

# **Post-Trade Transparency in the Credit Default Swaps Market**

## **Final Report**



**IOSCO**

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OF THE  
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## **Foreword**

The Board of the International Organization of Securities Commissions (“IOSCO”) has published this report, prepared by the Task Force on Over-the-Counter Derivatives Regulation. The report seeks to analyze the potential impact of mandatory post-trade transparency in the credit default swaps (“CDS”) market. This analysis is based upon a review of relevant works of international bodies and academic literature, an examination of publicly available transaction-level post-trade data about CDS, a survey of market participants and other market observers regarding their use of certain publicly available post-trade data and its perceived impact on the market and consideration of comments received on a consultation version of the report.

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## **I. Executive Summary.**

The Task Force on Over-the-Counter Derivatives Regulation of IOSCO has prepared this report on post-trade transparency in the CDS market. The report follows both longstanding and recent recognition of the importance of post-trade transparency to the regulation of financial markets.

The report seeks to analyze the potential impact of mandatory post-trade transparency in the CDS market, for which the Bank for International Settlements estimates \$16 trillion in notional amounts were outstanding at end-2014. As of July 2015, several IOSCO member jurisdictions have in place legislative and/or regulatory frameworks that require post-trade public dissemination of the price and volume of CDS transactions. These jurisdictions include the United States, where the Commodity Futures Trading Commission's mandatory post-trade transparency framework is currently in effect and the Securities and Exchange Commission has adopted a significant portion of its post-trade transparency framework. In Canada and the European Union, legislative and/or regulatory frameworks have been adopted and are expected to take effect in the near term. In addition, Japan has a legislative framework that requires public dissemination of certain information regarding over-the-counter derivative transactions.

The report's analysis of mandatory post-trade transparency is based upon a review of a diverse set of information about post-trade transparency and the CDS market. Notably, IOSCO conducted an original analysis of publicly available data about CDS transactions executed before and after the introduction of mandatory post-trade transparency in certain CDS markets in the United States. On the basis of this analysis, IOSCO concludes that the data does not suggest that this introduction of mandatory post-trade transparency had a substantial effect on market risk exposure or market activity for those products. IOSCO also reviewed relevant works of international bodies and academic literature and conducted a survey of market participants and other market observers regarding their use of certain publicly available post-trade data and its perceived impact on the market.

Taking into account this range of evidence and information, IOSCO has identified certain potential benefits and costs to mandatory post-trade transparency, which are described in Part VI of this report. In consideration of these potential costs and benefits, IOSCO believes that greater post-trade transparency in the CDS market—including making the price and volume of individual transactions publicly available—would be valuable to market participants and other market observers. IOSCO, therefore, encourages each member jurisdiction to take steps toward enhancing post-trade transparency in the CDS market in its jurisdiction, while recognizing that each member jurisdiction is best placed to judge the appropriate time and manner for enhancing post-trade transparency for CDS that trade in its respective market. To deliver anticipated benefits of post-trade transparency and to minimize potential costs, IOSCO jurisdictions may wish to consider certain factors described in Part VII of this report. Finally, Part VIII of this report includes a summary of the key feedback received on the consultation version of this report.

## **II. Objectives and Scope of This Report.**

In the wake of the global financial crisis of 2007-2009, the Leaders of the G20 in September 2009 called for a variety of reforms in the over-the-counter (“OTC”) derivatives markets aimed at improving transparency in those markets, mitigating systemic risk and protecting against market abuse.<sup>1</sup> In June 2010, the G20 Leaders agreed to accelerate the implementation of measures to improve transparency.<sup>2</sup> Recommendation 14 of the Financial Stability Board’s report on implementing OTC derivatives market reforms stated that “authorities should explore the benefits and costs of requiring public price and volume transparency of all trades” in over-the-counter derivatives, noting that “[v]ariation in data dissemination requirements could lead to opportunities for regulatory arbitrage.”<sup>3</sup> Improving market transparency thus plays an important role in determining the efficacy of the G20 commitments to reform the OTC derivatives markets.

This report seeks to analyze the potential impact of post-trade transparency in one particular OTC derivatives market: the CDS market. Part III of this report outlines the features of the global CDS market. Part IV outlines certain legislative and regulatory frameworks for implementing post-trade transparency in the OTC derivatives markets in IOSCO member jurisdictions. Part V assesses the potential impact of post-trade transparency in the CDS market. Part V first situates this report within the existing body of international and academic efforts concerning the impact of post-trade transparency in the CDS market and in markets for other products. Part V then describes an analysis of publicly available transaction-level post-trade data about certain CDS products. This analysis seeks to understand potential impacts of post-trade transparency on the CDS market, as well as to identify future lines of inquiry that IOSCO, other international bodies, regulatory authorities and researchers could undertake to explore further these potential impacts. Following this data analysis, Part V also reviews responses to a survey conducted by IOSCO of market participants and other market observers about their use of certain publicly available post-trade data and its perceived impact on the CDS market. Taking into account the evidence and analysis in Part V, Part VI evaluates potential costs and benefits that regulatory authorities may consider in their assessment of post-trade transparency. IOSCO makes recommendations on the basis of this work in Part VII. Part VIII sets out IOSCO’s feedback statement on public comments received on the consultation version of this report.

## **III. Characteristics of the CDS Market.**

CDS are contracts that transfer the credit risk of a reference entity or instrument from a buyer of credit protection to a seller of credit protection. As compensation for this transfer of credit risk, the buyer makes periodic premium payments to the seller. If a defined credit event occurs with respect to the reference entity or obligation, the seller pays the buyer an agreed

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<sup>1</sup> Communiqué of Leaders of the G20 (24-25 September 2009), available at [https://www.g20.org/sites/default/files/g20\\_resources/library/Pittsburgh\\_Declaration.pdf](https://www.g20.org/sites/default/files/g20_resources/library/Pittsburgh_Declaration.pdf).

<sup>2</sup> Communiqué of Leaders of the G20 (26-27 June 2010), available at [https://www.g20.org/sites/default/files/g20\\_resources/library/Toronto\\_Declaration\\_eng\\_0.pdf](https://www.g20.org/sites/default/files/g20_resources/library/Toronto_Declaration_eng_0.pdf).

<sup>3</sup> Financial Stability Board, Implementing OTC Derivatives Market Reforms (25 October 2010), available at [http://www.financialstabilityboard.org/publications/r\\_101025.pdf](http://www.financialstabilityboard.org/publications/r_101025.pdf).

amount reflecting the decline in market value of the relevant credit instrument or instruments. In the case of physically settled CDS, the seller would pay the buyer the par value of the relevant credit instrument and the buyer would deliver that credit instrument to the seller. In the case of cash settled CDS, the seller would pay the buyer any difference between the par value of the relevant credit instrument and its market value following the credit event.

Sources of information about market prices of CDS vary. Researchers Marco Avellaneda and Rama Cont note that “dealers observe the order flow (pre-trade) and transaction information (post-trade) for their own customers,” while end users may request quotes directly from a range of dealers.<sup>4</sup> Both dealers and end users may also rely on any publicly available information about quotes and trades, such as those that may be published through inter-dealer platforms, other trading venues and dealer and third-party data services.

Gross notional amounts of outstanding CDS reached approximately \$16 trillion at end-2014.<sup>5</sup> The gross market value of outstanding CDS stood at approximately \$593 billion at end-2014.<sup>6</sup> CDS with an aggregate of \$136 billion in net market value were outstanding at end-2014.<sup>7</sup>

In the United States, the gross notional outstanding of index CDS contracts required to be reported to a swap data repository was approximately \$5.7 trillion as of May 2015, of which approximately \$1.6 trillion (approximately 28%) was centrally cleared.<sup>8</sup> For the week ended 22

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<sup>4</sup> M. Avellaneda and R. Cont, *Transparency in Credit Default Swap Markets*, Finance Concepts (July 2010), available at <https://www2.isda.org/attachment/Mjc2Ng==/CDSMarketTransparency.pdf>.

<sup>5</sup> Bank for International Settlements, *Statistical Release: OTC Derivatives Statistics at end-December 2014* (April 2015), available at [http://www.bis.org/publ/otc\\_hy1504.pdf](http://www.bis.org/publ/otc_hy1504.pdf). Gross notional outstanding data has been adjusted to eliminate multiple-counting of the same trade.

<sup>6</sup> Bank for International Settlements, *Statistical Release: OTC Derivatives Statistics at end-December 2014* (April 2015), available at [http://www.bis.org/publ/otc\\_hy1504.pdf](http://www.bis.org/publ/otc_hy1504.pdf). According to the Bank for International Settlements, “gross market values are calculated as the sum of the absolute values of all open contracts with either positive or negative replacement values evaluated at market prices prevailing on the reporting date. Thus, the gross positive market value of a dealer’s outstanding contracts is the sum of the replacement values of all contracts that are in a current gain position to the reporter at current market prices (and therefore, if they were settled immediately, would represent claims on counterparties). The gross negative market value is the sum of the values of all contracts that have a negative value on the reporting date (i.e., those that are in a current loss position and therefore, if they were settled immediately, would represent liabilities of the dealer to its counterparties). The term “gross” indicates that contracts with positive and negative replacement values with the same counterparty are not netted. Nor are the sums of positive and negative contract values within a market risk category such as foreign exchange contracts, interest rate contracts, equities and commodities set off against one another. Gross market values indicate the potential scale of market risk in derivatives transactions and of the associated financial risk transfer taking place. Furthermore, gross market value at current market prices provides a measure of economic significance that is readily comparable across markets and products.” Id.

<sup>7</sup> Bank for International Settlements, *Statistical Release: OTC Derivatives Statistics at end-December 2014* (April 2015), available at [http://www.bis.org/publ/otc\\_hy1504.pdf](http://www.bis.org/publ/otc_hy1504.pdf). Net market values consist of gross market values minus the values of relevant offsetting contracts subject to bilateral netting agreements.

<sup>8</sup> Commodity Futures Trading Commission, *Weekly Swaps Report for Week Ended 22 May 2015*, Table 13a: Gross Notional Outstanding—Product Type—Cleared Status (3 June 2015), available at <http://www.cftc.gov/MarketReports/SwapsReports/Archive/index.htm>. The Weekly Swaps report is based

May 2015, transaction volume in index CDS contracts required to be reported to a swap data repository reached approximately \$288 billion, of which approximately \$217 billion (approximately 75%) was centrally cleared.<sup>9</sup>

The use of netting arrangements in the CDS market has increased in recent years, due in part to more frequent central clearing and implementation of higher capital requirements for OTC derivatives.<sup>10</sup> As the Bank for International Settlements explains, “netting enables market participants to reduce their counterparty exposure by offsetting contracts with negative market values against contracts with positive market values.”<sup>11</sup> Because net market values reflect these offsets and gross market values do not, net market values provide a measure of the extent to which netting arrangements are in use.<sup>12</sup> At end-2012 and end-2011, net market values represented 24% and 26%, respectively, of gross market values.<sup>13</sup> At end-2013, net market values represented 21% of gross market values.<sup>14</sup> By end-2014, netting in CDS contracts slowed as compared to a year earlier, with net market values representing 23% of gross market values.<sup>15</sup> At end-2014, the highest incidence of netting occurred in CDS contracts with central counterparties (16% net-to-gross market value) and dealers (17% net-to-gross market value), while the lowest incidence of netting occurred in CDS contracts with insurance companies (84% net-to-gross market value) and non-financial customers (69% net-to-gross market value).<sup>16</sup>

As of May 2015, single-name CDS accounted for approximately 53% of the CDS market in terms of outstanding gross notional, with the remainder of the market comprised of index CDS and “tranching” CDS that are structured to offer exposures on specific segments of an index loss distribution.<sup>17</sup> During the week ended 15 May 2015, transaction activity for index CDS totaled

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on data obtained from swap data repositories. Gross notional outstanding data has been adjusted to eliminate multiple counting of cleared trades.

<sup>9</sup> Commodity Futures Trading Commission, Weekly Swaps Report for Week Ended 22 May 2015, Table 15a: Transaction Dollar Volume—Product Type—Cleared Status (3 June 2015), available at <http://www.cftc.gov/MarketReports/SwapsReports/Archive/index.htm>. Transaction volume data has been adjusted to eliminate multiple-counting of cleared trades.

<sup>10</sup> Bank for International Settlements, Statistical Release: OTC Derivatives Statistics at end-December 2013 (May 2014), available at [http://www.bis.org/publ/otc\\_hy1405.pdf](http://www.bis.org/publ/otc_hy1405.pdf).

<sup>11</sup> Id.

<sup>12</sup> Id.

<sup>13</sup> Id.

<sup>14</sup> Id.

<sup>15</sup> Bank for International Settlements, Statistical Release: OTC Derivatives Statistics at end-December 2014 (April 2015), available at [http://www.bis.org/publ/otc\\_hy1504.pdf](http://www.bis.org/publ/otc_hy1504.pdf).

<sup>16</sup> Id.

<sup>17</sup> Depository Trust and Clearing Corporation, Trade Information Warehouse, Table 1: All Credit Products by Customer Type and Breakout by Product Type (Week Ended 15 May 2015), available at <http://dtcc.com/en/repository-otc-data.aspx>. Gross notional outstanding data has not been adjusted to eliminate multiple-counting of cleared trades.

approximately \$224 billion gross notional, while transaction activity for the top 1,000 reference entities for single-name CDS totaled approximately \$54 billion gross notional.<sup>18</sup>

Transactions involving at least one dealer—whether for the purpose of providing liquidity to end users or to hedge the dealer’s own positions—account for significant portions of notional amounts outstanding of CDS. Approximately 48% of the outstanding gross notional of CDS contracts as of May 2015 consisted of exclusively inter-dealer transactions, with the remainder represented by transactions involving at least one non-dealer counterparty.<sup>19</sup> Though the latter category primarily involved contracts between a dealer counterparty and a non-dealer counterparty, the share represented by contracts exclusively between non-dealers has grown from less than \$30 billion in June 2012 to almost \$690 billion in May 2015.<sup>20</sup>

Single-name CDS contracts referencing sovereigns or other state bodies have grown from approximately 11% of gross notional single-name CDS outstanding in December 2008 to approximately 28% in May 2015.<sup>21</sup> Conversely, over the same period single-name CDS referencing corporate entities other than financial institutions declined from approximately 67% of gross notional single-name CDS outstanding to approximately 51%.<sup>22</sup>

#### **IV. Legislative and Regulatory Frameworks for Post-Trade Transparency.**

As of July 2015, several IOSCO member jurisdictions have in place legislative and/or regulatory frameworks that require post-trade public dissemination of the price and volume of CDS transactions. In the United States, the Commodity Futures Trading Commission’s mandatory post-trade transparency framework is currently in effect. The United States Securities and Exchange Commission has adopted requirements for post-trade transparency of CDS that are security-based swaps, though a compliance schedule for these requirements had not been established as of the date of this report. Canada and the European Union have adopted mandatory post-trade transparency frameworks that are expected to take effect in the near term. In addition, Japan has a legislative framework that requires public dissemination of certain information regarding OTC derivative transactions. This momentum reflects the central role of

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<sup>18</sup> Depository Trust and Clearing Corporation, Trade Information Warehouse, Section IVa: Single Name Market Risk Activity (Week Ended 15 May 2015), available at <http://dtcc.com/en/repository-otc-data.aspx>; Depository Trust and Clearing Corporation, Trade Information Warehouse, Section IVb: Weekly Market Activity for Indices with 10 Contracts or Greater (Week Ended 15 May 2015), available at <http://dtcc.com/en/repository-otc-data.aspx>.

<sup>19</sup> Depository Trust and Clearing Corporation, Trade Information Warehouse, Table 1: All Credit Products by Customer Type and Breakout by Product Type (Week Ended 15 May 2015), available at <http://dtcc.com/en/repository-otc-data.aspx>.

<sup>20</sup> Id.; Depository Trust and Clearing Corporation, Trade Information Warehouse, Table 1: All Credit Products by Customer Type and Breakout by Product Type (Week Ended 29 June 2012), available at <http://dtcc.com/en/repository-otc-data.aspx>.

<sup>21</sup> Depository Trust and Clearing Corporation, Trade Information Warehouse, Table 2: Single Name Reference Entity Type by Buyer of Protection (10 Contracts or Greater) (Week Ended 15 May 2015), available at <http://dtcc.com/en/repository-otc-data.aspx>; Depository Trust and Clearing Corporation, Trade Information Warehouse, Table 2: Single Name Reference Entity Type by Buyer of Protection (10 Contracts or Greater) (Week Ended 26 December 2008), available at <http://dtcc.com/en/repository-otc-data.aspx>.

