

Structured Finance as an Alternative to Conventional Finance

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Abstract: *The traditional view of financial stability concentrates analytical efforts on the identification of increasing vulnerabilities prior to stress from individual failure in institutions, markets and infrastructure, assuming that the financial system is in equilibrium and adjusts when it experiences a shock. As opposed to this conventional approach, the presence of systemic vulnerabilities warrant the monitoring of ongoing developments in evolving areas of financial markets where the impact of unsustainable imbalances on financial stability is deemed most severe and widespread but difficult to measure, leave alone forecast. Given the increasing sophistication of financial products, the diversity and global reach of financial institutions, as well as the growing interdependence of financial markets and services, such areas exposed to extreme scenarios are likely to be found in financial innovation, where market forces and participants are left to their own devices and when complex incentive structures encourage greater risk taking in a benign economic environment but entail more adverse economic consequences when stress occurs.*

The aim of this paper is to define the structured finance in order to point out to its possibilities in capital costs reduction and efficient refinance, as well as credit risk transfer through credit derivatives and securitisation transactions.

Keywords: *structured finance; credit risk transfer; asset-backed securitisation (ABS); securitisation; mortgage-backed securitisation (MBS); collateralised debt obligation (CDO).*

1 Introduction

The characteristic of modern regulatory is uneasiness about current risk measurement standards of derivatives and their impact on financial stability because of noninvestment grade status of large producers in some industries as well as because of haircut unwinding of exposed collateralised debt obligation and other securitisation transactions. The concern about complex structured finance techniques, such as customised single-tranche and hybrid collateralised debt obligations with overlay structures, became greater. Investors and regulators began to worry about the systemic resilience of complex structured finance techniques (such as customised single-tranche hybrid CDOs with overlay structures) – especially against the background of tightening credit spreads and greater dislocation in the correlation market. The subsequent warnings about the impact of leveraged structured claims on financial stability in times of stress, however, hardly extended beyond indistinct assessments of the mechanics of structured finance markets and the ability of different structured finance products to propagate asset shocks across different capital market segments.

2 Definition of structured finance

Structured finance includes all advanced private and public financial arrangements that serve to efficiently refinance and hedge any profitable economic activity beyond the scope of conventional forms of on-balance sheet securities (such as debt, bonds, equity) at lower capital cost and agency costs from market impediments and liquidity constraints. Most structured investments combine traditional asset classes with contingent claims, such as risk transfer derivatives and/or derivative claims on commodities, currencies or receivables from other reference assets, or replicate traditional asset classes through synthetic or new financial instruments. Structured finance is invoked by financial and nonfinancial institutions in banking systems as well as in capital markets if either established forms of external finance are unavailable for a particular financing need, or traditional sources of funds are too expensive for issuers to mobilise sufficient funds for what would otherwise be an unattractive investment based on the issuer's desired cost of capital. Structured finance gives issuers flexibility to securities creation and design and asset type, providing higher return at a customised degree of diversification that satisfies individual investor's risk preference. Therefore, structured finance exerts influence on capital market completeness by offering any mean-variance trade-off along the efficient frontier of optimal diversification at lower transaction cost. The increasing structured finance complexity and the growing number of products that are available to investors, however, create challenges in terms of efficient management and dissemination of information.

The premier form of structured finance is predicated on capital market-based risk transfer (asset swaps, save for loan sales and natural hedges through bond trading, whose two major asset classes include asset securitisation and credit derivatives transactions. The securitisation is mostly used for funding purposes. The credit derivative transactions are used as hedging instruments and permit issuers to discover almost an infinite number of ways to combine various asset classes in order to both transfer asset risk between banks, insurance companies, other money managers and nonfinancial investors in order to achieve greater transformation and diversification of risk.

