PRODUCT INNOVATIONS IN THE FIELD OF DERIVATIVES

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1. Executive Summary

This report was designed to analyse relevant factors and point out future prospects for product innovations in the field of derivatives.

The following main findings have been derived:

- **Customer demand** shifts from standard to more exotic underlyings driving the need for new derivative products.

- **Trading technology enhancements** are a vital lever for operations efficiency allowing the creation of more complex derivative products.

- **Profitability** of the derivatives markets remains high for participants adapting to changing regulatory and competitive environments as well as clients’ demand.

- **Rising volatility and frequency** of financial markets constitute an excellent environment for the trade of derivatives.

- **Declining product life cycles** are leading to contracting innovation cycles resulting in the necessity for rising innovation velocity.

- **Regulation** demands high initial investment albeit constitutes an opportunity for participants embracing new regulatory requirements quickly.

- **Advancing competition** in any derivatives market lead to an increasing need for differentiation of participants.

In the light of these results it can be concluded that product innovations in the field of derivatives will continue to rise in the foreseeable future. However, market participants will have to embrace novel regulatory requirements as well as adapt to major trends in client’s demand and trading technology in order to succeed.
2. General Conditions

2.1 Definition of Derivatives
A financial instrument whose value is dependent upon or derived from values of at least one underlying variable (Hull 2011). Through a contract between two or more parties the derivative takes effect. The underlying variable is largely left unaffected by the derivatives contract.

The vast majority of such products derive their value from fluctuations in underlying assets’ rates and are characterized by high leverage. Stocks, commodities, bonds, interest rates, currencies and market indices comprise the most common underlyings. The fundamental categories of derivatives are Futures, Forwards, Options and Swaps. Other derivative products are variations or combinations of the pre-mentioned. Derivatives are broadly used to manage risk, whilst often serving investment or arbitrage purposes (Bloss et al. 2012).

2.2 Definition of Innovation
The process of translating an idea or invention into a good or service that creates value or for which customers will pay. To be called an innovation, an idea must be replicable at an economical cost and must satisfy a specific need. Innovation involves deliberate application of information, imagination and initiative in deriving greater or different values from resources, and includes all processes by which new ideas are generated and converted into useful products. In business, innovation often results when ideas are applied by the company in order to further satisfy the needs and expectations of the customers1.

Broken down to the derivatives market an innovation is any new financial product, which fits the definition of derivatives and is successfully introduced into the market. This

1 http://www.businessdictionary.com/definition/innovation.html
includes new products within existing asset classes as well as the creation of new asset classes and products therein.

2.3 Literature Review

The 2011 “Options, Futures and other Derivatives” by Hull as well as the 2009 “Financial Engineering” by Bloss et al. constitute the literary foundation for this report. They serve to create the framework by defining essential terms such as derivative products and provide general prerequisites and developments of financial instruments in the field of derivatives. Publications of Deutsche Börse (“The Global Derivatives Market – an Introduction”, 2008), Bank for International Settlement (BIS, “Triennial Central Bank Survey”, 2013), Futures Industry Association (FIA, “Annual Volume Survey”, various years) and Pricewaterhouse Coopers (PwC, “Anticipating problems, finding solutions”, 2014) allow more detailed insights into recent developments on the exchange traded together with the over the counter markets. BIS and FIA provide relevant data for the overarching examination of market size, participants and emerging product trends by offering historic and recent data sets.

3. Current Market Situation

3.1 Products

3.1.1 Plain Vanilla

The standard form of financial instruments such as futures, forwards, swaps and options is commonly referred to as plain vanilla derivatives (Hull 2011). This form constitutes the basic form of derivatives without any complex specifications relating to underlying, type of calculation or payoff.

3.1.2 Exotic

Exotic derivatives complete the whole derivatives universe. In this connection, the term exotic derivatives is not specifically defined (Taleb 1996). Generally, it refers to products which can be characterized by not commonly used underlyings, a complex payoff determination or low trade volume. Current exotic derivatives may include weather derivatives, freight derivatives or inflation derivatives. Exotic derivatives are often tailor-made for individual customers with special requirements. Therefore, most exotic derivatives are traded in the OTC market (Hull 2012). However, exotic derivatives can
also become plain vanilla derivatives in case of an increase in the general market demand or if the used underlying becomes more common. In this situation, issuers will standardize the product specifications to meet the majority of customer needs. In 1978, when put options were initially introduced at the Chicago Board Options Exchange (CBOE), they were recognized as exotic options, whereas those products now constitute standard financial products (Taleb 1996).