<sup>22</sup> Id.

transparency in the implementation of the G20 commitments to reform the OTC derivatives markets. Each of these frameworks and proposals is described below.

#### **A. Canada.**

Trade reporting and public dissemination rules have been adopted in Ontario, Québec and Manitoba. Reporting requirements began in these provinces on 31 October 2014. The remaining Canadian jurisdictions are expected to adopt similar legislation and regulation in the near term.

In the provinces of Ontario, Québec and Manitoba, Regulation/Rule 91-507 on trade repositories and derivatives data reporting will require designated or recognized trade repositories to make transaction-level reports available to the public at no cost. Though prices, reference entities and notional amounts will be required to be disseminated via a publicly accessible website or medium, the identities of the counterparties will be required to be kept anonymous. Appendix A of each Regulation/Rule prescribes the reporting fields that are required for public dissemination.

Transaction-level public reporting becomes effective on 29 July 2016 and, subject to any block trade thresholds, will require trade repositories to disseminate the reports no later than one day following the day the trade repository receives the data if one of the counterparties is a dealer, and no later than two days in all other cases.

#### **B. European Union.**

The Markets in Financial Instruments Regulation (“MiFIR”) will require public dissemination of the price, volume and time of transactions in derivatives (including over-the-counter transactions in CDS) traded on a trading venue. Data about transactions in those instruments will be made available to the public on a trade-by-trade basis. This information will be published as close to real-time as is technically possible. MiFIR allows for deferred publication of such information when certain conditions are met. MiFIR also will require all derivatives (including CDS) that are (1) admitted to trading or traded on a trading venue, such as a regulated market, multilateral trading facility or organized trading facility; (2) subject to the clearing obligation; and (3) sufficiently liquid, to be traded only on trading venues.

The Level 1 texts of MiFIR and a companion amendment to the Markets in Financial Instruments Directive were adopted on 12 June 2014 and will apply from 3 January 2017. The European Commission, in consultation with the European Securities and Markets Authority, is currently in the process of adopting Level 2 measures further developing the transparency regime to be applied to CDS products, including outlining the specific liquidity criteria and transparency requirements that will apply to CDS products and the circumstances under which deferred publication of transaction data will be permitted.

#### **C. Japan.**

The Financial Instruments and Exchange Act (“FIEA”) was amended in May 2010 to introduce the legislative framework for reporting of OTC derivative transactions to a trade repository. Reporting requirements under the FIEA took effect in November 2012, with a transition period until April 2013. Under the FIEA, the Financial Services Agency of Japan

("JFSA") must publicly disseminate certain information regarding OTC derivative transactions that are subject to reporting requirements under the FIEA. The JFSA may also direct a financial instruments clearing organization or a trade repository to publicly disseminate this information.

Pursuant to the FIEA, in May 2014 the JFSA began publishing quarterly reports of OTC derivative transactions on an aggregate basis. The JFSA is currently discussing the possibility of implementing public dissemination of more detailed information on OTC derivative transactions in the future.

Furthermore, the FIEA and relevant ordinances require electronic trading platform providers to publicly disclose the price and volume of, together with certain other information about, certain OTC derivative transactions executed on electronic trading platforms. This public disclosure will take effect in September 2015.

#### **D. United States.**

In the United States, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank Act") mandated reporting and public dissemination of data related to swap and security-based swap transactions, including price and volume, as soon as technologically practicable after the time at which each transaction is executed. The identities of the counterparties to such transactions are protected under the Dodd-Frank Act, so this information is not publicly disseminated. The Dodd-Frank Act directed the Commodity Futures Trading Commission ("CFTC") and the Securities and Exchange Commission ("SEC") to promulgate rules implementing this transaction-level post-trade public transparency for swaps and security-based swaps, respectively. Swaps are subject to the jurisdiction of the CFTC and include CDS referencing broad-based indices. Security-based swaps are subject to the jurisdiction of the SEC and include CDS referencing single securities, loans or issuers and CDS referencing narrow-based security indices. Such rules are required, among other things, to specify criteria defining block trades and related appropriate time delays for particular markets and contracts.

The CFTC has adopted final rules requiring reporting and public dissemination of data related to swaps transactions. Reporting and public dissemination of transactions in CDS referencing broad-based indices began on 31 December 2012 for transactions involving a swap dealer, on 28 February 2013 for transactions involving a major swap participant but not a swap dealer,<sup>23</sup> on 10 April 2013 for transactions involving any other financial entity and on 1 July 2013 for all other swap transactions subject to regulation by the CFTC. Data is disseminated to the public by one of four provisionally registered swap data repositories.<sup>24</sup>

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<sup>23</sup> The CFTC required both swap dealers and major swap participants to begin reporting to a registered swap data repository on 31 December 2012, but no major swap participants registered as such with the CFTC until 28 February 2013.

<sup>24</sup> CFTC-registered swap execution facilities have served as additional sources of publicly available information about transactions in CDS referencing broad-based indices since they began operation in October 2013.

In the first quarter of 2015, the SEC adopted requirements for reporting and public dissemination of security-based swaps, including CDS referencing single securities, loans or issuers and CDS referencing narrow-based security indices. As of the date of this report, a compliance schedule for these requirements had not been established.

## **V. Assessment of Potential Impacts of Post-Trade Transparency.**

In this report, the term “post-trade transparency” refers to a regulatory system that mandates disclosure of information, widely accessible to the public, about the price and volume of each relevant transaction does not refer to regulatory structures that allow for voluntary or selective disclosure of data. Because post-trade transparency requires public dissemination of information about the price and volume of individual transactions, the term also does not apply to regulatory structures that require dissemination of data (however widely) only in an aggregate form. Because the information is for the benefit of market participants and the public generally, post-trade transparency does not entail disclosure of counterparty identity, which is a matter of regulatory concern.

A variety of different regulatory systems can foster post-trade transparency. Trade repositories may disseminate trade-by-trade data to the public by extracting it from the transaction data that market participants report to them. Alternatively, exchanges or other trading platforms or infrastructures may publicly disseminate information about transactions executed on or through their facilities, though the comprehensiveness of such post-trade transparency systems depends upon the extent to which market participants utilize the associated venue or infrastructure. Regardless of who disseminates the information, post-trade transparency could entail disclosing transaction volumes as ranges or buckets and/or subject to a cap on the maximum size of transaction. Finally, the degree of post-trade transparency in a particular CDS market can vary depending upon how quickly information about individual transactions is disseminated to the public following execution of the transaction.<sup>25</sup>

### **A. Relevant IOSCO Work and Academic Literature.**

As transparency continues to spread across financial markets, researchers, authorities and policymakers have had the opportunity to examine the impacts of post-trade transparency in several distinct markets. The seminal works concerning voluntary post-trade transparency in the CDS market, mandatory post-trade transparency in related credit markets and post-trade transparency’s utility as a tool of broader market regulation serve as the foundation for IOSCO’s consideration of the potential impacts of mandatory post-trade transparency in the CDS market.

#### **1. Post-Trade Transparency in the CDS Market.**

Because mandatory post-trade transparency is only beginning to be implemented in the CDS market, the body of work analyzing the impacts or potential impacts of post-trade transparency in this market is limited.

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<sup>25</sup> International Organization of Securities Commissions, Methodology for Assessing Implementation of the IOSCO Objectives and Principles of Securities Regulation (September 2011 version as revised August 2013), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD359.pdf>.

Some researchers note that participants in financial markets, when armed with information about a competitor's position in a particular product, may trade in the direction of the expected hedge for that position so as to benefit from the expected demand for the hedging product.<sup>26</sup> This trading in anticipation of hedging transactions may drive up the time and costs required to hedge positions and could, as a result, decrease liquidity available to customers. Staff of the Federal Reserve Bank of New York conducted a study to test whether this pattern of trading applied in the CDS market. That study found that dealers typically do not hedge large CDS transactions by trading in the opposite direction on the same product type and reference entity on the same day or the next day after the original trade is executed.<sup>27</sup> The study did not review any offsetting transactions in index CDS or in equity or debt securities issued by the relevant reference entity. Based on the absence of same-instrument hedging activity soon after the original trade is executed, the authors concluded that "same-day reporting of CDS trading may not significantly disrupt same-day hedging activity."<sup>28</sup>

These results suggest that, when dealers' hedging strategies do include trades in the opposite direction on the same product type and reference entity, such trades may be delayed substantially beyond the execution of the original trade. Additionally, dealers' hedging arrangements may consist, in whole or in part, of economically offsetting transactions in instruments other than that which is the subject of the hedge. The hedging patterns observed in these results occurred at a time when no mandatory post-trade transparency rules applied to the CDS market, so results may differ in a study of a market subject to mandatory post-trade transparency.

As part of its examination of the structure and dynamics of the CDS market in the United Kingdom following the 2007-2008 financial crisis, the Bank of England analyzed voluntarily reported post-trade data for transactions in that market.<sup>29</sup> The Bank of England found, in a relatively small (in terms of values traded) market with infrequent trading concentrated around the main liquidity-providing dealers, no substantial differences in the prices at which the various types of counterparties completed their trades.<sup>30</sup> Instead, "most market [end users] traded at approximately the same prices at which dealers traded with one another."<sup>31</sup> The authors attributed this result to the relatively higher level of sophistication of end users in this market.<sup>32</sup>

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<sup>26</sup> M. Brunnermeier and L. Pedersen, *Predatory Trading*, 60 *Journal of Finance* 1825 (2005), available at [http://people.stern.nyu.edu/lpederse/papers/predatory\\_trading.pdf](http://people.stern.nyu.edu/lpederse/papers/predatory_trading.pdf).

<sup>27</sup> K. Chen, M. Fleming, J. Jackson, A. Li and A. Sarkar, *An Analysis of CDS Transactions: Implications for Public Reporting*, Federal Reserve Bank of New York Staff Report No. 517 (September 2011), available at [http://www.newyorkfed.org/research/staff\\_reports/sr517.pdf](http://www.newyorkfed.org/research/staff_reports/sr517.pdf).

<sup>28</sup> *Id.*

<sup>29</sup> E. Benos, A. Wetherilt and F. Zikes, *The Structure and Dynamics of the UK Credit Default Swap Market*, Bank of England Financial Stability Paper No. 25 (November 2013), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2363391](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2363391).

<sup>30</sup> *Id.*

<sup>31</sup> *Id.*

<sup>32</sup> *Id.*

Complementing this growing body of academic literature about post-trade transparency in the CDS market, in response to the financial crisis IOSCO recommended in 2009 that market regulators facilitate “appropriate and timely” disclosure of CDS data relating to price, volume and open-interest.<sup>33</sup> As part of these new disclosures, IOSCO recommended that market regulators consider the level of such information to be publicly disseminated.<sup>34</sup>

## 2. Post-Trade Transparency in Debt Securities Markets.

A wide array of IOSCO reports and scholarship in economics have highlighted certain advantages and disadvantages of introducing post-trade transparency in debt securities markets that are closely related to the CDS market. This body of literature has measured the impacts of post-trade transparency in the corporate bond market and in the structured finance market. Market liquidity, frequency and patterns of trading and/or investment purpose may differ between the corporate bond and structured finance markets, on the one hand, and the CDS market, on the other hand. Nevertheless, these research findings may remain relevant to the consideration of post-trade transparency in the CDS market because they offer insight into other markets in which post-trade transparency has been introduced in recent years.

Researchers conducted multiple studies of the OTC corporate bond market in the United States following the introduction of post-trade transparency under the auspices of the TRACE system in 2002. Several studies concluded that post-trade transparency lowered transaction costs and reduced information asymmetries between participants in the U.S. OTC corporate bond market.<sup>35</sup> One study found that trade execution costs for TRACE-eligible bonds fell 50% over the study period.<sup>36</sup> The authors concluded that TRACE reporting for related bonds also likely led to the 20% reduction in trading costs for bonds not eligible for TRACE.<sup>37</sup> At least one study anticipated that these lowered costs, together with the increased availability of pricing-determinant information, may lead to increased retail trading in that market.<sup>38</sup> A 2008 review of the TRACE literature confirmed that the introduction of post-trade transparency had benefitted investors by reducing the fees paid to dealers to complete trades.<sup>39</sup> Conversely, some researchers

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<sup>33</sup> International Organization of Securities Commissions, *Unregulated Financial Markets and Products* (September 2009), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD301.pdf>.

<sup>34</sup> Id.

<sup>35</sup> See, e.g., A. Edwards, L. Harris and M. Piwowar, *Corporate Bond Market Transaction Costs and Transparency*, 62 *The Journal of Finance* 1421 (June 2007), available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6261.2007.01240.x/pdf>; M. Goldstein, E. Hotchkiss and E. Sirri, *Transparency and Liquidity: A Controlled Experiment on Corporate Bonds*, 20 *Review of Financial Studies* 235 (2007), available at <http://rfs.oxfordjournals.org/content/20/2/235.full.pdf+html>.

<sup>36</sup> H. Bessembinder, W. Maxwell and K. Venkataraman, *Market Transparency, Liquidity Externalities and Institutional Trading Costs in Corporate Bonds*, 82 *Journal of Financial Economics* 251 (2006), available at <http://www.esma.europa.eu/system/files/bessembinder.pdf>.

<sup>37</sup> Id.

<sup>38</sup> A. Edwards, L. Harris and M. Piwowar, *Corporate Bond Market Transaction Costs and Transparency*, 62 *The Journal of Finance* 1421 (June 2007), available at <http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6261.2007.01240.x/pdf>.

<sup>39</sup> H. Bessembinder and W. Maxwell, *Transparency and the Corporate Bond Market*, 22 *Journal of Economic Perspectives* 217 (2008), available at <http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.22.2.217>.

have also found that in some cases dealers became more reluctant to carry inventory or stand ready to trade following introduction of post-trade transparency,<sup>40</sup> although this is not a settled point. Some researchers have concluded that infrequently traded bonds may not reap the same cost-savings benefits from post-trade transparency as more frequently traded products,<sup>41</sup> while others have suggested that post-trade transparency may help reduce the range of valuations calculated for illiquid assets<sup>42</sup> and found that price dispersion reduced more significantly for less actively traded products following introduction of post-trade transparency.<sup>43</sup>

In the U.S. structured credit product market, post-trade data about an increasing range of products has been disseminated to the public via the TRACE system since 2012. Similar to studies of the OTC corporate bond market, researchers have concluded that increased post-trade transparency in the structured credit market has the potential to reduce transaction costs, particularly in dealer-dominated markets where information asymmetries are most acute.<sup>44</sup>

Against this background of market research, IOSCO has recommended increased post-trade transparency in the global corporate bond and structured finance product markets. Concerning corporate bond markets, IOSCO concluded in 2004 that “regulatory authorities should assess the appropriate level of transparency in the market for corporate debt to facilitate price discovery and market integrity.”<sup>45</sup> IOSCO has further determined that post-trade transparency brings net benefits to structured finance product markets and recommended in 2010 that member jurisdictions seek to enhance post-trade transparency in the structured finance product markets in their respective jurisdictions.<sup>46</sup> Building on these recommendations, IOSCO’s 2012 review of the academic literature on post-trade transparency in the U.S. OTC bond market noted that this literature suggested increased transparency in the CDS market might

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<sup>40</sup> Id.; P. Asquith, T. Covert and P. Pathak, *The Effects of Mandatory Transparency in Financial Market Design: Evidence from the Corporate Bond Market* (September 2013), available at <http://www.nber.org/papers/w19417.pdf>.

<sup>41</sup> M. Goldstein, E. Hotchkiss and E. Sirri, *Transparency and Liquidity: A Controlled Experiment on Corporate Bonds*, 20 *Review of Financial Studies* 235 (2007), available at <http://rfs.oxfordjournals.org/content/20/2/235.full.pdf+html>.

<sup>42</sup> G. Cici, S. Gibson and J. Merrick, *Missing the Marks? Dispersion in Corporate Bond Valuations Across Mutual Funds*, 101 *Journal of Financial Economics* 206 (2011), available at <http://www.sciencedirect.com/science/article/pii/S0304405X11000341?np=y#>.

<sup>43</sup> P. Asquith, T. Covert and P. Pathak, *The Effects of Mandatory Transparency in Financial Market Design: Evidence from the Corporate Bond Market* (September 2013), available at <http://www.nber.org/papers/w19417.pdf>.

<sup>44</sup> H. Bessembinder, W. Maxwell and K. Venkataraman, *Trading Activity and Transaction Costs in Structured Credit Products*, 69 *Financial Analysts Journal* 55 (2013), available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2180961](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2180961).

