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ASIAN STRUCTURED PRODUCTS

Angel Wu and Clarke Pitts



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ASIAN STRUCTURED PRODUCTS

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I. INTRODUCTION AND EXPLANATION

Structured products constitutes a large industry and an important part of investment and capital market activity. Despite the substantial size of the business, little is known or said about structured products by industry professionals not directly involved, except in the context of a noteworthy event, such as the Lehman Brothers Minibond scandal. In this paper, we seek to explain what structured products are, how they work, and why investors use them, with particular reference to East Asia.

Structured products are financial instruments designed and created to afford investors exposure (to something) through a derivative contract. The underlying asset can be an equity price, an interest rate, an exchange rate, an index, a credit spread, a commodity price—anything, in fact, for which there is an existing financial market. Derivatives are packaged in a way that is most suitable for the investor. Typically, they are embedded in a medium-term note or other type of security. In some cases, the instrument is a bank deposit, an insurance policy, or a simple contract. The choice is predicated on such considerations as tax efficiency and convenience.

Investors usually want to go long the market. In a typical transaction, a client buys a bond consisting of a zero-coupon bond (“zero”) *and* a call option on an equity index. If the index rises above the option’s strike price by the maturity date, the bondholders receive the proceeds of the bond and the option. Otherwise, the option expires worthless and the client forfeits any interest he might have expected to earn on his capital. That is the basic structure of a “capital-guaranteed” product. It works especially well when interest rates are high (cheap zeros) and option prices are low (low volatility).

When rates are low, as they have been recently, the “reverse convertible” is a popular structure: The client effectively invests in a zero-coupon bond and sells short a put option. The value of the put option and any interest due are combined and passed to the

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investor as a coupon. If the market falls below the option's strike price at maturity, the loss is deducted from the proceeds of the zero and the net amount is the redemption value of the structured product. If the market rises above the strike price, the investor gets her money back along with a high coupon.

The structured products industry is so big and so diverse that it is helpful to break it down into three parts and consider each in turn.

- The first type of structured product is privately placed and individually negotiated transactions involving one investor or a very small number of investors. Such transactions are typically executed through medium-term notes.

This mechanism is commonplace for high-net-worth investors, corporate treasuries, and other quasi-professional investors—but not hedge funds.

These transactions are almost never disclosed to third parties; thus, this multi-billion-dollar industry is largely hidden from a potentially wide audience.

- The second type consists of products sold through syndication by such retail networks as banks, brokerages, financial advisers, and insurance companies.

This segment is the most conspicuous part of the structured products industry—these products are widely advertised to attract customers. The investors are usually private clients and not necessarily rich ones.

One of the most material manifestations of this kind of activity in Asia and North America is the *variable annuity*, an insurance policy with returns linked to stock market indexes.

- The third generic type of structured product includes those that are actively traded on exchanges or with market makers. These products constitute the fastest-growing segment. In Hong Kong, warrants and callable bull/bear certificates (CBBCs) are very popular; in Japan, Australia, and Singapore, contracts for difference (CFDs) are becoming popular.

Some exchange-traded funds (ETFs) should be considered structured products, particularly those that are leveraged or that short the asset to which they are linked.

Although the products themselves are quite visible, it is impossible to know exactly how much total capital is invested in them. The snippets of information we do have suggest that very large amounts of money are involved.

A. CLIENTS AND THEIR MOTIVATIONS

It is important to consider who invests in structured products and what motivates them to do so. Such a large and diverse industry has many participants, whose circumstances and priorities vary. Later in the paper, we discuss specific examples. Now let us consider the generic advantages that structured products offer—as well as some of their shortcomings.

1. Tax Efficiency

Tax efficiency is sometimes achieved through how the derivative is packaged—for example, insurance policies. Tax advantages can also be achieved by merging the interest or coupon of a bond with the more risky capital exposure from writing an option, leading to an after-tax improvement when capital gains are taxed more favorably (i.e., at a lower rate than interest income).