Asset securitisation is the process and the result of converting a pool of designated financial

assets into tradable liability and equity obligations as contingent claims backed by identifiable cash flows from the credit and payment performance of these asset exposures. [9] For an issuer, securitisation is an alternative of refinancing profitable economic activity instead of intermediated debt finance. Securitisation strives to substitute capital market-based finance for credit finance by sponsoring financial relationships without the lending and deposit-taking capabilities of banks.

Issuers raise funds through securitisation in order to improve their capital management and liquidity position without increasing the capital base. The implicit risk transfer of securitisation allows issuers to benefit from more cost-efficient terms of high-credit quality finance without increasing their liabilities or compromising the asset capacity to generate profit. On the other hand, securitisation gives investors a wider choice of available high-quality investments, whose market valuation creates greater overall efficiency and liquidity of capital markets. Securitisation, however, involves a complex structured finance technology, which demands significant initial investment of managerial and financial resources.

Besides this, securitisation enables reduction of economic cost of capital and regulatory minimum capital requirements and to diversify asset exposures to currency risk and interest rate risk. The effective asset risks redistribution method to investors and capital markets is securitised cash flow from diversified asset portfolio. In other words, a securitised contingent claim on promised portfolio performance enables investors to adjust their holdings quickly and at lower transaction costs due to changes in personal risk sensitivity, consumption preferences and/or market sensitivity.

3 Role of derivatives in structured finance

Derivatives in general are financial contracts on a pre-determined payoff structure of securities, indices, commodities or any other assets of varied maturities. Derivatives assume economic gains from both risk shifting and efficient price discovery by providing hedging and low-cost arbitrage opportunities. Risk diversification improves the pricing of risk, increases stability at all levels of the financial system, and enhances

general welfare. Moreover, derivatives represent alternatives to underlying assets trading.

Credit derivatives are financial instruments that isolate and transfer credit risk. They involve the sale of contingent credit protection for pre-defined credit events and/or asset performance. In general, the sale of credit derivatives severs the link between the loan origination and associated credit risk, but leave the original borrower–creditor relationship intact. The protection buyer of a credit derivative hedges specific credit risk at the expense of periodic premium payments to the protection seller, who assumes the credit exposure of the underlying transaction. In a cash-settled CDS, the protection seller is required to make a settlement payment in the amount of the difference between the notional principal and the market price of the underlying bond or the reduced recovery value of the defaulted bank credit. Alternatively, in what has increasingly become the market norm, physical settlement CDSs oblige the protection seller to accept the reference asset (or any other eligible collateral asset, such as cheapest-to-deliver (CTD) bonds) against payment of their par value. Unlike credit insurance contracts, credit derivatives are negotiable and attract large secondary trading. The significance of credit derivatives lies in their ability to supplement traditional ways of hedging credit risk through the transfer of credit-related exposures to a third party. On the other hand, noncredit derivative-based forms of credit risk transfer include credit insurance, syndicated loans, loan sales, bond trading and asset swaps (for example recovery rate products such as fixed recovery rate credit default swaps (CDS) or recovery credit default swaps (CDS) with a fixed recovery rate.

Credit derivatives include [3] [10]:

- “Pure” credit derivatives,
- Hybrid and securitisation products.

“Pure” credit derivatives are credit default swaps (CDSs), total return swaps and credit spread options. On the other hand, hybrid and securitisation products have constituent credit derivative elements, such as traditional or true sale collateralised debt obligations (CDOs) of bonds and loans and they are partially funded or unfunded structured finance transactions (for example credit-linked notes (CLNs), synthetic CDOs and other credit derivative-based hybrid products).

Hybrid structures use securitisation for refinancing (through cash flow restructuring) and tranche-specific credit risk transfer (though the

sale of credit protection or the issuance of leveraged super-senior (LSS). These hybrid and securitisation products are considered credit derivatives in a wider sense, which usually condition the repayment of securitised debt on a defined credit event in a bilateral hedge (in the case of CLNs), the premium income generated from credit protection sold on reference assets (in the case of synthetic CDOs), or the returns from investing and/or writing credit protection (long position on credit risk) on diversified pools of securitisation transactions of CDOs and/or assetbacked securities (ABSs) (‘pools of pools’) or newly formed CDSs and collateralised debt indices (e.g. the Dow Jones iTraxx® and the iBoxx® index), [2][and the composite ABXs indices of CDS on ABS (ABCDS).

