Towards an Understanding of the Effects of IFRS Adoption on Credit Default Swap Contracts

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Abstract

This essay evaluates the impact of the International Financial Reporting Standards on the pricing of the credit default swap (CDS) market. The purpose extended to application of the evaluation synthesized into a best-fit strategy for participants of the CDS market as designated the buyers, and sellers. The impact of IFRS 9 on the pricing of the CDS market, using an event study method, integrates into an accounting strategy allowing the seller of protection to reduce asset value instead of creating revenue on an uncertain financial asset. The results of the study first that regulation has an effect on notional prices of credit default swaps and second that cumulative abnormal return exists in the financial sector as compared to the CDS market. A best-fit strategy for buyers and sellers of protection using derivatives known as credit default swaps in an attempt to exercise the inefficiencies created by the pricing of the CDS derivative instruments.

I.   Introduction

The purpose of this paper is to evaluate the impact of the International Financial Reporting Standards (IFRS) on the pricing of the credit default swap (CDS) market. The purpose extends to application of the evaluation synthesized into a best-fit strategy for participants of the CDS market as designated the buyers, and sellers. The impact of IFRS on the pricing of the CDS market, using an event study method, integrates into an accounting strategy. The results of the study are synthesized using types of risk to evaluate risk premium from the buyer and seller perspective. A best-fit strategy ensues describing when and how to trade the derivatives known as credit default swaps attempting to exercise the inefficiencies created by the pricing of the CDS derivative instruments.

The evaluation uses a hypothesis of regulation having a statistically significant effect on the pricing of CDS. The actual price change is estimated using a cumulative abnormal return model within an event study. The event evaluated is the additional regulation requirements under International Financial Reporting Standards (IFRS), which took place July 24, 2014. The hypothesis testing leads to the synthesis of separate additional risk factors as a portion of risk premium change factored into pricing of the CDS contract. This effect achieves simple form through an Ijiri and Noel (1984) perspective of increase or decrease for corporate balance sheet effects. The accounting of the CDS derivative provided by International Financial Reporting Standard 9 is synthesized into additional risk factor identification. An analytical model of pricing for identifiable risk factors represents the risk factor premiums. These risk factors include the risk of default provided by the counter or third party for which the CDS derivative derives its basis.

What is the function of the CDS?
The function of the CDS is transactional insurance, allowing the selling and purchasing institution to segregate its default risk from debt of all kinds (Cherny & Craig, 2009). The issues inherent in such a tool for risk managers is the tool is not transparent nor regulated. Regulation risk is a risk an adjuster has to factor in the risk analysis (Strausz, 2011) affecting the basis point differential in the bid ask process of pricing the CDS. Regulation risk is an example of the factors of risk premium a party would calculate. The function of credit default swaps gain value through the provision for protection against default on fixed income instruments. The function of the CDS requires an owner of a fixed income security (A), an insurer or counter party which accepts the risk of default from A (B), and an issuer of the fixed security (C). Thus, B protects A from the default risk of C for a rate determined by exogenous factors including the rating of the fixed income security, the governmental risk, the default risk, the continuity risk, and finance risk (Powers, 2010). The effects of these risks upon the pricing model are evaluated in the next section with the risk of regulation change including International Financial Reporting Standards changes.