2. Currency Protection

Investors in overseas assets often suffer when the currency of the international asset depreciates. This risk can be neatly avoided by using derivatives.

3. Leverage

Some investors use structured products for short-term trading rather than long-term investment. Such products as CFDs and CBBCs are designed for this kind of activity.

4. Payoff Transformation

Derivatives allow investors to express their views and risk appetite in a more precise and nuanced way. Some will invest only if their capital risk is mitigated; capital-guaranteed products are well suited to such investors.

In this paper, we do not seek to promote structured products per se. There are reasons why some investors do not use structured products as well as considerations for those who do.

5. Transparent Pricing

The value of derivatives and structured products is a nebulous area, causing substantial problems for professional participants and their auditors. It is harder still for investors to properly understand the value of such products and thus the margins they are paying.

6. Complexity

Investors are rightly wary of things they do not understand. Some investors consider derivatives complicated. Although valuing structured products can be difficult, expressing the payoff is often quite straightforward.

II. THE SCOPE AND SCALE OF THE ASIAN STRUCTURED PRODUCTS INDUSTRY

In the decade or so before the 2007–08 financial crisis, the Asian structured products industry flourished in tandem with growth in private wealth. There was demand for a wide variety of structured products, including those offering capital protection, yield enhancement, and participation as well as leveraged products. The collapse of Lehman Brothers, however, marked a turning point for the industry. Weakened investor confidence—and tightened regulations regarding issuance, reporting, and capital requirements—led many issuing banks to narrow their product offerings or even withdraw from certain asset classes or markets. Financial institutions—including KBC, Standard Chartered, Macquarie, Deutsche Bank, and Barclays Capital—reduced or ended their structured products presence in the region. Product issuance became more “focused and commoditized,” with innovation no longer an important part of the business.

Most products are now linked to individual equities or equity indexes and foreign currencies. For the Asia ex-Japan market, tenor is usually less than a year, with a large portion concentrated at the short end. Common payoffs include equity-linked notes, fixed-coupon notes, twin-win autocallables, autocallables, range accruals, target redemption, dual currency investment, and accumulators and decumulators.

Even with fewer issuers, pricing competition (especially after the introduction of requirements for more-transparent fee disclosure) and pressure to reduce costs have led to the development of multi-issuer platforms for equity-linked derivatives. The concept began with the launch by certain issuers of the “auto-pricer,” which enabled buy-side banks to obtain faster price quotes via a standardized format. Under the multi-issuer platform, quotation speed and execution speed—as well as such after-sale services as valuation and settlement—are further improved with a single protocol for both the buy side and the sell side. Issuers have been forming different consortiums to gain economies of scale and market share. But because none of the platforms provide full coverage of all issuers—and there may be a set-up or maintenance fee for buy-side

banks to pay, not to mention information technology costs—the full rollout of the platforms is hindered.

At the end of 2015, outstanding sales volume for retail structured products offered in major Asian markets (including China, Hong Kong, Japan, South Korea, and Singapore) exceeded USD750 billion, representing a compound annual growth rate of 4% since 2012.¹

Japan, home of the largest stock exchange in Asia and the third largest in the world, contributed to the bulk of sales of Asian structured products, recording more than USD570 billion at the end of 2015. Securitized notes (Uridashi notes) tied to such equity indexes as the Nikkei 225 Stock Average or to foreign currencies made up the largest portion of the Japanese market. Autocallable notes were highly popular. This product enables investors to (1) receive a high coupon if the underlying asset is above the coupon strike on any observation date and (2) get the principal back if the note is knocked out early or at maturity so long as the underlying asset has never touched the knock-in barrier. Otherwise, investors receive cash or the underlying asset at market value.

The changing global economic landscape, in which developing economies such as China have gained importance, has helped shape the industry trend. With an annual GDP growth rate of more than 7% over 2010–2014, China emerged as the world's second-largest economy in 2014, according to the World Bank.