<sup>45</sup> International Organization of Securities Commissions, *Transparency of Corporate Bond Markets* (May 2004), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD168.pdf>.

<sup>46</sup> International Organization of Securities Commissions, *Transparency of Structured Finance Products* (July 2010), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD326.pdf>.

reduce information asymmetries and transaction costs and might also discourage dealers from providing liquidity.<sup>47</sup>

### 3. Post-Trade Transparency and Market Regulation.

IOSCO has long recognized the importance of post-trade transparency to the regulation of financial markets.<sup>48</sup> In addition to its work focused on post-trade transparency in specific markets, IOSCO developed a set of objectives and principles for the regulation of financial markets. Principle 35 of these principles declares that “regulation should promote transparency of trading” in the securities and derivatives markets.<sup>49</sup>

Describing the reasoning behind Principle 35, IOSCO explained that “market transparency is generally regarded as central to both the fairness and efficiency of a market, and in particular to its liquidity and quality of price formation.”<sup>50</sup> IOSCO further concluded that “post-trade transparency enhances investor protection by making it easier for investors to monitor the quality of executions that they receive from their intermediaries. Transparency can also help to promote market efficiency. Inefficiencies can arise in . . . pricing . . . when market participants are unaware of others’ trading activity. . . . Post-trade transparency can reduce information asymmetries between dealers and buy-side clients. If trade prices are publicly known, buy-side market participants will be more likely to question if they are not obtaining prices similar to those at which executions have occurred in the past. . . . Information in respect of the volumes and prices of completed trades enables market participants not only to take into account the most recent information on volumes and prices but also to monitor the quality of executions they have obtained compared with other market users. In general, the more complete and more widely available trading information is, the more efficient the price discovery process should be, and the greater the public’s confidence in its fairness.”<sup>51</sup> Discussing the importance of the principle of transparency embodied in Principle 35, IOSCO further concluded that post-trade transparency also reduces the potential for manipulative and other unfair trading practices.<sup>52</sup>

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<sup>47</sup> International Organization of Securities Commissions, *The Credit Default Swap Market* (June 2012), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD385.pdf>.

<sup>48</sup> See, e.g., International Organization of Securities Commissions, *Transparency on Secondary Markets: A Synthesis of the IOSCO Debate* (December 1992), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD27.pdf>; International Organization of Securities Commissions, *Transparency and Market Fragmentation* (November 2001), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD124.pdf>.

<sup>49</sup> International Organization of Securities Commissions, *Objectives and Principles of Securities Regulation* (June 2010), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD323.pdf>.

<sup>50</sup> International Organization of Securities Commissions, *Methodology for Assessing Implementation of the IOSCO Objectives and Principles of Securities Regulation* (September 2011 version as revised August 2013), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD359.pdf>.

<sup>51</sup> Id.

<sup>52</sup> Id.

## **B. Publicly Available Transaction-Level Post-Trade Data About CDS.**

The academic literature and IOSCO's prior work regarding the impacts of post-trade transparency do not address the potential impacts of mandatory post-trade transparency in the CDS market. For this reason, IOSCO has undertaken an analysis of the impacts of mandatory post-trade transparency in the CDS market by examining publicly available post-trade data about CDS.

As described in Part IV.D of this report, in the United States, the CFTC has adopted final rules requiring reporting and public dissemination of data related to swaps transactions, including transactions in CDS referencing broad-based indices. Reporting and public dissemination of these transactions began on 31 December 2012 for transactions involving a swap dealer, on 28 February 2013 for transactions involving a major swap participant but not a swap dealer,<sup>53</sup> on 10 April 2013 for transactions involving any other financial entity and on 1 July 2013 for all other swap transactions subject to regulation by the CFTC.<sup>54</sup>

Through its analysis, IOSCO sought to identify potential impacts of post-trade transparency on measures of market quality for these instruments. IOSCO also endeavored to identify future lines of inquiry that IOSCO, other international bodies, regulatory authorities and researchers could undertake to explore further the potential impacts of post-trade transparency on the CDS market.

### **1. Data.**

The data disseminated to the public pursuant to the CFTC's mandatory post-trade transparency rules relates only to transactions subject to those rules, specifically, transactions in CDS referencing broad-based indices conducted within the jurisdiction of the CFTC. As a result, that data set does not include transactions involving CDS that are not subject to those rules (for example, transactions in CDS referencing single securities, loans or issuers or referencing narrow-based indices). To allow for comparison of variables between CDS transactions that became subject to the CFTC's mandatory post-trade transparency rules and CDS transactions that are not subject to those rules, IOSCO instead analyzed publicly available data from the Depository Trust and Clearing Corporation Trade Information Warehouse ("DTCC-TIW").<sup>55</sup> The DTCC-TIW data allowed comparison of transactions and positions in CDS to which the CFTC's mandatory post-trade transparency rules apply with CDS to which these rules do not apply.<sup>56</sup>

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<sup>53</sup> The CFTC required both swap dealers and major swap participants to begin reporting to a registered swap data repository on 31 December 2012, but no major swap participants registered as such with the CFTC until 28 February 2013.

<sup>54</sup> As discussed in Part V.B.2 of this report, this analysis used 31 December 2012 as the date that post-trade transparency was introduced for products subject to the CFTC's jurisdiction because on that date information about swap transactions involving a swap dealer or major swap participant began to be disseminated to the public.

<sup>55</sup> The data set and detailed information about it are available at <http://dtcc.com/en/repository-otc-data.aspx>.

<sup>56</sup> The Depository Trust and Clearing Corporation reports that the DTCC-TIW provides "comprehensive reports on the vast majority of CDS contracts registered in the [DTCC-TIW's] global repository."

Some limitations apply to the DTCC-TIW data in the context of IOSCO's analysis. For example, the data may not contain all live positions in the DTCC-TIW as of a specified date because some transaction activity is subject to delayed reporting due to confidentiality arrangements.<sup>57</sup> Data reported on a voluntary basis may be less comprehensive than data reported pursuant to regulatory mandates. Cleared transactions are counted twice in some data sets because the cleared contracts between the clearing house and each of the counterparties are included in the data. Furthermore, the DTCC-TIW data includes transactions without regard to the domicile of the counterparties, their affiliation with U.S. persons or the location at which the transaction took place. As a result, the DTCC-TIW data may include index CDS transactions not subject to the CFTC's mandatory post-trade transparency rules. For example, a transaction conducted outside the United States between two non-U.S. counterparties not affiliated with or guaranteed by a U.S. person, would be included in the DTCC-TIW index CDS data sets. Finally, IOSCO's analysis examined data published in the two-year period ended 30 June 2013; future analyses using a longer time series may yield different or additional results.

## 2. Methodology.

As noted above, mandatory reporting and public dissemination of transactions in CDS referencing broad-based indices began in the United States on 31 December 2012 (the "Event Date"). The analysis examined the CDS market during the six-month period prior to the Event Date (1 July 2012 to 30 December 2012) and the six-month period beginning with the Event Date (31 December 2012 to 30 June 2013). These two event periods allow comparison of market behavior before and after the introduction of mandatory post-trade transparency pursuant to CFTC rules. The analysis also compares each of these two event periods to the equivalent six-month period in the previous year. These two control periods allow IOSCO to control for seasonalities and other potentially independent events in the market.<sup>58</sup>

IOSCO examined data related to North American corporate index CDS contracts (CDX), European corporate index CDS contracts (iTraxx) and single-name CDS contracts on entities that are CDX constituents. Certain CDX and iTraxx contracts became subject to the mandatory post-trade transparency rules beginning on the Event Date, while single-name CDS contracts were not subject to mandatory post-trade transparency during the event periods. For each of these three types of contracts, IOSCO analyzed four data sets published by the DTCC-TIW: gross notional

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Depository Trust and Clearing Corporation, Trade Information Warehouse Reports (accessed 6 October 2014), available at <http://dtcc.com/en/repository-otc-data.aspx>. Data is reported to the DTCC-TIW on a voluntary basis and is published weekly. Archived data is available beginning with dates in 2008.

<sup>57</sup> Depository Trust and Clearing Corporation, Explanation of Trade Information Warehouse Data (24 May 2011), available at [http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw\\_data\\_explanation.pdf](http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw_data_explanation.pdf).

<sup>58</sup> Because DTCC-TIW provides weekly reports, the data do not perfectly coincide with the dates provided above. The four time periods are, as given by the dates of the weekly reports from DTCC-TIW: 1 July 2011 to 30 December 2011; 6 January 2012 to 29 June 2012; 6 July 2012 to 28 December 2012; 4 January 2013 to 28 June 2013. Data have been allocated to one of these four time periods on the basis of the date of the report, but data included in each report relate to the full week immediately preceding the date of the relevant report. As a result, a report may include data relating to one or more days that fall outside of the period to which it was assigned for purposes of this analysis.

outstanding,<sup>59</sup> net notional outstanding,<sup>60</sup> total contracts outstanding<sup>61</sup> and traded notional.<sup>62</sup> The gross and net notional outstanding and total contracts outstanding data sets give some measure of market risk exposure. Traded notional is a measure for market activity.

### 3. Results.

Results for CDX, iTraxx and single-name CDS contracts on certain entities that are CDX constituents are presented below. Overall, during the six-month period after the introduction of mandatory post-trade transparency for CDS referencing broad-based indices, the average gross notional outstanding of all index CDS contracts in the DTCC-TIW was \$10.83 trillion.<sup>63</sup>

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<sup>59</sup> Depository Trust and Clearing Corporation, Trade Information Warehouse, Table 7: Gross and Net Notional for Indices and Index Tranches (10 Contracts or Greater), available at <http://dtcc.com/en/repository-otc-data.aspx>. Gross notional outstanding values may be influenced by non-economic activity such as central clearing and compression; these values are presented in U.S. dollar equivalents calculated by applying relevant exchange rates. Depository Trust and Clearing Corporation, Explanation of Trade Information Warehouse Data (24 May 2011), available at [http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw\\_data\\_explanation.pdf](http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw_data_explanation.pdf).

<sup>60</sup> Depository Trust and Clearing Corporation, Trade Information Warehouse, Table 7: Gross and Net Notional for Indices and Index Tranches (10 Contracts or Greater), available at <http://dtcc.com/en/repository-otc-data.aspx>. According to the Depository Trust and Clearing Corporation, “the aggregate net notional data is calculated based on counterparty family. A counterparty family will typically include all of the accounts of a particular asset manager or corporate affiliates rolled up to the holding company level. Aggregate net notional data reported is the sum of net protection bought (or equivalently sold) across all counterparty families.” Depository Trust and Clearing Corporation, Explanation of Trade Information Warehouse Data (24 May 2011), available at [http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw\\_data\\_explanation.pdf](http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw_data_explanation.pdf). Net notional outstanding values may be influenced by non-economic activity such as central clearing and portfolio compression; these values are presented in U.S. dollar equivalents calculated by applying relevant exchange rates. Id.

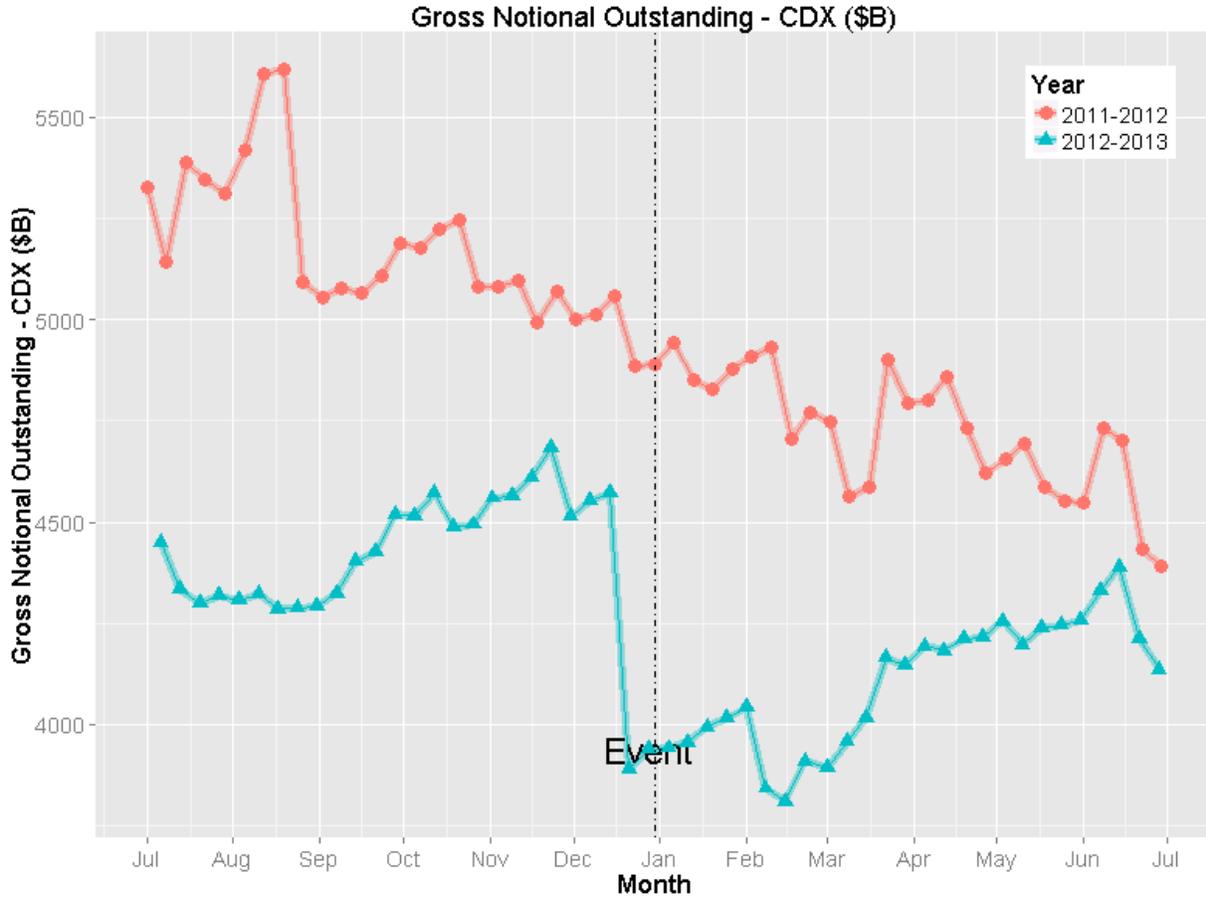
<sup>61</sup> Depository Trust and Clearing Corporation, Trade Information Warehouse, Table 7: Gross and Net Notional for Indices and Index Tranches (10 Contracts or Greater), available at <http://dtcc.com/en/repository-otc-data.aspx>. Measures of total contracts outstanding may be influenced by non-economic activity such as central clearing and portfolio compression. Depository Trust and Clearing Corporation, Explanation of Trade Information Warehouse Data (24 May 2011), available at [http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw\\_data\\_explanation.pdf](http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw_data_explanation.pdf).

<sup>62</sup> Depository Trust and Clearing Corporation, Trade Information Warehouse, Section IVb: Weekly Market Activity for Indices with 10 Contracts or Greater, available at <http://dtcc.com/en/repository-otc-data.aspx>. Traded notional values do not include transactions that “did not result in a change in the market risk position of the market participants,” such as central clearing and portfolio compression; these values are presented in U.S. dollar equivalents calculated by applying relevant exchange rates. Depository Trust and Clearing Corporation, Explanation of Trade Information Warehouse Data (24 May 2011), available at [http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw\\_data\\_explanation.pdf](http://dtcc.com/~media/Files/Downloads/Settlement-Asset-Services/DerivSERV/tiw_data_explanation.pdf).

<sup>63</sup> Depository Trust and Clearing Corporation, Trade Information Warehouse, Table 7: Gross and Net Notional for Indices and Index Tranches (10 Contracts or Greater), available at <http://dtcc.com/en/repository-otc-data.aspx>. This figure represents the average of the weekly data for this period as reported by the DTCC-TIW.

a. *North American corporate index CDS contracts (CDX).*

IOSCO reviewed all index CDS contracts based on indices of North American corporate CDS contracts, including both high-yield and investment grade contracts.<sup>64</sup> During the six-month period after the introduction of mandatory post-trade transparency, the average gross notional outstanding of these contracts was \$4.11 trillion, or approximately 37.9% of the total average gross notional outstanding for all index CDS contracts for which data is published by DTCC-TIWI.