Table 1: ISDA Market Place
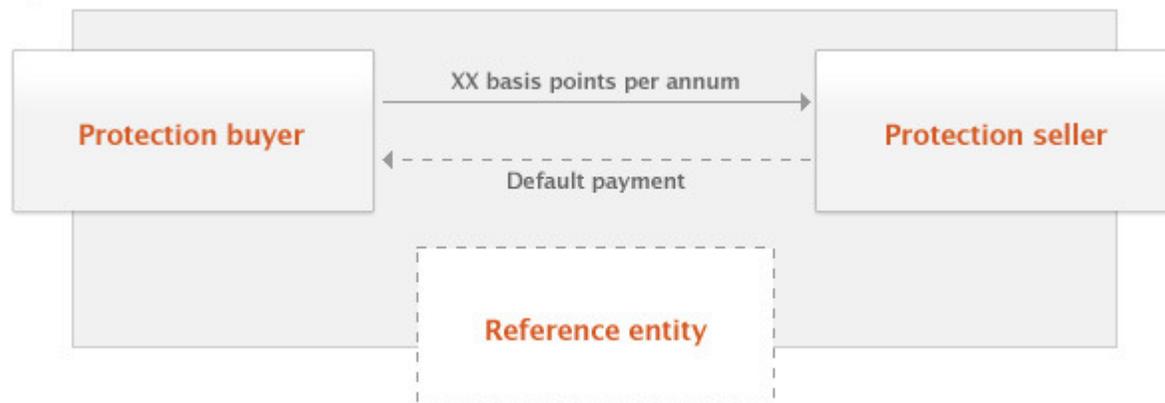
Pricing the Credit Default Swap
The pricing of the Over-the-Counter (OTC) market trading CDS derivatives is an involved subject considered individually. The pricing of the CDS is an endogenous consideration depending upon the credit default probability, the duration in years of the contract, and the hazard rate (the likelihood of default based on default of like-kind derivative securities). The structure of these derivative securities entail an owner of a fixed income security willing to trade part of the cash flow derived from the fixed income security for protection of the principal investment in the security.

For example, company X enters into an agreement with company Y for a 100 million dollar bond investment, yielding eight percent per annum interest payable bi-annual for 15 years. The credit risk analyst identifies the investment in need of a hedging contract securing the principal investment as the bond rating is below investment grade in the third year after interest payment, A- or above. The necessary protection for a bond reflects in a derivative product called a credit default swap, effectively trading the default risk of the fixed income security with a counter party. This product does not provide protection for the interest payments simply for the principal

investment into the security. Company X's credit analyst identifies a counter party, insurance company Z, willing to accept the default risk for the fixed income security for 292 basis points per annum period payable over the term of the security, due monthly. The price of the premium for the CDS derivative is represented as $PV_{premium} = C \times RPV01$ (White, 2013)

Where $PV_{premium}$ is the premium collected

C is the coupon of the fixed income instrument

RPV01 is the value of each fixed income payment.

Thus the premium for the above transaction is priced at $PVpremium = (.0292) \times 8,000,000)*12$
$PV_{premium} = 35,040,000$

The 35 million dollars above represents the notional amount of the contract for the Z insurance company in premium collections, through expiry without default. This is defined as the notional amount as it represents exactly what a company would pay for protection without market fluctuation and without other measurable credit risks. The reason to use the notional pricing model is the noted in the International Swaps and Derivatives Associations' description,

"in fact, notional amounts are only loosely related to risk. For most OTC derivatives, cash flow obligations are normally a small percent of notional amounts and so are mark-to-market exposures. Further, netting of obligations under a master agreement and collateralization of exposures reduces credit exposures to less than one percent of notional amount" (ISDA, 2014).

The IFRS 9 Effects on CDS Pricing

The international Financial Reporting Standards number nine has a three-step process of derivative recognition. The guidance publish date is July 2014, rendering any other pronouncement invalid as the checkpoints are codified into the new pronouncement. IFRS 9 creates guidance as a direct response to the financial crisis of 2008. The guide is for financial instruments as a whole, rather than simply for hedge accounting as provided through Accounting Standards and Controls pronouncement 815-20-15 (ASC). The presumption of the IFRS 9 is each financial instrument has a purpose discernable from other instruments.