China's private wealth market reached RMB112 trillion in 2014, translating into an annual expansion rate of 16% over 2012–2014.² The rising population of high-net-worth individuals has boosted demand for wealth management products (WMPs), which are designed to enable investors to receive higher interest income than they would receive from bank deposits. WMPs are a pool of funds (investing in a variety of assets, such as equities, loans, and bonds) with a guaranteed return and a fairly short maturity date. Most investors tend to believe that WMPs are as safe as bank deposits. But a number of high-profile payment defaults in recent years have sounded the alarm, attracting government scrutiny.

China's issuance of structured products was helped by the development of the Qualified Domestic Institutional Investor (QDII) scheme, begun in 2007 to enable institutional investors to invest in overseas financial instruments and extended in 2015 to domestic individuals. Despite the relatively short history of the QDII scheme for individuals, the types of structured products offered are wide ranging, with various underlying

¹We obtained data from www.structuredretailproducts.com.

²Bain & Company, *China Private Wealth Report* (Boston: Bain & Company, May 2015): <http://www.bain.com/about/press/press-releases/2015-china-private-wealth-report-press-release.aspx>.

assets and embedded derivatives. It is not uncommon to see such products as autocallable step-down notes, dual currency investments, callable step-up notes, credit-linked notes, and fund-linked notes offered to the public.

In Hong Kong, the structured products industry has stagnated since the financial turmoil of 2007–2008. According to the Securities and Futures Commission of Hong Kong, for the 12 months ended March 2014, the transaction amount of structured investment products was only HKD172 billion (USD22 billion), down from HKD329 billion (USD42 billion) for the same period ended March 2012. In terms of product types, currency-linked structured products accounted for 58% of the total transaction amount, followed by 38% for equity-linked products and 4% for others. The sluggishness could be explained by tightened regulation and a prolonged period of low interest rates, triggering an increased demand for leveraged bond investments. Many private wealth investors have built up heavy exposures to leveraged bond portfolios (which have low default rates) as a replacement for structured products, which are viewed as more risky.

In South Korea, structured securities/derivatives issued by securities companies remained on the uptrend, rising at a compound annual growth rate of 30% over 2003–2014.³ The structured products market was largely driven by retail investors, who were devoted to foreign-currency-linked structured products—worth KRW139 billion versus KRW30 billion for won-denominated products as of March 2015. Equity-linked securities (ELs), which are effectively autocallable, were one of the most popular products. Most ELs were linked to indexes, including the KOSPI 200, EUROSTOXX50, and Hang Seng China Enterprises. “Two-stock autocallables,” also known as “two-stock step-down triggers,” were widely available. Moreover, given the low-interest-rate environment, notes linked to South Korean sovereign credits and other government credits also appealed to investors.

In Taiwan, the onshore derivatives market was dominated by interest rate and foreign-exchange-linked products. At the end of December 2015, the total notional amount outstanding for derivatives was USD1.2 trillion, of which foreign exchange and interest rate contracts accounted for 79% and 20%, respectively.⁴ Given the low interest rates, the fixed-to-float structure and the cap-floor floater were relatively popular. The former offers investors fixed coupons in the earlier periods, switching to a floating-interest-rate mode thereafter. The latter is a floating-rate note subject to a cap and a floor. As for currency-linked products, investors were interested in products linked to such high-yielding currencies as the Australian dollar and the New Zealand dollar.

³FSS, *Annual Report* (Seoul, South Korea: Financial Supervisory Service, 2015): http://english.fss.or.kr/fss/eng/p/publications/ar_list.jsp?bbsid=1289364303986.

⁴See <http://www.banking.gov.tw/en/> (Banking Bureau, Financial Supervisory Commission, Taiwan).

III. EXAMPLES FROM ASIA

Since the 2007–08 financial crisis, the most common structured products theme has been a “search for yield.” After the financial crisis, the US Federal Reserve lowered its target for the federal funds rate 10 times. Starting in December 2008, the target range was kept between 0.00% and 0.25%. In December 2015, the near-zero target range ended when the Fed increased the federal funds rate by 25 bps, to 0.25%–0.50%. US easy-money policies were echoed in Asia, which was not immune to the global financial shock and subsequent meltdown in commodity prices.