**Figure 1.** Gross Notional Outstanding for CDX Contracts.

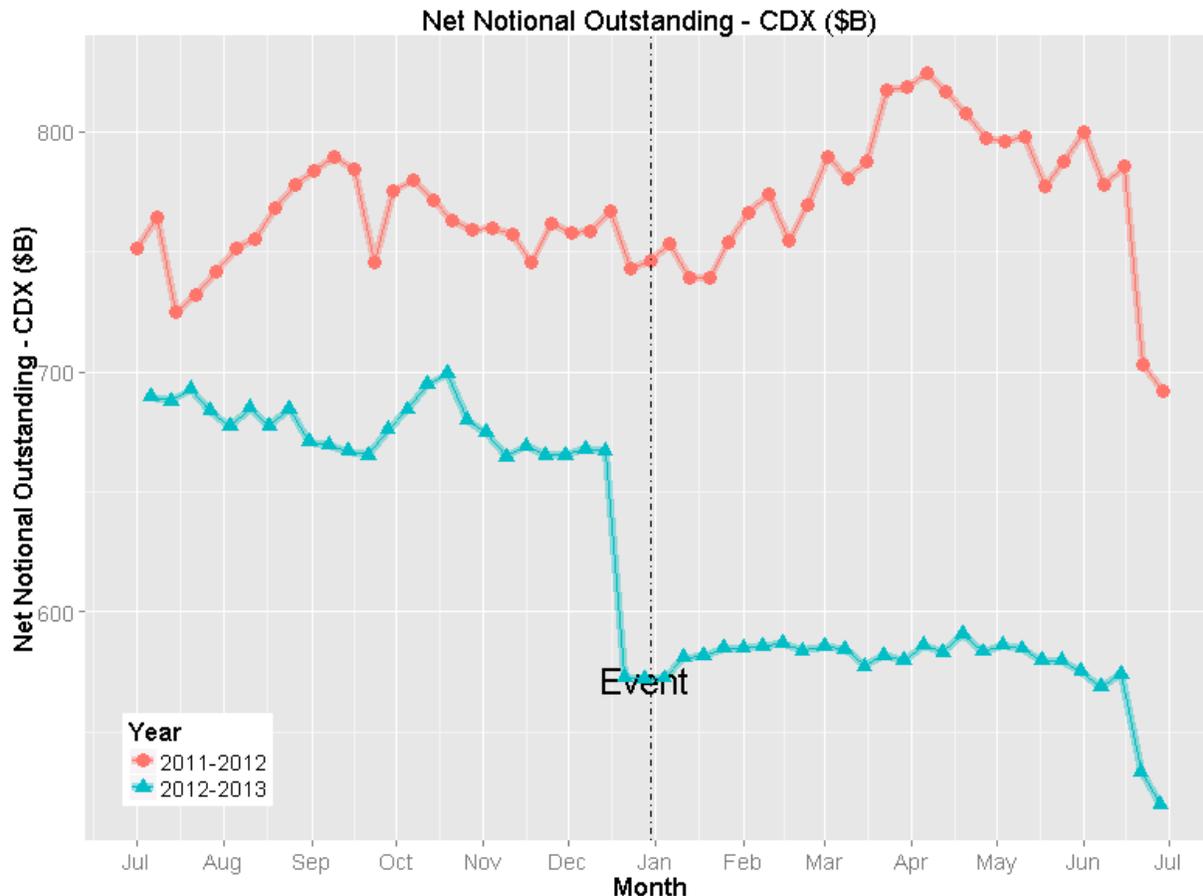
Figure 1 presents the results of IOSCO’s analysis of gross notional outstanding for CDX contracts. The 2011-2012 line depicts the two control periods, while the 2012-2013 line depicts the two event periods. The figure shows that overall the gross notional outstanding was higher during the control periods, with a downward trend across both control periods.

Figure 1 also shows a drop of approximately \$500 billion in gross notional outstanding in mid-December 2012, with an overall upward trend over the remainder of the event period. This drop preceded the Event Date and corresponded to the 20 December maturity date for CDX

<sup>64</sup> All contracts with identifiers beginning with “CDX.NA” were included in this sample.

contracts. CDX contracts mature either on 20 June or on 20 December of the relevant year, which may lead to a change in gross notional outstanding. The mid-December 2012 drop could, however, be an indication of market participants' preparation for the upcoming introduction of mandatory post-trade transparency; market participants may have used the 20 December maturity date to reduce their positions by letting contracts expire without entering into new contracts. IOSCO also observed declines around 20 December 2011, 20 June 2012 and 20 June 2013, although these declines were of similar magnitude to the general variability in gross notional outstanding during the event and control periods and were also much smaller in magnitude compared to the pronounced decline in December 2012. IOSCO also observed a large drop in September 2011 that is of similar magnitude to the drop in mid-December 2012. This drop did not occur near a CDX maturity date and illustrates the variability in gross notional outstanding over the periods reviewed.

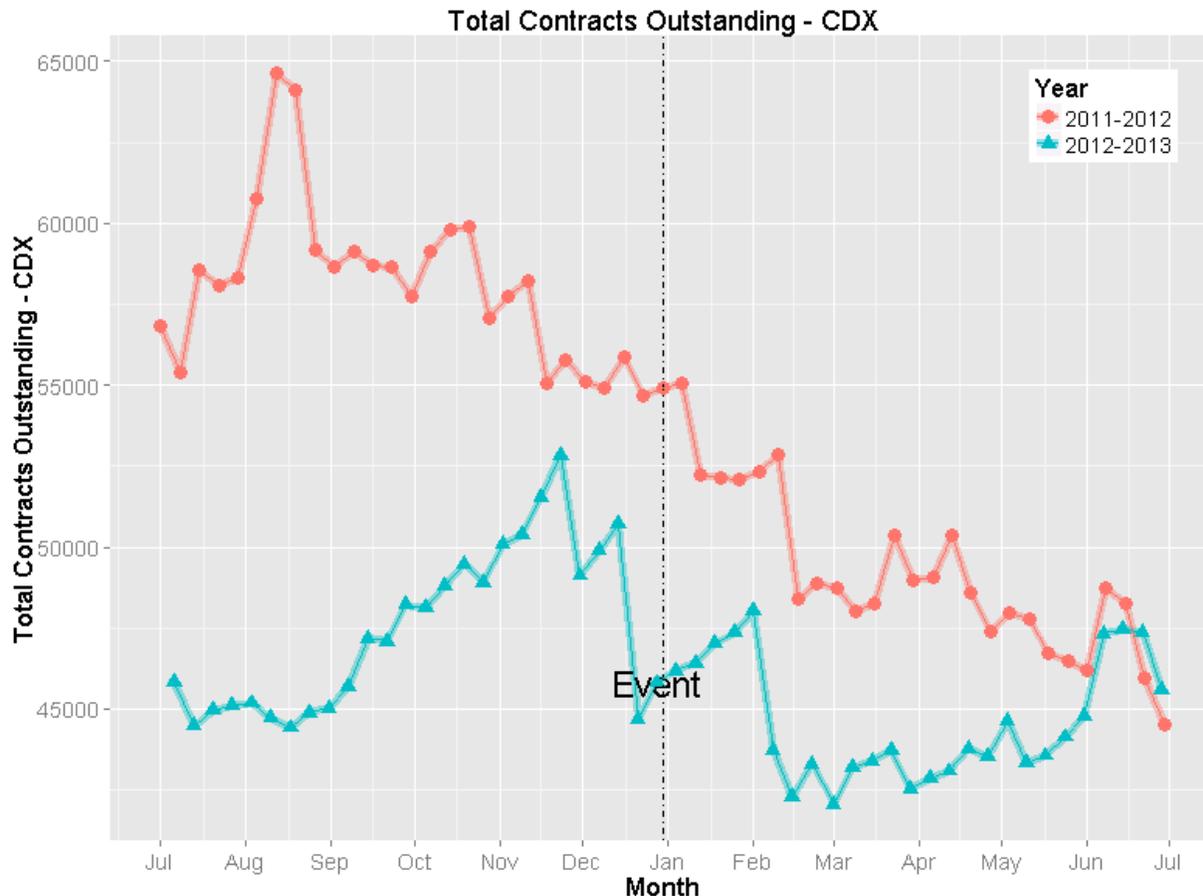
The mid-December 2012 decline in gross notional outstanding for CDX contracts also corresponds in magnitude to a sharp drop in gross notional outstanding of single-name CDS contracts on entities that are CDX constituents in the same time period, as shown in Figure 9. Because mandatory post-trade transparency did not apply to single-name CDS contracts during the control and event periods, the similarity between the results for CDX contracts and single-name CDS contracts on entities that are CDX constituents may suggest that the mid-December 2012 decline in gross notional outstanding for CDX contracts was due to the 20 December maturity date and other factors (which may include central clearing, compression and market events), rather than to the introduction of post-trade transparency in certain index CDS markets. On the other hand, one reason for this tandem decline in gross notional outstanding could be that a decline in gross notional outstanding of CDX contracts also may have affected single-name CDS contracts on entities that are CDX constituents, or that the decline in gross notional outstanding of single-name CDS contracts on entities that are CDX constituents also may have affected CDX contracts. For example, this spillover effect could reflect the extent to which one product may function as a hedging arrangement for the other.



**Figure 2.** Net Notional Outstanding for CDX Contracts.

Figure 2 presents the results of IOSCO’s analysis of net notional outstanding for CDX contracts. Figure 2 shows that, overall, the net notional outstanding was higher during the control periods, without the same downward trend during the control periods as shown for gross notional outstanding in Figure 1.

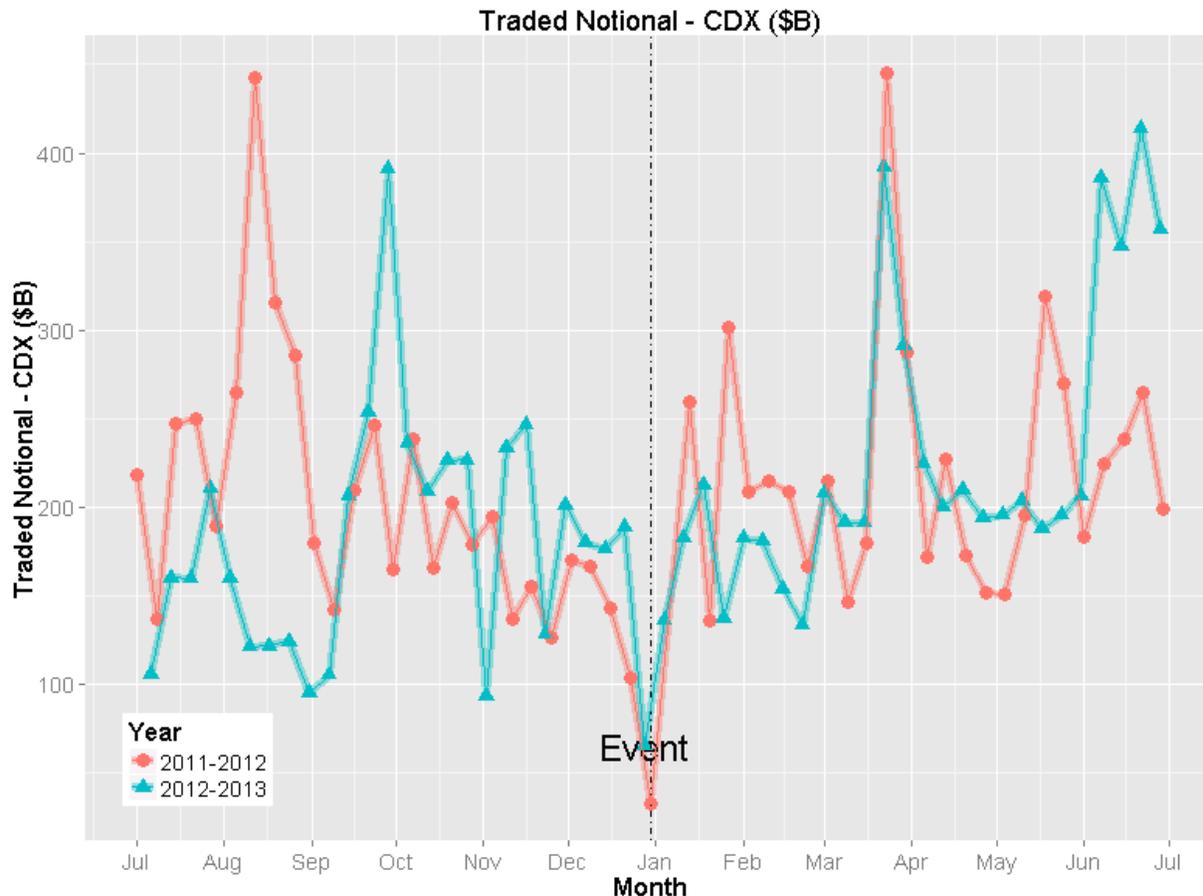
Figure 2 also shows a pronounced decline around the maturity date on 20 December 2012, which occurs before the Event Date. Immediately after the introduction of mandatory post-trade transparency, net notional outstanding is relatively stable and slightly higher than at the end of December 2012. A pronounced decline of similar magnitude corresponding to the typical maturity dates for CDX contracts occurred in June 2012 and, to a lesser extent, in June 2013 and December 2011. Following a decline in June 2012, net notional outstanding also remained at the lower level through December 2012. Net notional outstanding was lower after the introduction of post-trade transparency than in the corresponding control period, but the reduction occurred before the Event Date and corresponds to a similar pattern for net notional outstanding of single-name CDS contracts on entities that are CDX constituents over the same time period, as shown in Figure 10. These factors suggest that the lower level may not be attributable to the introduction of mandatory post-trade transparency requirements but, rather, to the maturity date that occurred several days before the Event Date.



**Figure 3.** Total Contracts Outstanding for CDX Contracts.

Figure 3 presents the results of IOSCO’s analysis of the total number of contracts outstanding for CDX contracts. Consistent with Figures 1 and 2, Figure 3 shows that, overall, more CDX contracts were outstanding during the control periods than during the subsequent event periods. As in Figure 1, Figure 3 shows a downward trend across both control periods, including a decrease of more than 3,000 contracts in February 2012.

A pronounced decline occurred again around the 20 December 2012 maturity date. The total number of contracts outstanding initially increased after the Event Date, with a decline in February 2013 and subsequent slow increase towards June 2013. No equivalent decline occurred in December 2011, and the declines in June 2012 and 2013 are less pronounced. As shown in Figure 11, a similar decline in the total number of outstanding single-name CDS contracts on entities that are CDX constituents occurred near the 20 December 2012 maturity date, again suggesting that the decline in the total number of CDX contracts outstanding may not have been due to the introduction of mandatory post-trade transparency.



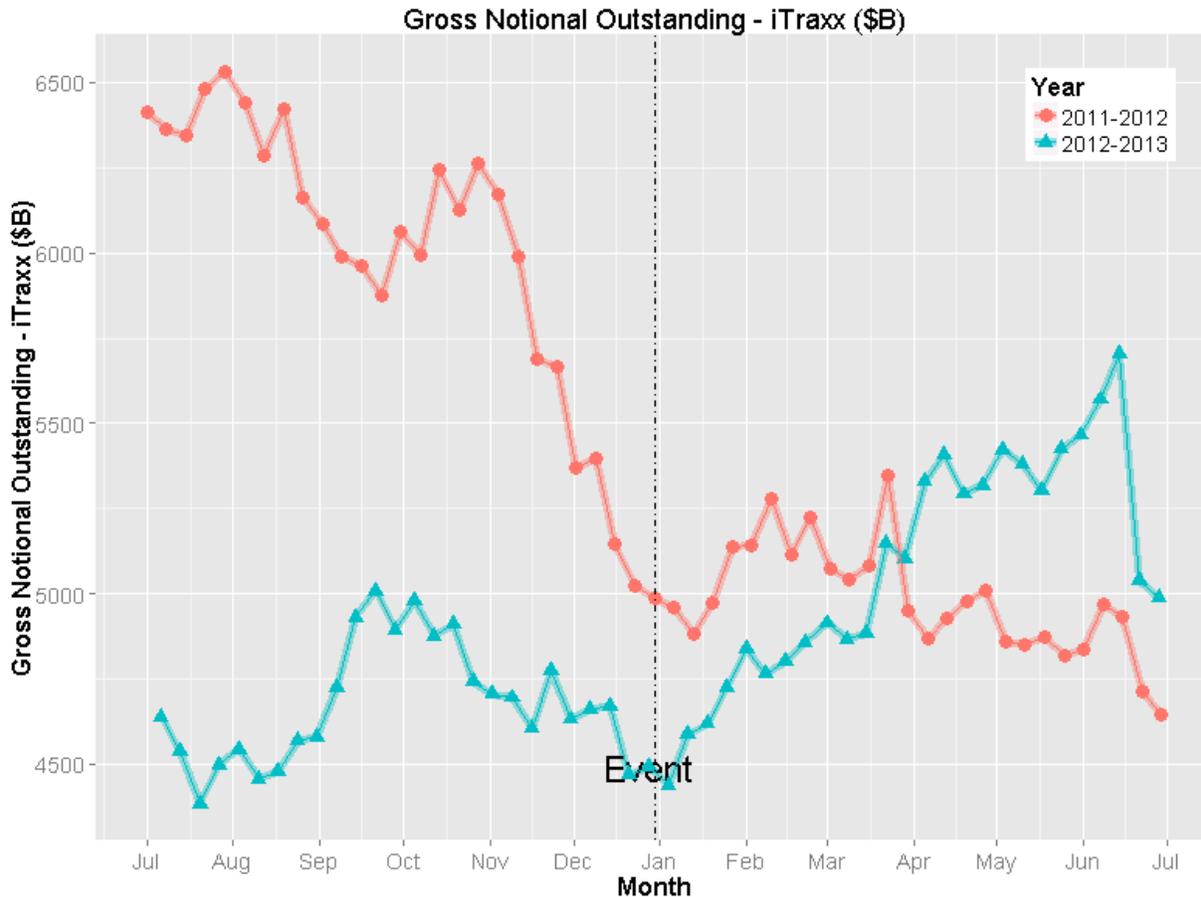
**Figure 4.** Traded Notional for CDX Contracts.