Classification and Measurement Phase

This assumption codifies in the Classification and Measurement Section. The Classification and Measurement section describes how to account for financial assets and liabilities. The Classification and Measurement section introduces a logical model for measurement. The logical model uses a cash flow characterization to derive value in the accounting cycle. The model used is the collection of contractual cash flows, which assumes the hold in state for the life of the contract. The characterization of the cash flows include questions such as type of interest payable within the scope of the instrument, the duration of the instrument, the structure of the instrument, and the hazard rate of the instrument (IFRS, 2014). The model as applied to Credit Default Swaps uses the price of premium as basis for measurement of the cash flow. The model uses both sides of the equation introducing a 'dirty' side of the model, which helps to reconcile the payables differences found in the pricing a CDS equation. What is new is the effects of the IFRS 9 on the accounting for CDS, when classified as such, creates a loss provision for recognition of the expected credit loss in following 12-month periods. The expected credit loss

characterizes as an expense (IFRS, 2014). This loss calculation uses a Poisson Regression determining the credit quality of the asset, then booking the variance between actual and expected in the closing cycle. The cycle of accounting, where the loss recognition exists is in extraordinary items reconciliation in the production of the statement of cash flows.

How does the process of classification and measurement affect the pricing of credit default swaps? The general tenants of the IFRS is to provide transparent and accurate information to investors. The determination of value reduced by expected credit losses requires more attention than historical valuation, a US Generally Accepted Accounting Principles (US GAAP). The IFRS provision for measurement moves the standard further away from US GAAP by creating required recognition of expected loss reflecting the deterioration of credit collectability (PWC, 2014). An example of this extraordinary topic is a company not being able to make the coupon bond payments. If one the covenants built into the CDS agreement is the purchaser X remedies such an event, the insurer Z recognizes a loss on investment and X realizes gain on investment, while offsetting the value due to credit quality deterioration. What are the effects of Phase one of IFRS 9 on the pricing of credit default swaps?

The effects lie in the timetable presented by the CDS. Phase one, ideally, is implemented prior or immediately after purchase. After purchase due diligence allows the insurer access the portfolio of fixed income securities with actual values rather than expected. This consideration period is similar to the purchase of mortgage backed securities were the purchaser does not know the extent of the portfolio until the full due diligence is performed. The optimal relationship of ownership and insurance applications in the strategy section of this essay building on the concepts introduced in this section. If a credit deterioration recognition happens during the measurement process, the notional value of the CDS will increase, as the market would create a steeper price to insure. If an increase of rating occurs during the classification and measurement phase, then the notional price of security would decrease directly as the likelihood of default decreases and the insurability of the instrument realizes a compression of bid ask. An example of this is the compression of price for CDS using Banco Santander bonds as the reference unit (Reuters, 2014).

How then does price reflection reconcile with the IASD's statement of risk only accounting for one to one and a half percent of the notional price (IASD, 2014)? The character of the statement needs evaluation to discern reconcilability. The IASD's statement date is April of 2014 before the final accounting guidance for IFRS release. The IASD's findings based on 2011 data points, and the IASD is a dealer representative thus the information may contain higher than usual entropy (Heberlig, 2006). Does this suggest that the accounting pronouncements of IFRS 9 closer reflect the business environment? Does the process need a way to discern loss in a measurable way?

The Impairment of Financial Assets Phase
The impairment phase, or phase two, in the IFRS 9 pronouncement details the need for loss recognition to better reflect the health of an organization. Citing the financial crisis of 2008, Phase two of IFRS 9 provides the delayed recognition of loss items allowed organizations to move default risk into future accounting periods (IFRS, 2014). The positon taken by the IFRS is to recognize expected loss before actual loss, effectively using the actual loss as a reconciling

item if the probability calculations were not one. The phase two model details the calculation of lifetime expected loss, which is simply the full value of the referenced item, contract for the insurer, or the modeled cash flow if marketed in a payment-by-payment fashion. The impairment model provides an ease of recognition when default events trigger. The expected premiums collectible are calculated using the premium model in the pricing section above, then a provision is booked for potential loss equaling the value of the referenced instrument. With each payment period passing, the premium is collected, the loss provision is reduced, and the gain is booked as gain on derivative investment (PWC, 2014).