Among Asian countries, the spotlight has been on China, the second-largest economy in the world in 2016. The use of the renminbi has been extended from cross-border trade settlements to offshore investment activities linked to shares (the Shanghai–Hong Kong Stock Connect enables non-mainland investors to invest in eligible shares on the Shanghai Stock Exchange and mainland investors to invest in eligible shares on the Hong Kong Stock Exchange). According to SWIFT, in September 2015, the renminbi ranked 5th among world currencies as an international payment currency, with a 2.45% share, versus its ranking of 35th in October 2010.⁵ Offshore renminbi deposits have also jumped significantly. Renminbi deposits in Hong Kong, the largest offshore renminbi center, reached RMB864 billion in November 2015, compared with RMB576 billion in January 2012, according to the Hong Kong Monetary Authority.

Demand for renminbi-linked structured products was particularly strong among corporations that initially aimed at hedging their currency risk but ended up taking a directional bet on the renminbi in order to generate “yield.” Given the slowdown in the global economy (including China), some corporations used their credit facilities to finance investments in renminbi-linked structured products with a view toward generating returns to compensate for the weakness in organic business growth.

A. POPULAR PRODUCT: TARGET REDEMPTION FORWARD

This product is set up as a zero-cost option strategy that enables the buyer to exchange one currency for another at a predetermined exchange rate (“strike rate”) according to a regular schedule, subject to a target redemption provision (“knockout event”). The buyer effectively enters into strips of forward contracts under which he benefits from a better exchange rate if the strike rate is higher than the prevailing market spot rate on the fixing date (“fixing rate”). The product is terminated early when the total accumulated positive value reaches the maximum target or cap (“exact knockout”) or when the target number of in-the-money fixings is reached (“discrete knockout”). The buyer is obligated to settle any profits or losses accumulated before the occurrence of a

⁵See <https://www.swift.com/>.

knockout event. For a leveraged trade, the notional of the sold leg is higher than that of the bought leg. With a leverage ratio of 2, which is common in most trades, the buyer is obligated to settle twice the underlying currency when the fixing rate is higher than the strike rate, thus incurring a higher mark-to-market loss. **Exhibit 1** shows an example of a target redemption forward.

EXHIBIT 1. ILLUSTRATIVE EXAMPLE OF A TARGET REDEMPTION FORWARD

Aspect	Comments
Party A	Bank
Party B	Client
Notional	USD100,000
Fixing rate	On a fixing date, mid–spot exchange rate of USD/CNY, expressed in the number of offshore deliverable CNY per USD1
Tenor	12 months
Fixing and settlement	Monthly
Ratio	2
Strike rate	6.2000
Maximum target	0.3 (exact knockout)
Knockout event	On a fixing date, accumulated monthly positive value \geq maximum target
Monthly positive value	On a fixing date, $\text{MAX}[(\text{strike rate} - \text{fixing rate}), 0]$
Accumulated positive value	With respect to a fixing date, monthly positive value of all previous fixing dates + monthly positive value of such fixing date
Final strike	Fixing rate on the knockout fixing date + (maximum target – accumulated monthly positive value), where monthly positive value is excluded from the accumulated monthly positive value of the observation period when a knockout event has occurred

On a fixing date,

- (1) if the fixing rate is below the strike rate (e.g., fixing rate = 6.1000), the monthly positive value is USD10,000—that is, $\text{USD}100,000 \times (6.2000 - 6.1000)$; or

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- (2) if the fixing rate is equal to the strike rate (e.g., fixing rate = 6.2000), the monthly positive value is 0—that is, $\text{USD}100,000 \times (6.2000 - 6.2000)$; or
- (3) if the fixing rate is higher than the strike rate (e.g., fixing rate = 6.3000), the monthly positive value is 0 and the client loses $\text{USD}20,000$ —that is, $\text{USD}100,000 \times 2$ (the ratio) $\times (6.2000 - 6.3000)$.