Figure 4 presents the results of IOSCO’s analysis of traded notional for CDX contracts. Traded notional is a direct measure of trading activity. Results for the event periods and the control periods look similar, both in terms of level of trading activity and its variability. Pronounced declines occurred in December 2011 and December 2012, with subsequent recoveries in January 2012 and January 2013, respectively. Trading activity for the period following the Event Date appears similar to that during the other time periods.

Overall, the evidence presented in Figures 1 to 4 does not suggest that market activity or market risk exposure for CDX contracts has changed substantially due to the introduction of mandatory post-trade transparency beginning on 31 December 2012. Trading activity after the Event Date, as measured by traded notional amount, appears similar to periods in which post-trade transparency requirements did not apply. While market risk exposure (as measured by gross notional outstanding, net notional outstanding and total contracts outstanding) exhibits changes and variability, the evidence suggests that those changes may be due to factors other than the introduction of mandatory post-trade transparency. For example, the maturity dates on 20 June and 20 December of each year may have impacted the results presented in Figures 1 to 3.

b. *European corporate index CDS contracts (iTraxx)*

IOSCO reviewed all iTraxx contracts based on indices of European corporate CDS contracts.<sup>65</sup> During the six-month period after the Event Date, the average gross notional outstanding of these contracts was \$5.08 trillion, or approximately 46.93% of the total average gross notional outstanding for all index CDS contracts.

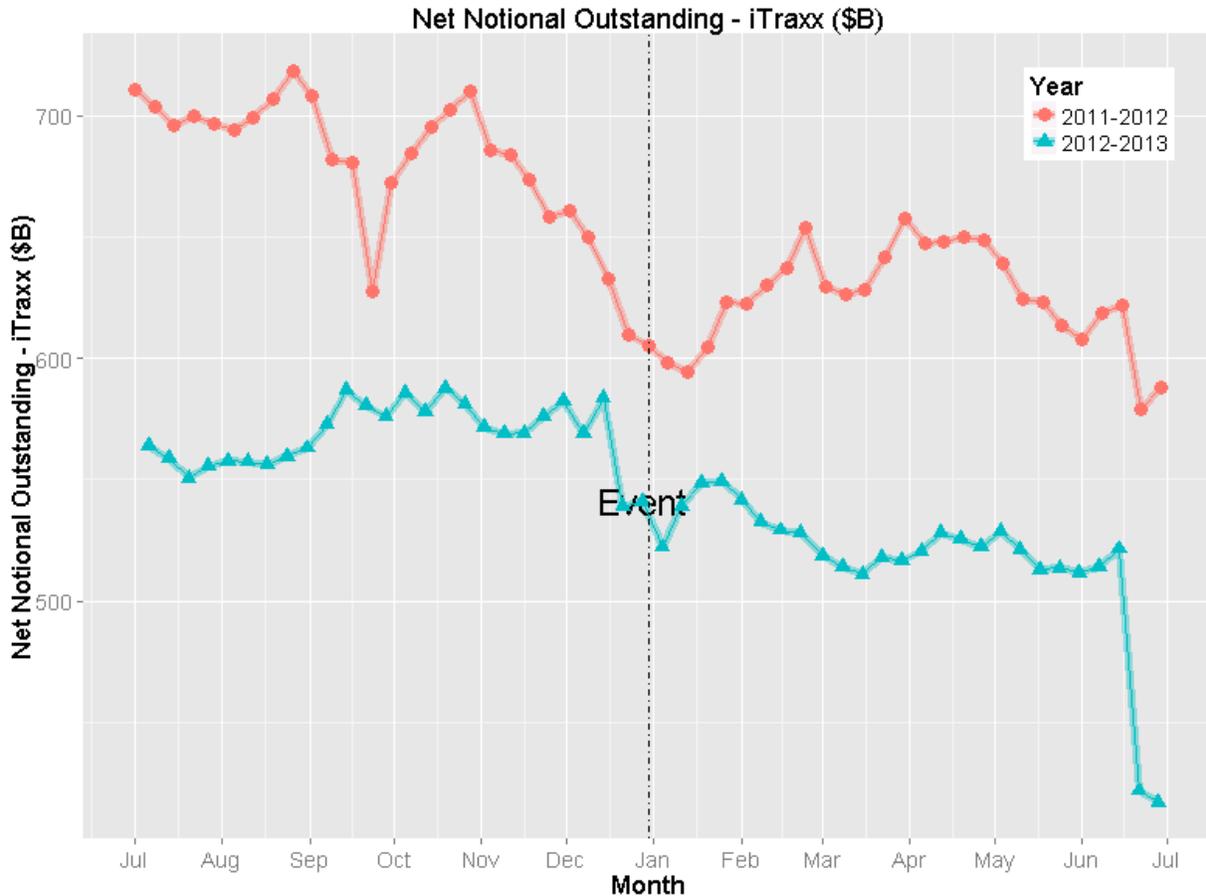


**Figure 5.** Gross Notional Outstanding for iTraxx Contracts.

Figure 5 presents the results of IOSCO’s analysis of gross notional outstanding for iTraxx contracts. Gross notional outstanding is substantially higher during the second half of 2011 compared to other periods. Beginning in November 2011, gross notional outstanding declined to a level similar to the other periods.

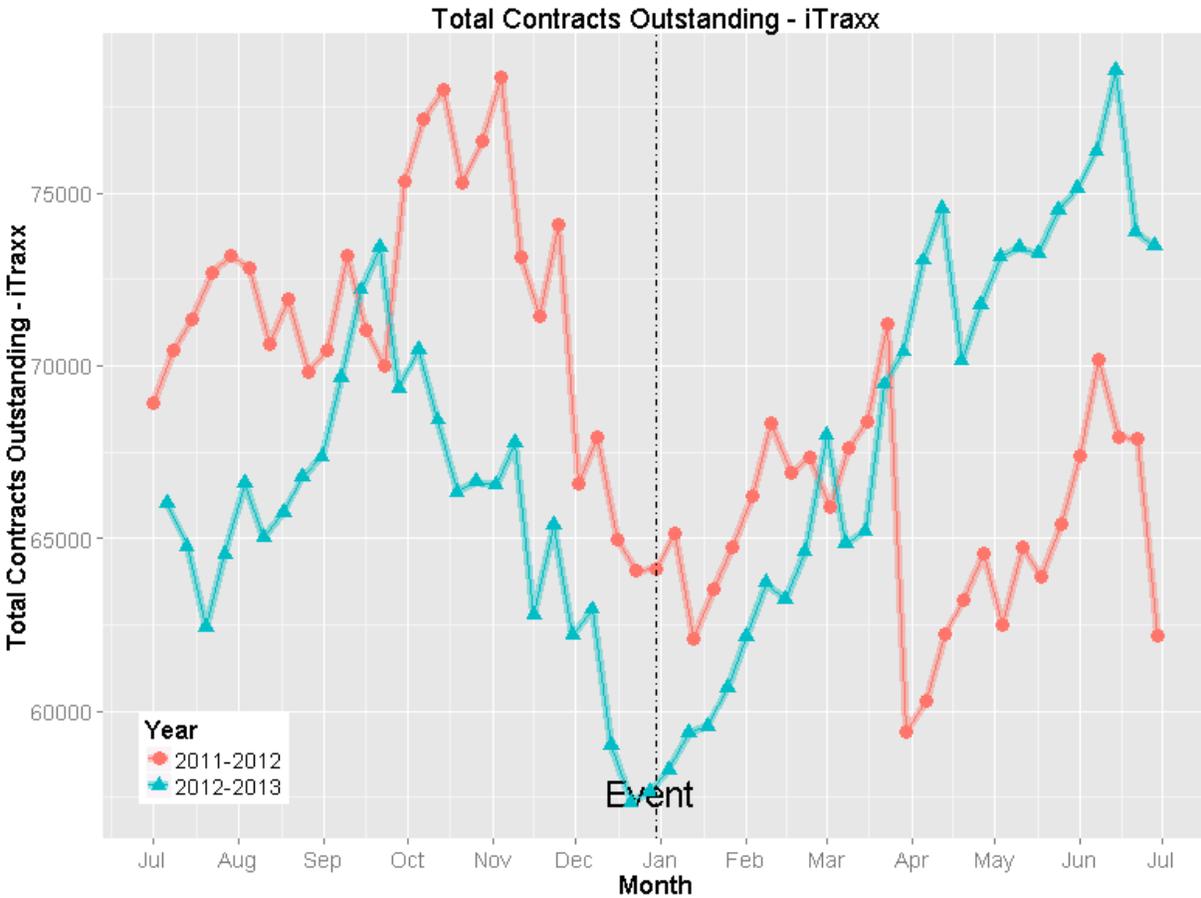
An upward trend in gross notional outstanding began in January 2013 following the Event Date. As with CDX contracts, iTraxx contracts mature either on 20 June or on 20 December of the relevant year. A pronounced decline occurred in June 2013 around the maturity date and, to a lesser extent, in June 2012. Around the December 2012 and 2011 maturity dates, small declines also occurred.

<sup>65</sup> All contracts with identifiers beginning with “ITRAXX EUROPE” were included in this sample.



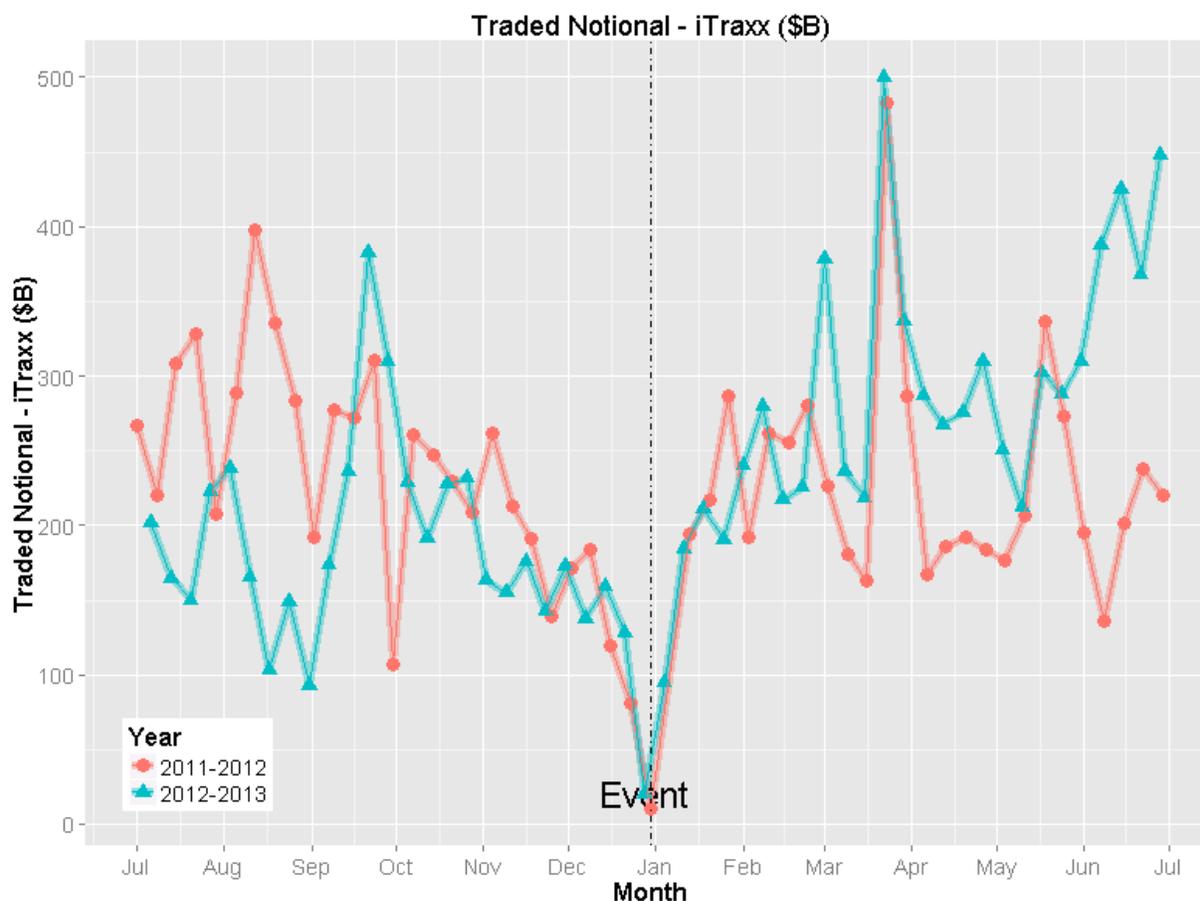
**Figure 6.** Net Notional Outstanding for iTraxx Contracts.

Figure 6 presents the results of IOSCO’s analysis of net notional outstanding for iTraxx contracts. Net notional outstanding tended to be higher during the control periods. Net notional outstanding declined in December 2012 before the Event Date and stabilized at that lower level after the Event Date. Again, declines around the maturity dates occurred, with the most pronounced decline occurring in June 2013.



**Figure 7.** Total Contracts Outstanding for iTraxx Contracts.

Figure 7 presents the results of IOSCO’s analysis of the total number of contracts outstanding for iTraxx contracts. The total number of contracts varied considerably in both the control and event periods. Declines occurred around all four maturity dates in June and December, but these declines were not large compared to the variability observed during the control and event periods. The total number of contracts outstanding trended strongly upward following the introduction of mandatory post-trade transparency on the Event Date.



**Figure 8.** Traded Notional for iTraxx Contracts.

Figure 8 presents the results of IOSCO’s analysis of traded notional for iTraxx contracts. Similar to the results for CDX contracts shown in Figure 4, the event period and the control period look similar, both in terms of level of trading activity and their variability. Pronounced declines occurred in December 2011 and December 2012, with subsequent recoveries in January 2012 and January 2013. Trading activity in the period following the Event Date appears similar to that during the other time periods analyzed.

Overall, the evidence presented in Figures 5 to 8 does not suggest that market activity or market risk exposure for iTraxx contracts has changed substantially due to the introduction of mandatory post-trade transparency. Similar to the results shown for CDX contracts, trading activity in iTraxx contracts following the Event Date, as measured by traded notional amount, appears similar to that for periods prior to the Event Date. While market risk exposure (as measured by gross notional outstanding, net notional outstanding and total contracts outstanding) exhibits changes and variability, the evidence suggests that those changes may be due to factors other than the introduction of mandatory post-trade transparency. The maturity dates on 20 June and 20 December of each year may have impacted the results presented in Figures 5 to 7.