The fair market value adjustments described above requires a benchmark instrument for comparative analysis. The new additions to valuation are the consideration of non-discounted cash flows to the model, the benchmark needing to be of similar credit quality and term, the financial asset is not hypothesized, and the financial asset reflects proper modified time value of money (PWC, 2014). The fair market value adjustments based on changes in the credit quality of the referenced unit necessitate the use of the impairment model for debt instruments as guided by IFRS 9. The model is dependent on the calibration between the referenced instrument and the credit quality of said instrument. The reduction of credit quality is accounted as an adjustment from phases one to three in the model of credit quality. Phase one is the lowest risk of default, phase two includes any financial assets with a credit event, and phase three includes all non-current financial assets. The tests to determine which phase the financial asset fits is a fit analysis based on duration of credit quality. The duration of credit quality depends on the length of time to execution of the contract in consideration of synthetic cash flows and other fixed income instruments. Moreover, the determination of credit quality is based on the existence of credit events such as non-payment, and downgrades of reference instruments. The second phase of the impairment process creates the largest effect of IFRS 9 on the pricing of credit default swaps. IFRS 9 creates new accounts for financial assets and liabilities to provide increase transparency. The increased transparency creates accounts reflecting the impairment phase, which the asset exists in three categories, low risk of default, default event, and fully impaired non-performing asset.

The pricing behavior of credit default swaps is similar to the pricing behavior of consumption. The consumption function describes the relationship between total consumption, autonomous consumption, marginal propensity to consume, and disposable income (Studenmund, 1992). The most robust effect to the consumption function is the delta of disposable income; similarly, the largest effect to pricing of credit default swaps is the reduction of liquidity of the reference entity. How does IFRS 9 effect the liquidity assumption priced into the notional price of the CDS? IFRS 9, with increased transparency, may increase the amount of participants in the trading scheme. The increase of participants can influence the price of the CDS by narrowing the spread with more than simple arm's length agreements moving to an electronic trading platform.   If this proposed change happens, and then the common investor that may be experienced in futures contracts will need an arbitrage option, hence the development of the hedge accounting for credit default swaps.

Hedge Accounting Phase

The third phase of the IFRS 9 accounting for financial instruments includes guidance on matching principles for credit default swaps. The issue addressed by the hedge accounting pronouncements is the valuation differences in Variable Interest Entities as the counter party upon consolidation. After consolidation, valuation of the same contract showed an imbalance in calculation. With the fair market valuation of hedges, the consolidation of VIE assets as a counter party provides adjustments aligned with risk management techniques rather than historical costing principles (IFRS, 2014). How is this treatment different from ASC 815-20 treatment or IAS 39 treatment?

The treatment is different as the matching principles of ASC 815 and IAS 39 are incorporated into the new hedge accounting model. The differences are the determination of an acceptable hedge ratio, contractual pricing, and specific risk component identification. The hedge ratio is determined by grades of investment. An example is a company wishing to hedge the exposure to coal mining entities as a reference entity. The company is required to hedge the the potential loss exposure identified in the measurement phase of IFRS 9. If the referenced cash flow has a 30 percent risk of default the reflecting price of the CDS would reflect a discounted cash flow rate multiple of 30. The contractual specific hedge needs to reflect the contracted price rather than the purchase price less fees and expenses associated as described in IAS 39. An example is similar to the hedge ratio, using exposure to coal mining as a reference item the company account for all expenses related to the CDS as a portion of the notional price reflected on the statement of financial position (balance sheet). The third part of hedge accounting through IFRS 9 is the specified risk of the underlying component. This is a transparency motion by the IFRS, to better classify where the CDS fits on the statement of financial position. This transparency requires the company to define the risk component for which the hedge is classified. In the aforementioned example, the hedge classifies as a future price forecast hedge (BDO, 2014). How does the hedging accounting phase affect pricing of credit default swaps?