The fastest growing area of structured finance is CDOs (in 2004, one out of four new CDO deals was synthetic). The CDO market has rapidly evolved since 1996, when the sector first gained significant prominence after its inception in the late 1980s, when some US banks started using CDOs as expedient risk-transfer mechanism. CDOs have now become a globally accepted structured finance technique, which is used in US, Europe and in developed countries of Asia. CDOs are investment vehicles that allow issuers to refinance the purchase of debt instruments by repackaging them into different slices of risk and maturity. While CDOs use the same structuring technology as asset-backed securities (ABS) to convert a large, diversified pool of exposures into tradable commercial papers (tranches), their underlying collateral pool typically includes a wider and more diverse range of heterogeneous reference assets, such as senior secured bank loans, high yield bonds and CDSs, as opposed to more homogenous titles, such as home equity loans and credit card receivables.[8] A CDO transaction is arranged and administered like a ‘managed fund’ with debt and equity holders, where a designated reference portfolio represents a diversified exposure to one or more asset classes from different issuers and/or industry sectors. CDO investors, conversely, sell credit protection to issuers against default on a portion of underlying reference assets. Generally, managers of CDO collateral portfolios choose a certain degree of diversification for a prespecified risk-return profile subject to limits and guidelines that are determined by the issuers, rating agencies and investors at the commencement of the transaction.

In a CDO structure asset managers can increase assets under management while locking in committed funds and achieving some protection from market value volatility. While cash CDOs are backed by a collateral of actual bonds and loans as reference assets, whose legal title is transferred to the purchaser, issuers of synthetic CDOs enlist wads of credit derivatives and various third-party guarantees to create unfunded or partially funded, highly leveraged investment from synthetic claims on the performance of designated credit exposures.[13] CDOs involve either cash flow or arbitrage mechanisms to either fund expected principal and interest payments or expected trading and sales activity. CDOs enable issuers to achieve a broad range of financial goals, such as reduced minimum regulatory capital requirements, off-balance sheet treatment of securitised exposures and access to alternative sources for asset funding and liquidity support. The conventional security design of CDOs assumes a typical three-tier securitisation structure of junior, mezzanine and senior tranches, which concentrates expected losses in a small first loss position as equity claim, which bears the majority of the credit exposure and is frequently covered by a junior CDS, shifting most unexpected risk to larger, more senior tranches, which display distinctly different risk profiles.[6] [7] This risk sharing arrangement induces a leverage effect on constituent tranches, whose distinct risk-return profiles can be tailored to specific investment preferences.

3 Boundaries between structured finance and conventional finance

The boundary between structured and conventional finance is hard to find because of flexible nature of structured finance. In spite of difficulties of structured finance defining, we need to make functional and substantive differentiation between structured and conventional finance. Having this in mind, let us consider two financial arrangements:

- (1) Financial arrangement that could include investment instruments which are motivated by the same or similar financial objective from both the issuer's and the investor's point of view, but a dissimilar legal and functional implementation requires a different valuation and
- (2) Financial arrangement that could involve (include) investment instrument which are

motivated by the same or similar financial objective and are substantively equivalent (i.e. they share a close equilibrium price relation and the same investor pay-off profile), but which are different in transaction structure and/or security design necessitate a different valuation.