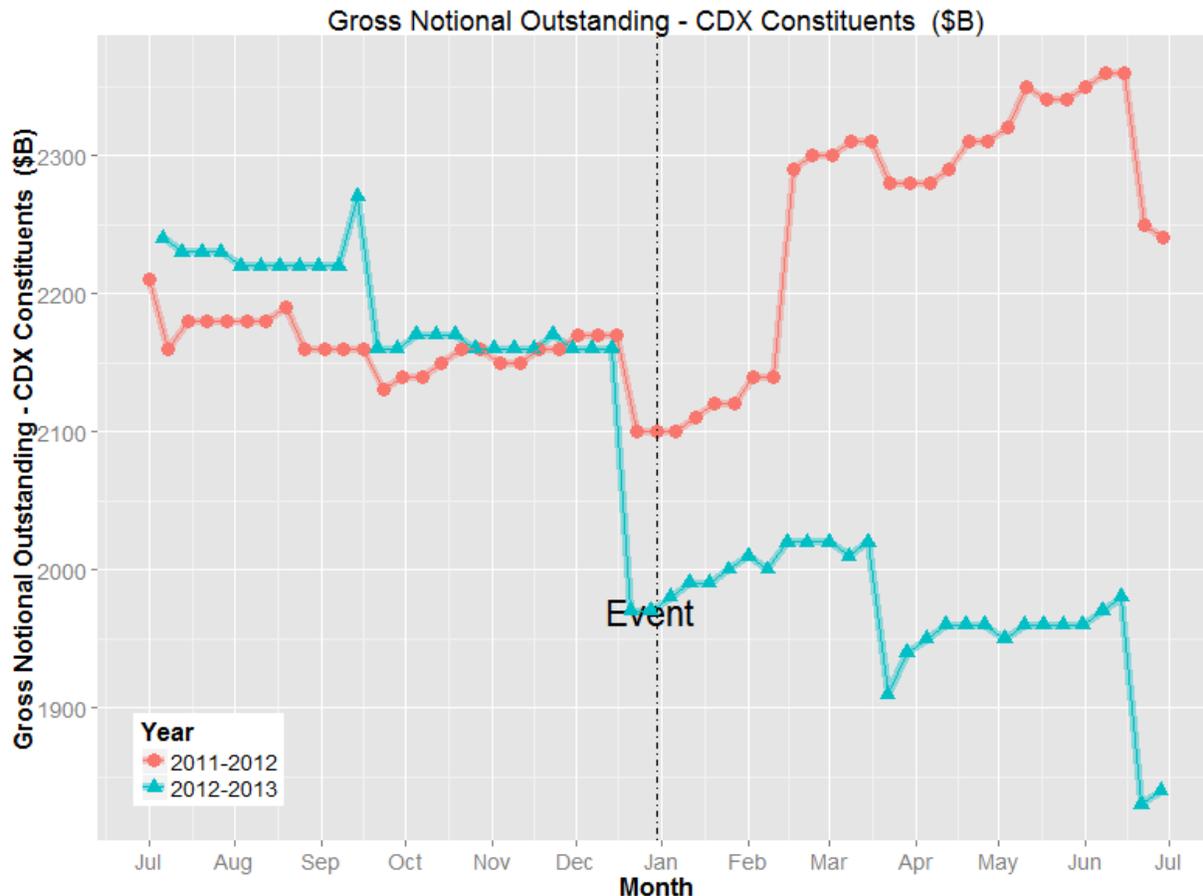
c. *Single-Name CDS Contracts on Certain Entities That Are CDX Constituents.*

During the control and event periods, mandatory post-trade transparency did not apply to single-name CDS contracts. As a result, any changes in this market during those periods would not have been due to the introduction of mandatory post-trade transparency. Data about these single-name CDS contracts serve as a control to compare with data about the CDX and iTraxx contracts for which mandatory post-trade transparency was introduced on the Event Date. As noted above, however, any spillover effect between the CDX market and the market for single-name CDS contracts on entities that are CDX constituents also could reflect the extent to which one product may function as a hedging arrangement for the other.

IOSCO identified entities that are constituents of the CDX.NA.IG index.<sup>66</sup> Because the DTCC-TIW reports activity only for the top 1,000 single-name CDS contracts, IOSCO selected the index constituents that appeared in this list and obtained an average coverage of 95% of entities that are CDX.NA.IG constituents (calculated by number of constituent entities). During the six-month period after the Event Date, the average gross notional outstanding of these contracts was \$2.27 trillion. This amount represents approximately 19.1% of the total gross notional of all the contracts reported in DTCC-TIW's top 1,000 single-name CDS contracts.

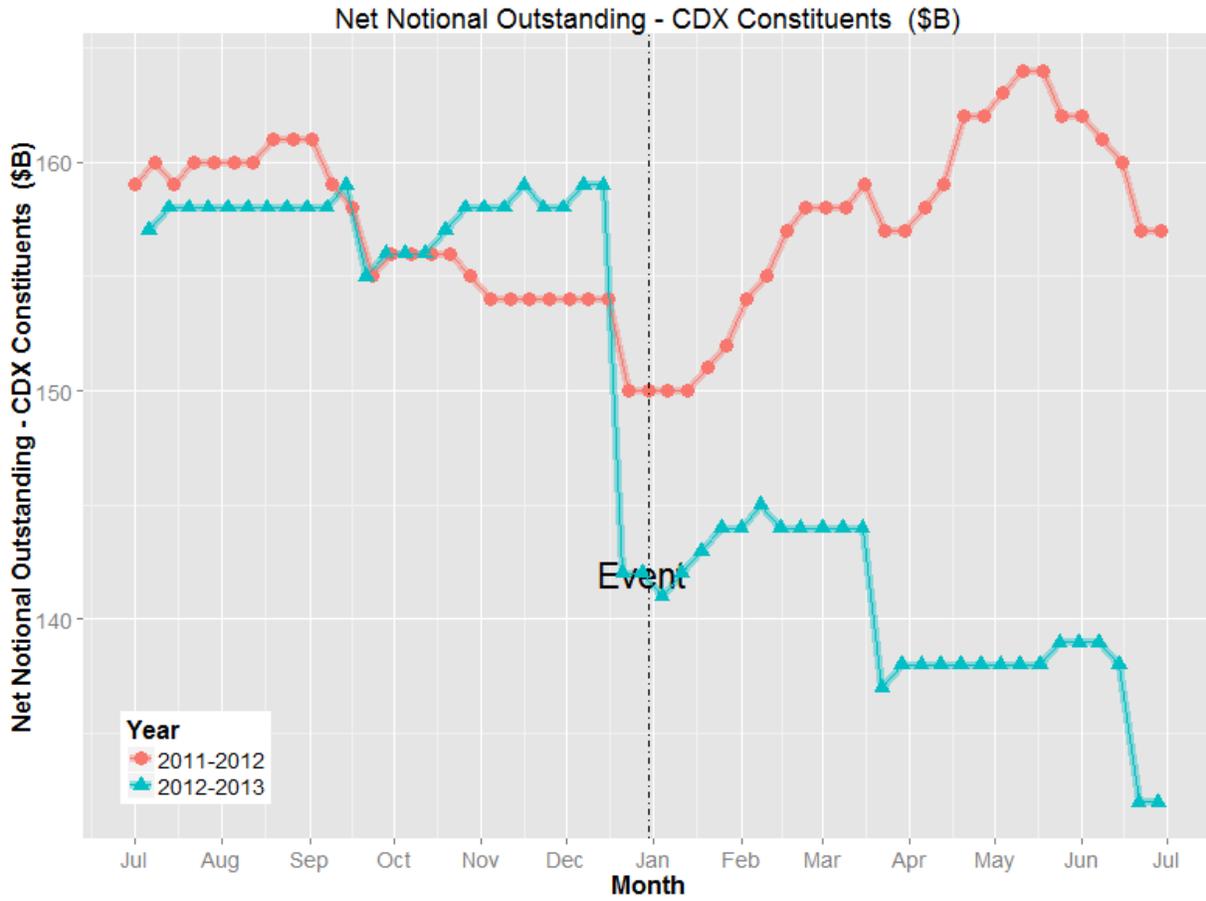
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<sup>66</sup> CDX.NA.IG is the CDS index for North American investment grade corporate bonds.

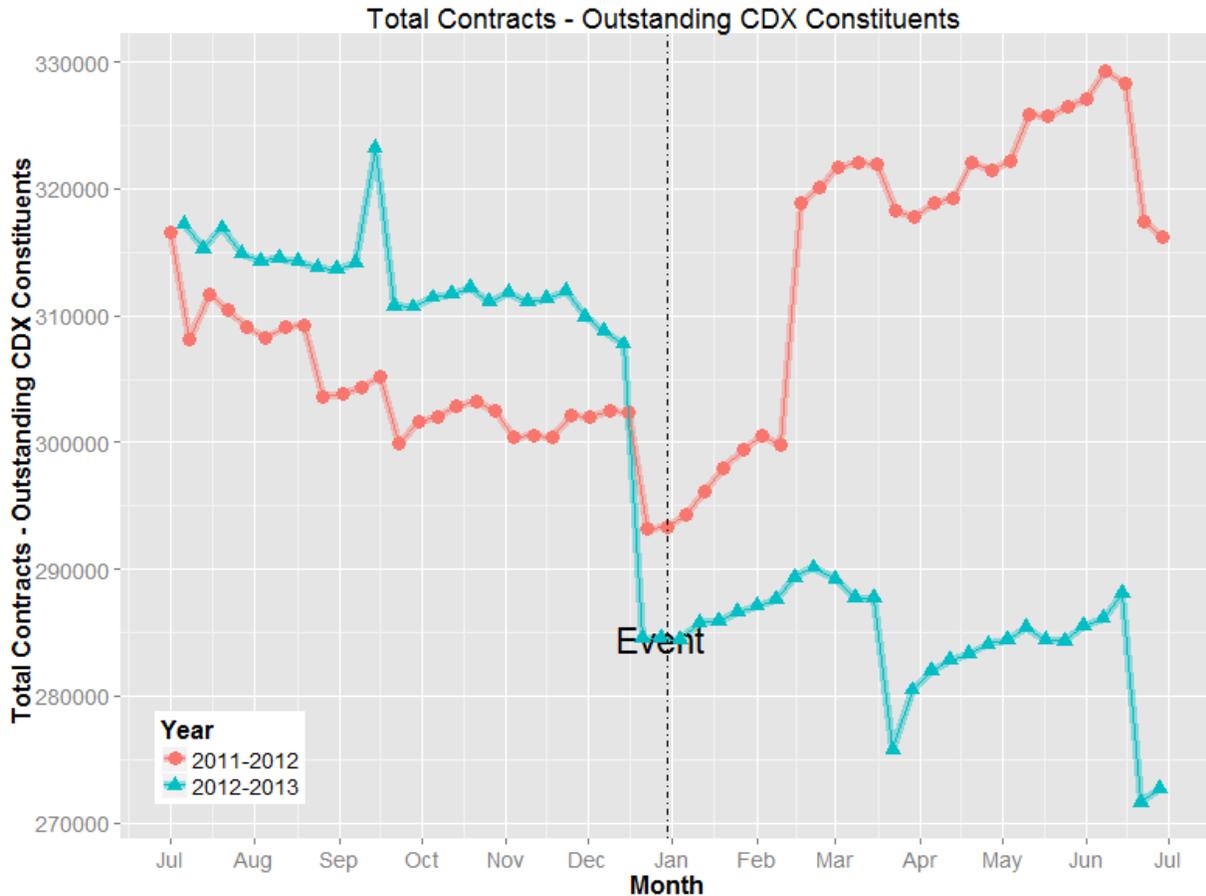


**Figure 9.** Gross Notional Outstanding for Single-Name CDS Contracts on Entities That Are CDX.NA.IG Constituents.

Figure 9 presents the results of IOSCO’s analysis of gross notional outstanding for single-name CDS contracts on entities that are CDX.NA.IG constituents. Single-name CDS contracts mature on 20 March, 20 June, 20 September or 20 December of the relevant year. Declines occurred to varying extents around those dates in all periods. During the period following the Event Date, gross notional outstanding was lowest, though the reduction occurred earlier in December 2012 before the Event Date, and a slight upward trend began after the Event Date. Importantly, the Event Date did not introduce mandatory post-trade transparency for single-name CDS contracts, so the variability of gross notional outstanding shown in Figure 9 could not be due to the introduction of mandatory post-trade transparency for those specific contracts. The Event Date did, however, introduce mandatory post-trade transparency for CDX and iTraxx contracts. The similarity between the patterns of variability of gross notional outstanding shown for these single-name CDS contracts and for CDX and iTraxx contracts suggests that all such variability may have been due to factors other than the introduction of mandatory post-trade transparency (which may include central clearing, compression and market events). On the other hand, the decline in gross notional outstanding of single-name CDS contracts on entities that are CDX constituents might be a byproduct of the tandem decline in gross notional outstanding of CDX contracts.

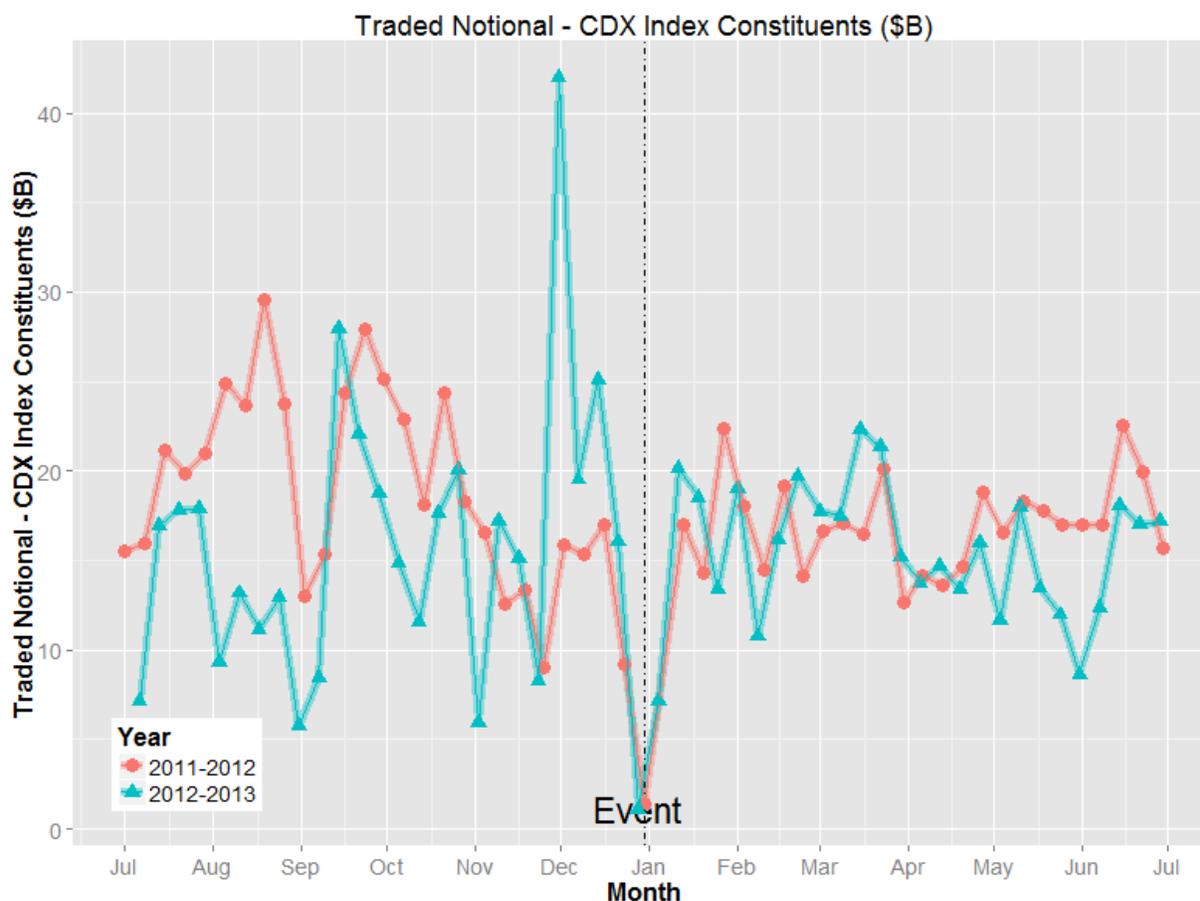


**Figure 10.** Net Notional Outstanding for Single-Name CDS Contracts on Entities That Are CDX.NA.IG Constituents.



**Figure 11.** Total Contracts Outstanding for Single-Name CDS Contracts on Entities That Are CDX.NA.IG Constituents.

Figures 10 and 11 present the results of IOSCO’s analysis of net notional outstanding and total contracts outstanding, respectively, for single-name CDS contracts on entities that are CDX.NA.IG constituents. The results are very similar to those for gross notional outstanding shown in Figure 9.