The effects of hedge accounting changes proposed by the IFRS 9 on credit default swap notional pricing is limited. Hedge accounting is a complicated topic considering the nature of hedging. The price reflection based on increased transparency are more notable in the impairment section rather than the hedge accounting process. The test of the hypotheses related to the effects of IFRS 9 on the pricing of credit default swaps happens in the event study described in the next section.

II.   The Methodology

In order to calculate the event influences, the study needs a measure of abnormal return, positive or negative (MacKinlay, 1997). The abnormal return measured in this event by comparing the constant mean market return of CDS conveyed through notional price changes. The equation to determine the abnormal return of the considered index over the event window represented by T. The equation for abnormal return is

$$AR_{IT} = R_T - E(R_T/X_T)$$

The study uses a constant mean model allowing the event window to estimate returns, observe actual returns and define a period using return as a singular item similar to autoregressive mean

parameters. This technique allows the mean to develop without parameters limiting the bias of the researcher. With a parameter free mean defined, the researcher can calculate the abnormal return. The next section discusses the design framework and determine the proper techniques for aggregation of the data. The consideration of the null hypothesis definition as aforementioned in the research question section of the introduction.

The presentation of empirical results in the results section are coupled with the presentation of the diagnostics used in the design matrices. The index components are disclosed in the discussed in the discussion section for weighting of each component and the outlay of each weighting. The knowledge creation from the event study develops in the next section and further in the recommendation section of the study.   The knowledge created will lead to insightful relationships for accounting professionals when considering new policy implementation by defining the causes for the effects observed during the event window.

The Constant Mean Return Model
Although the constant mean return model is the humblest model, Brown (1980) describes the model to often yield results similar to models that are more erudite. This is similar to the random walk theorem describing the constant mean as the lesser of rather the more complex. The model is driven by monthly data inputs thus moderating for influences on the market cannot replicate the movements of the market with any additional controls. The constant mean return model uses index return adjusted for the broader market return.

The Event Study
With the model and explanation from industry experts, the essay attempts to discern if a cumulative abnormal return exists between the dates of July 24 through October 31 of 2014 when the IFRS 9 pronounced the treatment of financial asset derivatives. The model uses a larger discrete period as the earnings season results were available after September 30. The null hypothesis for consideration is

H_o: The implementation of new regulation has no effect on the pricing of credit default swaps.
The null hypothesis does not consider pricing changes due to regulation implementation tying closely to the ISDA's statement, while the alternate hypothesis includes an expectation for abnormal return due to new regulation.

H_{a1}: The implementation of a new regulation has an effect on the pricing of credit default swaps.

III.   Results
The model is concerned with the dollar value change in notional price of a basket of securities contracts to determine the cumulative abnormal return due to IFRS 9. The basket of securities includes early adopters of financial regulation, such as banks and other finance driven entities. The specific companies are Bank of America, Banco Santander, Bank of China, Bank of Scotland, and Barclay's Bank. The following table exposes the notional values of the early adopters at the codification of new standards, before earnings releases, and after earnings release. All data is gathered from the Depository Trust and Clearing Corporation (DTCC).

	Notional Value Change	Number of Contracts Change
BANCO SANTANDER, S.A.	402%	392%
BANK OF AMERICA CORPORATION	-13%	-42%
BANK OF CHINA LIMITED	-83%	-36%
BANK OF SCOTLAND PLC	423%	571%
BARCLAYS BANK PLC	200%	282%
BANCO SANTANDER, S.A.	-84%	-77%
BANK OF AMERICA CORPORATION	-16%	28%
BANK OF CHINA LIMITED	-69%	-57%
BANK OF SCOTLAND PLC	-99%	-98%
BARCLAYS BANK PLC	-78%	-81%
BANCO SANTANDER, S.A.	128%	293%
BANK OF AMERICA CORPORATION	-42%	-77%
BANK OF CHINA LIMITED	1160%	367%
BANK OF SCOTLAND PLC	8923%	1400%
BARCLAYS BANK PLC	120%	115%
BANCO SANTANDER, S.A.	-31%	-51%
BANK OF AMERICA CORPORATION	-45%	39%
BANK OF CHINA LIMITED	-80%	-64%
BANK OF SCOTLAND PLC	-34%	93%
BARCLAYS BANK PLC	80%	174%
Week of 10/03/2014	1,345,598,834.00	247
Week of 07/26/2014	1,925,268,021.00	254
Difference	579,669,187.00	7
Change	-30%	-2.76%