The examples of first financial arrangement are the credit derivatives, which allow specific and capital market priced credit risk transfer. Credit insurance and syndicated loans have the same financial objective, but they do not constitute an arrangement to create a new risk-return profile from existing or future reference assets. On the other hand, mortgage-backed securities (MBSs) and Pfandbrief-style covered mortgage bonds represent different functional and legal methods of securitisation with the same financial objective. Although both refinancing techniques convert homogenous pools of mortgage claims into negotiable securities, they represent two distinct forms of debt securities issued on the same type of underlying reference asset either off-balance sheet (asset-backed securitisation), on-balance sheet ("Pfandbrief-style" securitisation) or even through synthetic securitisation.

The Pfandbrief is the most prominent deal structure for securitised mortgage loans in Europe, which matches the importance of MBS in the US by issuance volume, trading activity and historical track record. In contrast to the US, where the market for MBS has had a longstanding tradition since the first half of the 1980s, off-balance sheet securitisation via MBS is a relatively recent development in Europe and has gained traction only over the last years, with issuance amounts being still relatively low compared to established on-balance sheet securitisation via covered mortgage bonds or Pfandbrief. ABS issues have caught up with Pfandbrief transactions. The Pfandbrief market is still the biggest segment of the euro-denominated private debt market and rivals in size the individual government bond markets in Europe. [11] [12] Whereas originators of Pfandbrief issues retain securitised assets on their balance sheet, issuers of MBSs sell assets to a separate legal entity (such as trust, fund and corporation), commonly referred to as a special purpose vehicle (SPV), which refinances the acquisition of the assets by issuing debt (e.g. bonds or commercial paper) or equity claims on the back on these reference assets. The designated assets are considered securitised insofar as their cash performance serves to secure

any repayment obligation to investors. Alternatively, synthetic securitisation represents a compound form of structured finance, which amalgamates properties of both asset-backed securitisation and credit derivatives in one coherent structure. Synthetic securitisation does not involve the transfer of assets, but serves to hedge the credit risk to which the originator is exposed. The originator merely transfers the credit risk through the use of funded (e.g. credit-linked notes (CLNs)) or unfunded (e.g. CDSs) credit derivatives or guarantees, in which the counterparty agrees upon specific contractual covenants to cover a predetermined amount of losses. Thus, synthetic arrangements effectively sidestep possible legal constraints associated with different loan characteristics and jurisdictions, mainly because most or all of the securitised assets are never sold to capital market investors.

The example of second financial arrangement is Islamic finance that could represent structured finance instrument whenever religious constraints require the replication of conventional interest-bearing assets through structural arrangements of two or more contingent claims. Islamic finance is limited to financial relationships involving entrepreneurial investment, subject to the prohibition of interest earnings and money lending; sinful activity (such as direct or indirect association with lines of business involving alcohol, tobacco, pork products etc.) and; the speculative trade or exchange of money for debt without an underlying asset transfer.

As opposed to conventional finance, where interest represents the contractible cost for funds over a pre-specified lending period, in Islamic finance, both financiers and borrowers to share the business risk and returns from investment in religiously acceptable services, trade or products (in adherence to lawful activities), where profits are not guaranteed ex ante, but only accrue if the investment itself yields income. Islamic financial transaction assigns to investors clearly identifiable rights and obligations for which they are entitled to receive commensurate return. In light of these moral impediments to both 'passive' investment and interest as form of compensation, shariah-compliant lending in Islamic finance requires the replication of interest-bearing, conventional finance via structural arrangements of contingent claims. Although Islamic and conventional finance are equivalent in terms of substance and yield the same lender and investor pay-offs (i.e. equilibrium price equivalence) at the inception of

the transaction, they differ in legal form and might require a different valuation due to dissimilar transaction structures and/or security design.

As opposed to conventional lending, Islamic finance substitutes a temporary transfer of an asset to the lender for a permanent transfer of funds to the borrower as a source of indebtedness. There are three basic forms of Islamic financing methods for both investment and trade finance: [1] [4]:

- synthetic (mortgage) loans (debt-based) through a salerepurchase agreement or back-to-back sale of borrower- or third party-held assets,
- operating or finance leases (asset-based) through a leasebuyback agreement or purchase order, and
- profit-sharing contracts (equity-based) of future assets.