**Figure 12.** Traded Notional for Single-Name CDS Contracts on Entities That Are CDX.NA.IG Constituents.

Figure 12 presents the results of IOSCO’s analysis of traded notional for single-name CDS contracts on entities that are CDX.NA.IG constituents. Similar to the results for CDX and iTraxx contracts shown in Figures 4 and 8, respectively, the event periods and the control periods look similar both in terms of level of trading activity and their variability. Pronounced declines occurred in December 2011 and December 2012, with subsequent recoveries in January 2012 and January 2013, respectively. Trading activity during the period following the Event Date appears very similar to the same time period one year before.

Overall, the results for single-name CDS contracts on entities that are CDX.NA.IG constituents are broadly qualitatively similar to the results for CDX and iTraxx contracts, particularly surrounding the Event Date. This similarity is noteworthy because the Event Date did not introduce mandatory post-trade transparency for single-name CDS contracts. As a result, patterns and changes shown for single-name CDS contracts cannot be attributed to the introduction of mandatory post-trade transparency for these specific contracts. This similarity may also suggest that comparable patterns and changes shown for CDX and iTraxx contracts may be the result of factors other than the introduction of mandatory post-trade transparency.

Taken together, the evidence presented for the index CDS products, CDX and iTraxx and single-name CDS contracts on entities that are CDX.NA.IG constituents does not suggest that

the introduction of mandatory post-trade transparency had a substantial effect on market risk exposure or market activity in index CDS products, but, rather, suggests that the patterns and changes observed may have been the result of more widely applicable market factors, such as the standardized maturity cycles applicable to each product.

### **C. Survey of Market Participants and Other Market Observers.**

As described in Part IV.D of this report, in the United States post-trade data about certain transactions in CDS referencing broad-based indices became available to the public on 31 December 2012. Since that time, this post-trade data has been publicly posted by the four provisionally registered swap data repositories in the United States. As part of its analysis of the potential impact of post-trade transparency in the CDS market, IOSCO solicited the views of market participants and other market observers for their views on the uses and perceived impacts of this post-trade data about CDS.

Twenty-three respondents from ten jurisdictions participated in the survey, including one firm from Australia, two firms from Canada, ten firms from Europe (three from France, one from Germany, one from Jersey, one from Spain, three from the United Kingdom and one firm that did not specify a jurisdiction), four firms from Japan, two firms from Singapore and four firms from the United States. Four G16 dealers, eleven non-G16 dealers, six buy-side firms and one data provider responded; one firm did not characterize the capacity in which it participates in the CDS market.

Eighteen of twenty-three respondents reported no observable changes in local market trading behavior after swap data repositories began to publish CDS post-trade data in the United States. A European G16 dealer noted that less liquid index CDS contracts had become slightly easier to trade. The firm believed this effect was the result of customers becoming more comfortable trading armed with post-trade data about transactions in those products. One buy-side firm reported that dealers had begun to focus on their own respective market shares to a greater degree than before the introduction of mandatory post-trade transparency. Three market participants reported that they had observed some decreases in liquidity following the introduction of mandatory post-trade transparency.

Most respondents reported using post-trade data about CDS to assist in pricing, valuation and/or other analyses, both under normal market conditions and in times of increased market volatility. Respondents also reported that information about the volume of trades and the net long or short position of the market as a whole were useful to them. A dealer in Asia noted that it might use the post-trade data about CDS published in the United States as a reference point for pricing CDS at market opening in Asia.

## **VI. Regulatory Consideration of Post-Trade Transparency.**

As described in Part IV of this report, IOSCO has considered a body of relevant international work and academic literature about post-trade transparency, conducted a study of the publicly available transaction-level post-trade data about the CDS market and surveyed CDS market participants and other market observers about the uses and perceived impact of such data. On the basis of this range of information, IOSCO has identified potential benefits and costs to

mandatory post-trade transparency in the CDS market. The degree to which any particular potential benefit or cost actually occurs, if at all, will, however, likely depend upon the characteristics of the relevant post-trade transparency framework.

**A. Potential Benefits of Post-Trade Transparency.**

1. May Promote More Efficient Price Discovery and Increase Price Competition.

Without post-trade transparency, those who frequently trade CDS typically will have access to more information about the CDS market than those who trade less frequently. Dealers active in the CDS markets may garner a significant amount of information about the market from the transactions that they execute with, or the order flow that they observe from, their customers. By contrast, in the absence of post-trade transparency, other market participants, such as small dealers and non-dealers, may not have access to a significant amount of information, if any, about other transactions in the market. Post-trade transparency may reduce these information asymmetries among market participants, under normal market conditions as well as in times of market stress.

Bona fide, arm's-length transaction prices form the best foundation of price discovery. Enhanced information about prior transactions therefore would be particularly useful to a wide variety of types and sizes of market participants. First, post-trade transparency provides small dealers and non-dealers access to information about a broader array of transactions than those previously available to them, which could be particularly useful in connection with their interactions with counterparties. Second, large dealers may find that information about the volumes and prices at which other market participants have traded could contribute to the efficiency and accuracy of the price quotations that they offer to customers.

The increased availability of information offered by post-trade transparency may be of use to market participants even in illiquid markets. Though the absence of a critical number of transactions may render an average price less meaningful for infrequently traded products, individual transaction prices still may be useful inputs to the price formation process, when used with appropriate caution. For example, large differences in pricing may alert market participants that pricing and valuation are likely to be imprecise. Where prices are generally consistent in an illiquid market, post-trade transparency may make it less likely for any particular trade to be executed at an anomalous price.

Post-trade transparency also may increase price competition in both liquid and illiquid markets. With post-trade transparency, customers can compare both quoted prices and their own final transaction prices with the final transaction prices of other relevant transactions. Such comparisons may reveal pricing variations that customers could discuss with their intermediaries. These intermediaries, knowing that customers have information to assess quoted prices and their own final transaction prices against other transactions in the market, may have a greater incentive to offer customers their best price to the extent that applicable regulations do not already require them to do so.

## 2. May Enhance Liquidity.

Individual participants in a CDS market without post-trade transparency may possess incomplete knowledge of transactions that occur in that market and the pricing of risk. Market participants thus may not be aware of at least some of the opportunities to trade on terms favorable to them.

By providing extensive transaction information to all market observers, post-trade transparency may create greater confidence in the market and, in turn, encourage additional market participants to enter the market or to participate more extensively in the market. This expanded market participation may increase competition while reducing market concentration. Post-trade transparency may also allow providers of liquidity to assess market prices more accurately. This increased accuracy may, in turn, increase the confidence of liquidity providers and encourage them to offer additional liquidity. This enhanced liquidity may reduce price volatility by broadening the market available to absorb trading interest, both under normal market conditions and in times of market stress.

## 3. May Improve Valuations and Consequently Enhance Risk Management, Calculation of Margin and Allocation of Capital.

Post-trade transparency also may improve market participants' ability to value existing CDS contracts. In transparent markets with sufficient liquidity, valuations could be derived from the prices of recent, comparable transactions. A reasonably objective valuation for a particular instrument, therefore, may be the price at which it could be sold in the market at the time of valuation. For markets without sufficient liquidity, post-trade transparency may enhance valuation models by providing data about the most recent sales of the instrument to be valued and about sales of benchmark products that include the relevant instrument or closely related instruments, even if such information is less current than for instruments with more liquid markets. Post-trade transparency may also help to narrow the range of valuations for assets that trade in illiquid markets. Moreover, post-trade transparency in the CDS market may provide useful inputs for valuing underlying credits that trade in markets without transparency. Finally, post-trade transparency may also permit counterparties to more easily and accurately determine the price to sell an existing CDS to one or more new counterparties.

Improvements to CDS valuations may enhance the effectiveness of efforts to manage risk in the CDS market. By increasing the accuracy of valuations, post-trade transparency may increase the effectiveness of market participants' internal risk management practices. Similarly, post-trade transparency may increase the speed and reliability of valuations that reveal losses in a portfolio, allowing both the market participant and any applicable regulatory authorities to take appropriate steps to address any potential concerns about prudential or systemic risks.

Improvements to CDS valuations may facilitate and enhance the accuracy of calculations of margin requirements for both centrally cleared and non-centrally cleared transactions. Reliable sources of timely market price data are critical for margin systems to operate accurately and effectively. Accordingly, central counterparties (in the case of centrally cleared transactions) as well as market participants would benefit from access to reliable sources of timely market

price data to help calculate initial and/or variation margin and, ultimately, to collateralize effectively their CDS positions.

Improvements to the valuation of CDS also may lead to more efficient allocation of capital. Valuations that are too high may result in misallocation of capital as customers demand an asset incapable of delivering an economic risk-adjusted return. Similarly, investors may not allocate capital to undervalued assets because the lower valuation masks a portion of the asset's fundamental value.

For counterparties to CDS that are also financial institutions and/or public companies, accurate valuations of material CDS portfolios are essential for accounting and other regulatory disclosures. These disclosures, in turn, form part of the total mix of information upon which investors make informed investment decisions. Any enhancement of the accuracy of valuations of material CDS portfolios held by such entities would, therefore, also be expected to enhance the accuracy of information about those portfolios that may be disclosed to regulators and investors in other markets as well.

4. May Help Integrate a Fragmented Market.

Post-trade transparency may have the effect of integrating otherwise fragmented markets. If information about all CDS transactions is required to be publicly disseminated, all market participants and other market observers can view those transactions without regard to whether they were executed bilaterally or on platforms to which certain market participants and market observers may not have access. The ability to observe executed prices in particular instruments could have an anchoring effect on prices of later transactions in the same or similar instruments, even if those later transactions are executed bilaterally or on different platforms.

5. May Complement Regulatory Reporting.

Reporting of information about CDS transactions to trade repositories or regulatory authorities is an important tool to assist regulatory authorities in surveillance of the CDS market. Post-trade transparency in the CDS market allows the public to see a subset of the data reported to trade repositories. Public availability of this data allows market participants and researchers to use this data to produce additional research about the CDS market. This research may, in turn, assist regulatory authorities in their surveillance of the existing CDS market and may potentially provide additional expertise that could lead to a more informed rulemaking process and, ultimately, more effective and efficient regulations.

**B. Potential Costs of Post-Trade Transparency.**

1. May Reduce Liquidity.

Although not observed in the data that IOSCO reviewed in connection with this report, post-trade transparency could in theory adversely impact liquidity, for example by increasing dealers' costs to hedge the CDS positions sold to their customers. Hedging of a CDS position that is relatively large in comparison to the size of the market may be more difficult once the price, volume and time details of that position have been publicly disseminated. In the case of large trades or trades in an illiquid market, the dealer would require a comparatively significant

amount of market liquidity to hedge the position. Because it could provide potential counterparties to the hedging transactions with the information about the dealer's need for this liquidity, post-trade transparency could potentially weaken the dealer's bargaining position in the hedge transaction, thereby increasing the costs of hedging.

Dealers may seek to pass any perceived higher costs of hedging on to their customers in the form of higher prices or may decline to participate in the market for a particular product. These potential effects on market prices and liquidity may be tempered when dealers have the flexibility to hedge using a variety of instruments other than the product that was the subject of the original trade. Conversely, these potential effects may be more acute to the extent that other instruments do not offer a suitable hedge. Customers may be unable or unwilling to absorb these higher costs, leaving them with risk they are unable to relocate to others who are more willing or able to assume it. Dealers may face declines in transaction volumes and a corresponding decline in revenues.

Some researchers have questioned whether these scenarios apply to the CDS market, finding that dealers typically do not hedge large CDS transactions by trading in the opposite direction on the same product type and reference entity on the same day or the next day after the original trade is executed.<sup>67</sup> In addition, IOSCO's analysis of publicly available post-trade data about CDS transactions does not suggest that the introduction of mandatory post-trade transparency in certain CDS markets in the United States had a substantial effect on market risk exposure or market activity for those markets. Even if the costs and consequences described above do apply to the CDS market, they may be mitigated or prevented altogether by delaying publication of the details of transactions that are part of a comparatively large trade or a trade in an illiquid market.

Post-trade transparency may also impact liquidity outside of the increased cost of hedging transactions. Post-trade transparency may reduce incumbent dealers' profits by narrowing price spreads for intermediated transactions, which could reduce those dealers' incentives to intermediate. In addition, because market participants may use post-trade data to more accurately determine their risk of participating in the CDS market, some market participants might conclude that they are unable or unwilling to manage that risk at a given time.

## 2. Operational Costs and Considerations.

The costs of developing, implementing and maintaining a system of post-trade transparency are not insignificant. Such a system may be operated as a public utility or as a private venture. Operating the system as a public utility may impose a higher burden on public funds, while operating the system as a private venture would require careful consideration to ensure that no significant barriers to public access to the information would advantage some market participants or market observers over others. In either case, regulatory authorities would need to enforce compliance across all market participants subject to mandatory post-trade transparency in order to equitably allocate its costs and to reap fully its benefits.

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<sup>67</sup> See supra notes 27 and 28 and accompanying text.

3. May Allow Distressed Sales to Increase Market Volatility or Impact a Central Counterparty's Ability to Manage a Member Default.

In a CDS market with post-trade transparency, distressed sales may increase market volatility by drawing the market toward the prices of the distressed sales, especially for highly illiquid products or in times of market stress. These distressed sales may unduly lead other market participants to mark down the value of their CDS portfolios, potentially triggering margin calls or causing other forms of market stress. Post-trade transparency may also impact a central counterparty's ability to manage member defaults (which may be more likely to occur during times of market stress), as it may impact the pricing and availability of transactions to hedge the defaulting member's portfolio prior to liquidation or auction.

4. May Allow Loss of Confidentiality of Positions and Investment Strategies.

Though post-trade transparency does not involve disclosure of the identity of the counterparties to a trade, in small or illiquid markets transparency of the price and volume of a trade may compromise the counterparties' identities and reveal positions and/or investment strategies. Liquidity could be reduced if market participants become unwilling to trade in this environment. These consequences might be mitigated or prevented altogether by, for example, publishing a volume range rather than the precise volume of the transaction. Similarly, unusually large volumes could be published as above a specified threshold. These concerns about the potential for loss of confidentiality in small or illiquid markets might be less pronounced for CDS products that are frequently traded in other larger, more liquid markets.

## **VII. Conclusions and Recommendations.**

Consistent with Principle 35, IOSCO has analyzed the nature of the CDS market and its participants and the potential impact of introducing post-trade transparency to the CDS market. IOSCO has long recognized that increased transparency has the potential to improve the quality of financial markets and has issued a number of statements supporting expansion of post-trade transparency. IOSCO equally has recognized that regulators should proceed deliberately in implementing post-trade transparency after assessing the unique characteristics and needs of the relevant market.<sup>68</sup> A number of economic studies, as well as IOSCO's own survey of market participants and other market observers, suggest that mandatory post-trade transparency may reduce transaction costs and improve some measures of market quality. While some academic literature and some responses to IOSCO's survey of market participants and other market observers suggest the potential for certain costs, IOSCO's study of the impact of post-trade transparency in the index CDS market in the United States does not suggest that the introduction of mandatory post-trade transparency had a substantial effect on market risk exposure or market activity in index CDS products.

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<sup>68</sup> International Organization of Securities Commissions, Methodology for Assessing Implementation of the IOSCO Objectives and Principles of Securities Regulation (September 2011 version as revised August 2013), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD359.pdf>. (“[E]stablishing market transparency standards is not straightforward, as the interest of individual market participants in transparency varies. Regulators need to assess the appropriate level of transparency of any particular market structure with considerable care.”).

IOSCO thus believes that greater post-trade transparency in the CDS market—including making the price and volume of individual transactions publicly available—would be valuable to market participants and other market observers. IOSCO encourages each member jurisdiction to take steps toward enhancing post-trade transparency in the CDS market in its jurisdiction. IOSCO recognizes that such steps may include first adopting legislation or implementing other legal powers to enhance post-trade transparency, as authorities may take further steps in this regard only if they have the authority to do so. To deliver anticipated benefits of post-trade transparency and to minimize potential costs, IOSCO jurisdictions may wish to consider the following:

- Limiting the delay between time of execution and time of public dissemination of the price and volume of an individual CDS transaction;
- Whether special rules should govern the timing and scope of public dissemination of the price and volume of large or “block” transactions and/or transactions in an illiquid market and, if so, rules that determine what constitutes such a transaction;
- Measures to ensure confidentiality of the identities of the market participants, which could include “capping” or “bucketing” the true notional size of the transaction, particularly in small or illiquid markets in which trading is concentrated in one or two key market participants;
- Whether the potential for loss of confidentiality in small or illiquid markets may be less pronounced for CDS products that are frequently traded in other larger, more liquid markets;
- Utilizing relevant data to study the impact of post-trade transparency;
- Structuring the system of post-trade transparency (whether as a public utility or a private venture) to promote compliance across all market participants subject to mandatory post-trade transparency, equitably allocate its costs and reap fully its benefits;
- Maintaining sufficient flexibility to adapt to changing market conditions;
- Implementing post-trade transparency in phases, focusing on the most frequently traded standardized products and/or the largest, most frequent or best prepared market participants in earlier phases and on less frequently traded and non-standardized products and/or smaller, less frequent or less prepared market participants in later phases; and
- Consulting with authorities in other jurisdictions as appropriate, recognizing that each member jurisdiction is best placed to judge the extent of any such consultation, local market characteristics and the appropriate time and manner for enhancing post-trade transparency for CDS that trade in its respective market.