Fixing Date	Fixing Rate	Monthly Positive Value	Accumulated Positive Value	Party B's Profit and Loss
1	6.1000	0.1000	0.1000	$100,000 \times 0.1 = 10,000$
2	6.2000	0.0000	0.1000	$100,000 \times 0.0 = 0$
3	6.2500	0.0000	0.1000	$100,000 \times 2 \times -0.05 = -10,000$
4	6.0000	0.2000	0.3000	$100,000 \times 0.2 = 20,000$
5–12		Expired after the knockout event		

On the fourth fixing date, the accumulated positive value is greater than or equal to the maximum target, the knockout event has occurred, and the contract is terminated. The cumulative profit or loss for the buyer is $\text{USD}20,000$.

One variation of this product is different strike rates for different fixing dates. For instance, in Exhibit 1, the strike rate is set at 6.2000 for fixing dates 1–3, 6.1600 for fixing dates 4–6, and 6.1200 for fixing dates 7–12.

Target redemption forwards are commonly embedded with a European knock-in barrier. On a fixing date, if the fixing rate is at or below the relevant European knock-in barrier, the buyer is not obligated to settle, even when the fixing rate is higher than the strike rate.

As Exhibit 1 shows, an investor can enjoy a better-than-market exchange rate. Despite limited upside (owing to the cap) and unlimited loss potential, demand for USD/CNY target redemption forwards has been triggered by expectations of the renminbi's continued appreciation. Investors began to suffer losses, however, after the unexpected trend reversal in early 2015.

B. POPULAR PRODUCT: ACCUMULATOR/DECUMULATOR

An accumulator/decumulator is a combination of barrier call options and barrier put options. An accumulator allows an investor to accumulate the underlying asset (typically an individual equity or currency) at a strike price lower than the initial spot price, subject to a knockout event that terminates the contract immediately. A decumulator is

the reverse of an accumulator—an investor sells, or “decumulates,” the underlying asset instead of buying or accumulating it. A leveraged accumulator/decumulator is usually offered at two or three times the underlying asset. An investor is obligated to accumulate or decumulate two or three times the underlying asset if the fixing price is lower than the strike price on any fixing date (accumulator) or if the fixing price is higher than the strike price on any fixing date (decumulator). A leveraged accumulator/decumulator enables investors to enjoy a more attractive strike price, but the downside risk is higher. **Exhibit 2** shows an example of an accumulator.

EXHIBIT 2. ILLUSTRATIVE EXAMPLE OF AN ACCUMULATOR

Aspect	OTC Options
Underlying asset	Stock A
Tenor	12 months
Initial spot price	USD100
Strike/accumulation price	90% of the initial spot price (i.e., USD90)
Knockout strike	105% of the initial spot price (i.e., USD105)
Observation period	Daily closing price
Daily number of shares	100
Leveraged factor	2×
Settlement	Monthly

Absent a knockout event, an investor can purchase 100 shares of stock at USD90 on an exchange business date. So long as the prevailing market price is higher than USD90, the investor makes a profit. But if the prevailing market price is lower than USD90, the investor is still obligated to purchase 200 shares of Stock A at USD90, thus suffering a loss. If a knockout event occurs, the contract is terminated and the investor bears no further obligation or liability. **Exhibit 3** shows an example of a decumulator.

Absent a knockout event, an investor can dispose of 100 shares of Stock A at USD105 on an exchange business day. So long as the prevailing market price is lower than USD105, the investor makes a profit. But if the prevailing market price is higher than USD105, the investor is obligated to dispose of 200 shares of Stock A at USD105, thus suffering a loss. If a knockout event occurs, the contract is terminated and the investor bears no further obligation or liability.