Table 1

10/3/2014	99,340,613,115	18,136
7/26/2014	165,755,746,318	24165
	66,415,133,203	6,029
Net Market Change	-40%	-25%

Table 2

The rationale in using banking as a sector for the cumulative abnormal return analysis is the sector is normally an early adopter and credit default swaps are integral to the hedging model of most banks to manage risk.

IV.   The Hypothesis Discussion

The null hypothesis is rejected by the analysis by creating a cumulative negative abnormal return in the notional value and the number of contracts. The alternative hypothesis is accepted as the data shows a reduction over 66 billion dollars in notional value of contracts and a six thousand contract decrease over the event window. The transparency phase, phase two, of the IFRS 9 helps explain the large reduction in exposure to credit default swaps. Inferences drawn from the analysis are first that regulation does affect markets, second transparency required risk managers to evaluate the company positions in each security, and third the evaluation lead risk managers to limit the exposure to credit default swaps effecting the notional price of the securities in an anomalous method. With the identification of anomalies or inefficiencies, how does one use these inefficiencies to create arbitrage?

The Best-Fit Strategy
For Both
Understanding the item is the catalyst to either strategy. The risks involved in trading credit default swaps apply to both parties. Liquidity risk happens when the agreement requires both parties (Table 1) to deposit collateral. Counterparty risk is the inability of the buyer or seller to meet the contracted obligation; both parties share exposure to this risk. Default risk predicates the necessity for the credit default swap. Both parties share exposure to this risk through the reference entity. The following strategies synthesize the results of the study, consider risks, and provide an accounting treatment for each party.

For Buyers
The best-fit strategy for buyers of protection in the CDS market include due diligence analysis of the seller of the protection. This due diligence insures the protection seller has the capital to honor the tenants of the contract. For the strategy to work in the favor of the protection buyer, the assurance of due diligence performed on the seller is the first step in creation of value for the buyer. The timing of purchase is a major consideration of buyer strategy. The buyer strategy needs to include a purchase of protection prior to necessity, before any impairments factored into the price of the credit default swaps.   The last consideration for buyers of protection in the CDS market is the proper risk analysis before purchase of reference entities that would require default protection.

For Sellers
The best-fit strategy for sellers of protection includes due diligence of the reference entity for which the insurance provision is facilitated. The arrangement of protection needs to facilitate a notional fee of 50 to 55 basis points per annum (Akdoğan and Chadwick, 2013). The seller needs to create an exposure ratio based on probability of default using Markov or Poisson distribution. The default rate can discount the estimated losses. The estimated losses provisions a restriction to cash with a recurring offset accretion of the contract. This offset strategy allows for tax efficiency in the accounting cycle by reducing asset value, the premium collection process does not create revenue.

V.   Conclusion
This essay evaluated the impact of the International Financial Reporting Standards on the pricing of the credit default swap (CDS) market. The purpose extended to application of the evaluation synthesized into a best-fit strategy for participants of the CDS market as designated the buyers, and sellers. The impact of IFRS 9 on the pricing of the CDS market, using an event study method, integrates into an accounting strategy allowing the seller of protection to reduce asset value instead of creating revenue on an uncertain financial asset. The results of the study first that regulation has an effect on notional prices of credit default swaps and second that cumulative abnormal return exists in the financial sector as compared to the CDS market. A best-fit strategy for buyers and sellers of protection using derivatives known as credit default swaps in an attempt to exercise the inefficiencies created by the pricing of the CDS derivative instruments.

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