Thus, a jurisdiction might consider, for example, introducing post-trade transparency for more liquid index CDS instruments initially, and expanding a post-trade transparency regime to more illiquid index products and single-name CDS at a later stage. A jurisdiction also might wish to consider lengthier delays in either reporting or public dissemination in earlier stages, and lowering these time frames in later stages.

Moreover, the effects of real-time dissemination could differ between the near term and the long term, particularly as the CDS market evolves in response to other regulatory actions. IOSCO anticipates that additional data from jurisdictions with some form of mandatory post-trade transparency will enable additional and more in-depth studies of the impact of post-trade transparency.

## **VIII. Feedback Statement on Public Comments Received on the Consultation Report.**

Below is a summary of the key feedback received on the consultation version of this report published on 17 November 2014, together with IOSCO's response to that feedback. Interested parties were invited to provide by 15 February 2015 written comments on all aspects of the consultation report, including in particular in response to the following questions:

1. Should IOSCO draw additional or alternate conclusions from the analysis of publicly available transaction-level post-trade data about CDS described in Part V of this report? Please explain and provide supporting evidence, including any additional data upon which these conclusions are based.
2. Are the regulatory considerations evaluated in this report appropriate? Please explain and provide supporting evidence.
3. Should IOSCO evaluate any additional or alternate regulatory considerations? Please describe any such considerations, explain why IOSCO should evaluate them and provide supporting evidence.
4. Are the preliminary recommendations made in this report appropriate? Please explain and provide supporting evidence.
5. Should IOSCO make any additional or alternate recommendations? Please describe any such recommendations, explain why IOSCO should make them and provide supporting evidence.
6. Should IOSCO consider any additional relevant data? Please explain and provide supporting evidence.

Table 1 details the six institutions that submitted comments on the public consultation. The full text of these comments is available on IOSCO’s website.<sup>69</sup> IOSCO thanks those who took the time and effort to express their views.

Table 1: Institutions That Submitted Comments

Type	Count	Names of Commenters
Industry Associations	2	Federation of European Securities Exchanges (“FESE”) International Swaps and Derivatives Association, Inc. (“ISDA”)
Asset Managers	2	Amundi Asset Management S.A. (“Amundi”) Union Asset Management AG (“Union Investment”)
Financial Information Service Provider	1	Markit Group Limited (“Markit”)
Clearing House	1	LCH.Clearnet Group Limited (“LCH.Clearnet”)

IOSCO found all of the comments received from the public consultation to be helpful. IOSCO has revised the report to address the comments received where IOSCO determined that revisions were appropriate. Other comments did not result in revision but did provide valuable input for consideration, with most of the comments received already covered by the report. IOSCO’s responses to some issues raised by commenters are detailed below.

#### **A. Assessment of Potential Impacts of Post-Trade Transparency.**

One commenter responded to the report’s summary of a Federal Reserve Bank of New York study of hedging activity in the CDS market. That study concluded that dealers typically do not hedge large CDS transactions by trading in the opposite direction on the same product type and reference entity on the same day or the next day after the original trade is executed.<sup>70</sup> The commenter suggested that “hedging or exiting a position by taking the opposite direction on the same product type and reference entity is very difficult in a competitive market with the

<sup>69</sup> International Organization of Securities Commissions, Public Comments Received on the Consultation Report “Post-Trade Transparency in the Credit Default Swaps Market,” available at <https://www.iosco.org/library/pubdocs/465>.

<sup>70</sup> K. Chen, M. Fleming, J. Jackson, A. Li and A. Sarkar, An Analysis of CDS Transactions: Implications for Public Reporting, Federal Reserve Bank of New York Staff Report No. 517 (September 2011), available at [http://www.newyorkfed.org/research/staff\\_reports/sr517.pdf](http://www.newyorkfed.org/research/staff_reports/sr517.pdf).

existing transparency measures” and that “the inception of post-trade transparency in US markets is in of [sic] itself likely to have reduced the reliance on same instrument / same day hedging.”<sup>71</sup> The study, however, was published in 2011 using data about CDS transactions completed from 1 May 2010 to 31 July 2010, well before post-trade transparency requirements for index CDS were implemented in the United States. The report’s assessment of this study therefore does not reflect this suggestion.

The same commenter noted that dealers may hedge CDS transactions by trading in other instruments that may be viewed as well-correlated to the risk of the original transaction.<sup>72</sup> The commenter opined that CDS market liquidity may increase when dealers have the flexibility to hedge using a variety of instruments and, conversely, that CDS market liquidity may decrease to the extent that other instruments do not offer a suitable hedge.<sup>73</sup> The report acknowledges this suggested potential correlation between dealers’ hedging options and CDS market liquidity.

One commenter suggested that additional factors, such as compression exercises and backloading of existing trades into clearing arrangements, may have prompted the declines in gross and net notional outstanding of CDS that IOSCO observed in publicly available post-trade data about CDS.<sup>74</sup> Another commenter similarly noted that inclusion of trades resulting from compression could have impacted IOSCO’s analysis of this data.<sup>75</sup> The report notes that these and other factors may have impacted the data sets that IOSCO analyzed.

Two commenters noted that IOSCO should consider additional factors, such as specific external market events, transaction prices and relative levels of market liquidity, to explain the trends that IOSCO observed in the publicly available post-trade data about CDS.<sup>76</sup> IOSCO agrees that other analyses of post-trade data could consider these and other additional factors and that evaluation of such factors could provide further explanations of and conclusions about the impact of post-trade transparency in the CDS market. The analysis that IOSCO conducted in connection with this report endeavored to consider potential impacts of mandatory post-trade transparency in the CDS market. IOSCO did not, however, design its analysis to identify exhaustively all other intervening factors or events that may have impacted the data sets reviewed. Questions regarding the interplay between mandatory post-trade transparency, on the one hand, and other factors and events, on the other hand, may be appropriate topics for future lines of research.

Another commenter noted that IOSCO had compiled “reliable results based on a solid data basis.”<sup>77</sup>

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<sup>71</sup> ISDA at 3-4.

<sup>72</sup> ISDA at 3.

<sup>73</sup> ISDA at 3.

<sup>74</sup> Markit at 3.

<sup>75</sup> ISDA at 6.

<sup>76</sup> Amundi at 2; ISDA at 1-2, 6.

<sup>77</sup> Union Investment at 5.

## **B. Regulatory Consideration of Post-Trade Transparency.**

One commenter agreed that post-trade transparency may reduce information asymmetries and increase price competition among CDS market participants.<sup>78</sup> Another commenter agreed that increased transparency “reduces the risk of manipulation, improves the dissemination of market information and gives market participants and the regulatory authorities confidence that a market is operating fairly.”<sup>79</sup> The report describes these potential benefits of post-trade transparency in the CDS market.

One commenter opined that the absence of significant retail investor participation in the CDS market may dampen these potential benefits.<sup>80</sup> The report does not reflect this opinion because, for the reasons outlined in this report, IOSCO believes that these potential benefits apply to all CDS market participants.

Two commenters agreed that post-trade transparency could assist in valuation of existing CDS contracts.<sup>81</sup> One of those commenters also noted that post-trade transparency would not, however, resolve all challenges to valuation of infrequently traded instruments for which recent transaction prices may not be available or for which recent transaction prices may not represent current market values.<sup>82</sup> The report describes the potential benefit of post-trade transparency in valuing existing CDS contracts. The report also acknowledges the potential limitations on this benefit and concludes that post-trade transparency may enhance valuation models by providing data about the most recent sales of the instrument to be valued and about sales of benchmark products that include the relevant instrument or closely related instruments, even if such information is less current than for instruments with more liquid markets. The report further notes that post-trade transparency may also help to narrow the range of valuations for assets that trade in illiquid markets.

One commenter agreed that post-trade transparency may increase prices for investors if dealers pass on to their customers any increased costs of hedging in a transparent environment.<sup>83</sup> Another commenter noted that the CDS market may not have sufficient trading activity to mitigate the risks that post-trade transparency may reduce available liquidity and/or provide clues as to counterparties’ identities.<sup>84</sup> The report describes these potential costs of post-trade transparency.

One commenter opined that the costs of implementing post-trade transparency in the CDS market would be “minimal.”<sup>85</sup>

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<sup>78</sup> Amundi at 1, 3.

<sup>79</sup> LCH.Clearnet at 1.

<sup>80</sup> ISDA at 4.

<sup>81</sup> Amundi at 3; Markit at 3.

<sup>82</sup> Markit at 3.

<sup>83</sup> Amundi at 3.

<sup>84</sup> ISDA at 4.

<sup>85</sup> Amundi at 3.

### C. Conclusions and Recommendations.

Commenters agreed with IOSCO's recommendation that each member jurisdiction take steps toward enhancing post-trade transparency in the CDS market in its jurisdiction.<sup>86</sup>

One commenter recommended specific time delays between completion of a CDS transaction and public dissemination of the related data.<sup>87</sup> IOSCO believes that post-trade transparency systems for CDS should be tailored to address the needs of each member jurisdiction and, therefore, declines to recommend detailed timing for public dissemination of post-trade data about CDS.

Commenters noted that some form of delay in public dissemination of post-trade data about large CDS transactions would be appropriate to mitigate or eliminate the potential for post-trade transparency to undermine efforts to hedge these trades and/or to constrict available liquidity.<sup>88</sup> Commenters noted that for the same reasons transactions in less liquid markets should also be subject to a delay in public dissemination of post-trade data.<sup>89</sup> The report encourages member jurisdictions to consider whether it would be appropriate to implement delays for large or "block" transactions as well as for transactions in illiquid markets.

One commenter suggested that IOSCO recommend that member jurisdictions exempt from post-trade transparency any transactions involving a central counterparty's transfer of positions held by a defaulting clearing member.<sup>90</sup> IOSCO declines to recommend such an exemption for all central counterparties in all post-trade transparency systems because it believes that post-trade transparency systems for CDS should be tailored to address the needs of each member jurisdiction. Such transactions, if sufficiently large in size or in sufficiently illiquid markets, may fall within any special rules that member jurisdictions may adopt to govern post-trade transparency for "block" transactions or transactions in an illiquid market.

Two commenters agreed that member jurisdictions may wish to consider measures such as "capping" and "bucketing" of the true notional size of the transaction to protect the confidentiality of counterparties' identities.<sup>91</sup> The report encourages member jurisdictions to consider these issues.

One commenter suggested that IOSCO should encourage member jurisdictions to rely on available market data when designing their post-trade transparency systems for CDS, citing the U.S. Securities and Exchange Commission's decision to analyze transaction reports before adopting public dissemination deadlines.<sup>92</sup> The commenter noted that member jurisdictions

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<sup>86</sup> Amundi at 2; FESE at 1; LCH.Clearnet at 1; Markit at 2, 4; Union Investment at 5; cf. ISDA at 5.

<sup>87</sup> ISDA at 5-6.

<sup>88</sup> Amundi at 3; Markit at 4; Union Investment at 5.

<sup>89</sup> ISDA at 2, 4-5; Markit at 2.

<sup>90</sup> LCH.Clearnet at 2.

<sup>91</sup> ISDA at 2, 5; Markit at 5.

<sup>92</sup> Markit at 5.

should scrutinize any such data sets by excluding non-price forming transactions from analyses aimed at evaluating market activity and volumes, as well as bear in mind that market participants may not report transactions accurately and/or may submit duplicate reports for the same transaction.<sup>93</sup> Another commenter noted that member jurisdictions should identify liquidity and other differences within and between the different CDS product groups.<sup>94</sup> The report encourages member jurisdictions to utilize relevant data to study the impact of post-trade transparency.

One commenter suggested that any entity or service created to publish post-trade data about CDS should be operated as a public utility on a not-for-profit basis, with commercial entities permitted to offer enhanced data and services for a fee.<sup>95</sup> The report encourages member jurisdictions to consider structuring their system of post-trade transparency to equitably allocate its costs and to reap fully its benefits.

One commenter urged member jurisdictions to maintain sufficient flexibility of regulatory authority to adapt post-trade transparency requirements to changing market conditions.<sup>96</sup> The report encourages member jurisdictions to consider maintaining such flexibility.

Commenters agreed that member jurisdictions should implement post-trade transparency requirements in phases.<sup>97</sup> The report encourages member jurisdictions to consider implementing post-trade transparency in phases, focusing on the most frequently traded standardized products and/or the largest, most frequent or best prepared market participants in earlier phases and on less frequently traded and non-standardized products and/or smaller, less frequent or less prepared market participants in later phases.

One commenter urged member jurisdictions to consult with authorities in other jurisdictions and, to the extent possible, harmonize their requirements internationally.<sup>98</sup> The same commenter noted, however, that “each member jurisdiction is best placed to judge the extent of any such consultation.”<sup>99</sup> IOSCO agrees that cross-border consultation among regulatory authorities may enhance the effectiveness of post-trade transparency systems for CDS and that each member jurisdiction is best placed to judge both the extent of any consultation and the appropriateness of any harmonization of requirements across jurisdictions.

One commenter advocated for IOSCO to recommend that member jurisdictions and other competent authorities ensure that illiquid non-equity instruments are exempt from pre-trade transparency requirements.<sup>100</sup> As this report considers only post-trade transparency in the CDS

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<sup>93</sup> Markit at 3.

<sup>94</sup> ISDA at 5-7.

<sup>95</sup> Amundi at 3.

<sup>96</sup> ISDA at 5.

<sup>97</sup> ISDA at 5; Markit at 5-6.

<sup>98</sup> Markit at 6.

<sup>99</sup> Markit at 6.

<sup>100</sup> Union Investment at 5.

market, IOSCO declines to extend the report’s conclusions and recommendations to matters concerning pre-trade transparency.

The same commenter suggested that IOSCO publish a separate report examining pre-and post-trade transparency in illiquid non-equity markets other than the CDS market or, in the alternative, comment in this report on the potential for post-trade transparency in such markets to compromise counterparties’ identities, reveal positions and/or investment strategies and reduce liquidity.<sup>101</sup> IOSCO has previously published reports on post-trade transparency in the corporate bond and structured finance product markets. With respect to post-trade transparency in the corporate bond market, IOSCO has said that “[r]egulatory authorities should assess the appropriate level of transparency in the market . . . to facilitate price discovery and market integrity. In determining the appropriate level, regulators should take into consideration a number of factors, including[] the size of the market, the frequency of trading of particular bonds or groups of bonds, participants in the market . . . [and] the potential effects of any disclosure on the liquidity of the market.”<sup>102</sup> IOSCO also has said that member jurisdictions, in seeking to develop appropriate post-trade transparency regimes for structured finance products, “may wish to consider . . . [t]he degree of liquidity or secondary market trading for a particular [instrument] . . . [and] [w]hether there is a broad investor base for the particular instrument.”<sup>103</sup> In determining the kind of information to be disseminated to the public under a post-trade transparency regime for structured finance products, IOSCO has also said that member jurisdictions may wish to consider “[m]easures to ensure anonymity of the market participants [and] [r]easonable delays before trading information is disseminated.”<sup>104</sup>

One commenter suggested that IOSCO make recommendations concerning some of the factors that the report identifies for member jurisdictions to consider when implementing or administering a post-trade transparency system for CDS.<sup>105</sup> IOSCO believes that post-trade transparency systems for CDS should be tailored to address the needs of each member jurisdiction and, therefore, declines to make more detailed recommendations concerning these factors.

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<sup>101</sup> Union Investment at 3-5.

<sup>102</sup> International Organization of Securities Commissions, *Transparency of Corporate Bond Markets* (May 2004), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD168.pdf>.

<sup>103</sup> International Organization of Securities Commissions, *Transparency of Structured Finance Products* (July 2010), available at <http://www.iosco.org/library/pubdocs/pdf/IOSCOPD326.pdf>.

<sup>104</sup> Id.

<sup>105</sup> Amundi at 1, 3.