The accumulator/decumulator is popular in Hong Kong and Singapore, for both onshore and offshore investors in other Asian markets. Investors are attracted by the opportunity to purchase or sell at a better price than the initial spot price, subject to

EXHIBIT 3. ILLUSTRATIVE EXAMPLE OF A DECUMULATOR

Aspect	OTC Options
Underlying asset	Stock A
Tenor	12 months
Initial spot price	USD100
Strike/decumulation price	105% of the initial spot price (i.e., USD105)
Knockout strike	95% of the initial spot price (i.e., USD95)
Observation period	Daily closing price
Daily number of shares	100
Leveraged factor	2×
Settlement	Monthly

a knockout event. Moreover, because most investors need to pay an initial margin of only 20%–40%, the leveraged return is lucrative. Although sales volume has dropped after peaking before the 2007–08 financial crisis, the accumulator/decumulator has become a core commoditized product that continues to play an important role in the Asian structured products market.

C. POPULAR PRODUCT: AUTOCALLABLE NOTES

The autocallable note is a variant of the reverse convertible. For example, the investor sells a put option on the market (typically an equity or equity index) to the bond issuer. The investor is remunerated for the sold option with a coupon stream that is paid until the bond expires or is knocked out. On the observation dates (every six months), 3% is paid to the investor until a coupon date arrives when the market is above 20,000 and the whole structure expires—the investor receives her principal and the last coupon payment. If no such knockout event occurs by the end of the bond’s life, the market is below the strike and the bond redeems below par. So, if the Nikkei falls by 10%, the investor gets 90% of the principal back. **Exhibit 4** shows the terms of this autocallable note.

It is also possible to make the coupons dependent on the market level. The put option can be out of the money and can be leveraged up. A large number of varieties can be deemed autocallable, which refers to the automatic redemption that occurs when the market is above the knockout level on an observation date.

Autocallable notes are very popular in Japan and Europe, where longer-dated structures are more prevalent. They have been produced and distributed for over 20 years

EXHIBIT 4. EXAMPLE TERMS OF AN AUTOCALLABLE NOTE

Issue Price	100%
Notional	JPY1,000,000
Underlying asset	Nikkei 225
Initial spot price	20,000
Knockout strike	20,000
Put strike	100% of spot (i.e., 20,000)
Maturity	Three years
Coupon	6% annually (paid semiannually)
Observation dates	Semiannual, just before each coupon

and thus seem likely to be around for a while yet. A version based on interest rates, known as the power reverse dual currency (PRDC) note, became wildly popular in Japan but caused so much damage to both investors and product producers that it is no longer commonplace. A more detailed explanation of the genesis of autocallables and of the PRDC debacle, along with the risk management problems these products have presented, can be found in *Structured Products: Evolution and Analysis*, edited by Clarke Pitts (London: Risk Books, 2013).

IV. RISK AND STRUCTURED PRODUCTS

There are several sorts of risk that can be easily identified.

A. INVESTORS' RISKS

For the investor, there is *investment risk*. When the underlying assets do not perform as expected, the structured product will also disappoint. Investment risk is the largest class of risk for any party but is neither the most interesting nor the most important risk in any other sense.

The investor also bears *default risk*. If the issuer of the structured product fails before the product matures, the investor may suffer. Sometimes, the products are guaranteed by a third party to improve the credit quality for the investor.

Underperformance risk is sufficiently commonplace to merit a mention. Investors often do not appreciate that while they may be making a profit in a rising market, their participation can be curtailed by caps on the payoff or by early redemption of the structured product.

Should investors want to sell a structured product owing to a change in their market view or other circumstances, they may find doing so difficult or expensive. *Liquidity risk* often arises when financial markets are turbulent (e.g., 1998 and 2008), just when liquidity may be needed most.

B. INTERMEDIARIES' RISKS

Investors often buy structured products through intermediaries, such as brokers, financial advisers, and private banks. Although intermediaries act as agents, they are also susceptible to significant risk.

Intermediaries can have *reputational risk* and even investment risk. When investors suffer losses from structured products, especially unforeseen losses, they sometimes accuse the selling party of misleading them or failing to properly explain the products. In some jurisdictions, courts have upheld such claims and have required intermediaries to pay compensation. These so-called mis-selling scandals have been rife in the United Kingdom and Hong Kong but have also occurred in many other countries.