As opposed to equity-based contracts, both debt- and assetbased contracts are initiated by a temporary transfer of existing assets from the borrower to the lender or the acquisition of third-party assets by the lender on behalf of the borrower. These different forms of Islamic finance combine two or more contingent claims to replicate the risk-return trade-off of conventional lending contracts or equity investment without any contractual guarantee of investment return or payments by reference to an interest rate as time-dependent cost of funds.[5] This unsecured arrangement constitutes entrepreneurial investment on part of the Position Value financier, who receives returns from direct participation in uncertain asset performance in the form of state-contingent payments according to an agreed schedule and amount. The specific lending arrangement underlying each type of Islamic finance represents a different form of a put-call parity-based replication of interest income, which recharacterises the rate of return of conventional investments in a religiously acceptable manner.

The three main types of Islamic finance are only distinct as to the attribution of economic benefits from the use of an existing or future asset owned by the lender. In asset-based Islamic finance for investment or trade, the borrower leases from the lender one or more assets A at current stock value S, which the lender has previously acquired either from the borrower or a third party. The lender writes a call option C with strike price E to the borrower to acquire the asset after time T, subject to the promise (put option P) of full payment E of the current asset price plus

an agreed premium in the form of total rental payments over the investment period, which amounts to a present value of $PV(E)$ of risky debt at maturity. If the lender has full recourse (i.e. he retains ownership until maturity T , when the borrower can exercise the right to acquire the asset), also the put option has a strike price E , which ensures that the borrower's failure to fully repay entitles the lender to sell the asset to compensate for the financial shortfall. This arrangement amounts a collateralised loan with maturity T and a fully collateralised principal amount, which is equivalent to the current purchase price of the desired asset. According to put-call parity, the lender's position at maturity is $S - C(E) + P(E) = PV(E)$, which equals the present value of the principal amount and interest of a conventional loan. In a more realistic depiction, the combination of a held put and a written call option on the same strike price represent a series of forward contracts over multiple rental payment dates, each of which obliging the holder to renew the periodic call option of purchasing the asset at maturity as a buyback or allowing the lender to resell the asset at final maturity.

In debt-based and equity-based Islamic finance, the payoff profiles are similar. In debt-based Islamic finance, borrower indebtedness from a sale-repurchase agreement of an asset with current value $PV(E)$ implies a premium payment to the lender for the use of funds over the investment period T . As opposed to an asset-based arrangement, the lender relinquishes same asset ownership right after inception, if there is a mismatch of funding and repayment reducing the option value of possible recourse (written put) to $P(F)$, so that ex ante lender payoff L_2 is now $S - C(E) + P(F) = PV(F) - (PV(E) - PV(F)) - C(F) + C(E)$. In equity-based Islamic finance, the lender (i.e. investor) is fully repaid only if the investment project generates high enough returns to repay the initial investment amount and the premium payment in return for investment risk until maturity T . This arrangement precludes any recourse by the lender. If the investor owns 100 per cent equity of investment S , ex ante lender payoff L_3 is $S - C(E) = PV(E) + P(E)$.

5 Conclusion

This paper is trying to argue that a clear definition of structured finance could help substantiate debate about the resilience of credit risk transfer to financial shocks. Structured finance encompasses all advanced private and

public financial arrangements that serve to efficiently refinance and hedge any profitable economic activity beyond the scope of conventional forms of on-balance sheet securities (debt, bonds and equity) in the effort to lower cost of capital and to mitigate agency costs of market impediments on liquidity. Especially, the distinction of the various methods of credit risk transfer through credit derivatives in a wider and narrower sense as well as securitisation transactions illustrates the need for more comprehensive and creative regulatory considerations that take on board the heterogeneity of institutions, markets, and infrastructure.

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