Even if the investor's litigation fails, the intermediary will probably have to endure negative publicity and significant loss of goodwill with existing clients. Therefore, many organizations have stopped offering structured products completely. Others charge high markups to mitigate the risk or to pay for very expensive indemnity insurance.

C. PRODUCT MANUFACTURERS' RISKS

Although the banks that create these products also suffer from reputational risk and are sometimes sued by investors, their main problems stem from *market risk* and *model risk*.

Each structured product includes derivatives, which generate the payoff for holding the product. Banks hedge these derivatives. Their ability to do so relies on the markets' behaving in ways that are consistent with the assumptions made in the model and on the suitability and resilience of the model itself.

Early generations of structured products incorporated derivatives for which there were established markets and models. For the most part, managing these products was straightforward. By the mid-1990s, early redemption, multiple assets, capped payoffs,

forward-starting derivatives, and currency protection had all been introduced. These new payoffs were beyond the scope of conventional models, and so new, more sophisticated tools were introduced. The industry has not been uniformly successful in finding its way to safety, and a number of spectacular losses have been caused by model failure.

Another serious problem—sometimes called the “crowded trade” problem—arises when the hedging activity around these derivatives starts to significantly influence the asset price. Some structured products are so popular that the positions in them constitute many days’ volume of the underlying asset. Thus, when banks start hedging, the asset price is materially affected by the size of the orders. The magnitude of this effect can cause markets to become extremely volatile—or occasionally becalmed. This phenomenon is usually very detrimental to banks.

Popular products often cause problems when they lead to two distinct assets becoming highly correlated. In such cases, the movement of one asset requires banks to adjust their position in the other. For example, JPY-denominated long-dated swaps tracked the USD/JPY exchange rate for a long time, owing to the huge popularity of PRDC bonds in Japan.

The risks associated with structured products constitute a large and complex topic. Those interested in learning more should read Chapter 10 in *Structured Products: Evolution and Analysis*. A few other books on this topic are also very useful.⁶

V. CONCLUSION

The structured products industry is large and complicated enough that it should be examined by anyone involved or interested in finance and capital markets. The sums involved are comparable to those invested in hedge funds, yet these businesses are largely ignored by the press, the public, and even practitioners.

⁶Nassim Taleb, *Dynamic Hedging: Managing Vanilla and Exotic Options* (New York: John Wiley & Sons, 1997); Emanuel Derman, *Models.Behaving.Badly: Why Confusing Illusion with Reality Can Lead to Disaster, on Wall Street and in Life* (New York: Free Press, 2011).

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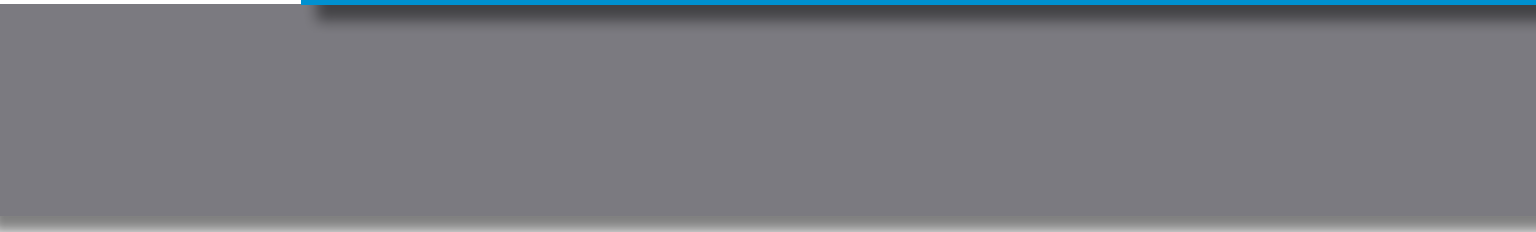
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