3.1.3 Exchange Traded vs. OTC

Derivative products can either be traded on exchanges or via the OTC market. For derivatives to be listed on an exchange they have to be standardized to the specified terms of the respective exchange. Those conditions can include requirements in terms of quality and quantity of the delivery or settlement terms. This high degree of standardisation is required to keep trading transparent for all market participants. In contrast, trading via the OTC market is not limited to such guidelines. Within the OTC market, a trade takes place directly between two counterparties which can agree on individual specified terms. Hereby, trading is not subject to any supervision of an exchange (Chui, 2012). With approximately $696 trillion notional amount outstanding in the OTC derivatives market by June 2013 (figure X1), the OTC sector constitutes the main market place for trading derivatives. In comparison, the market for exchange traded derivatives (ETD) amounted to $66 trillion (BIS 2013).
3.2 Market Players

3.2.1 Investment Banks

Investment Banks (IB) hold a banking license and must adhere to national and international banking regulations. Acting as financial intermediaries between issuers of derivative products and the investing public, IB provide a foundation for the OTC market.

Figure X2 shows the prime IB, emphasizing Northern America and Europe as still being the most important markets for trading financial derivatives. One of the main strengths of IB in the context of derivatives is the issuance of new derivative products through financial engineering. Having a deep insight into the preferences and needs of clients they are able to issue tailor-made products for hedging, yield enhancement, funding, arbitrage or tax purposes.

3.2.2 Non-Bank Financial Institutions

Non-bank financial institutions (NBFI) are financial institutions without holding a banking license and therefore are not subject to the supervision of national or international banking regulations. The lacking regulation provides the NBFI with higher freedom of movement when issuing contracts. The strength of NBFI lies within the tailoring of Investment Banks’ derivative products towards the particular needs of the clients. Additionally, most NBFI concentrate on a definite sector within the derivatives market, gaining an informational advantage. They have become an important part of the financial system as they facilitate a variety of bank-related services and are therefore the 2-tier intermediaries in the OTC market. According to the 2013 “BIS Triennial Central Bank
Survey” NBFI accounted for more than half of all foreign exchange and interest rates trading. NBFIs include insurance, investment and brokerage companies as well as hedge funds.

3.2.3 Exchanges

Exchanges in terms of derivative products are market places where market players trade standardized contracts. The respective derivative exchange determines the policy for the contracts and trade in order to minimize the credit risk. The trades are carried out via the traditional open outcry system or the increasingly common computerized system also known as high speed trading. Even though exchange traded derivatives contracts (ETD)

account for only ten percent of the whole market, they meet the distinctive preferences of investors. Advantages of exchanges are the facilitation of liquidity, mitigation of the credit risk as well as market and price transparency.

Among the most important exchanges are CME Group, NYSE Euronext, EUREX, CBOE as well as BM&F Bovespa (figure X3). Since the early 2000s some serious international consolidations proceeded within the derivatives exchanges’ universe (Hull 2011). Most probably to exploit economies of scale in order to minimize trading costs and stay competitive within the presently contracting market of ETD. North America accounted for approximately 37% of the worldwide ETD by the end of 2013 (FIA 2014).
4. Driving Forces for Product Innovations

4.1 Customer Requirements

The growing and specialized demand of customers for derivatives can be identified as one driver for product innovations. As customers depend on derivative instruments to hedge their individual portfolio risks, the derivative market constantly has to come up with product innovations to meet the developing customer requirements. This can either result in the creation of a derivative on a new underlying or with different payoff features (Madhumathi & Ranganatham 2012). Nowadays customer needs exceed the basic demand to hedge a company's exposure to interest or exchange risks. With innovative derivatives, corporations are able to protect themselves against various kind of risks. Those different risk types can include credit risks, fluctuations in energy and commodity prices or weather related risks. Figure X4 illustrates annual growth rates\(^2\) in terms of traded contracts worldwide\(^3\). Particularly noteworthy is that growth in exotic underlyings (red coloured\(^4\)) such as commodities, energy, inflation or weather exceeded significantly growth in standard underlyings like currencies, interest rates and equity. The increasing demand for exotic underlyings is also clearly visible at its share of total outstanding futures and options volume. While exotic underlyings\(^5\) accounted for 13% of outstanding contracts in 2010, its share rose to 19% in 2013. Generally, product innovations are first

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\(^2\) Growth rates are calculated on the basis of the annual futures and options survey performed by the FIA

\(^3\) The figures refer to traded contracts at 84 exchanges worldwide. We assume that this is close to the entirety of all traded future and option contracts

\(^4\) "Other" includes contracts based on commodity indices, credit, fertilizer, housing, inflation, lumber, plastic and weather

\(^5\) In this context, agriculture, energy, non-precious metals, precious-metals, commodity indices, credit, fertilizer, housing, inflation, lumber, plastics and weather are referred to as exotic underlyings
introduced on the OTC market as it offers better conditions due to the more liberal regulatory environment and lower initial investments (Mai 2008). Furthermore, contracts are not required to be standardized, thus offering financial engineers greater flexibility to meet individual customer needs.

4.2 Technological Development

Technological innovations constitute a main driver for product innovations and efficiency enhancements when trading derivative products (Madhumathi & Ranganatham 2012). Innovations in trading technology enable customers to execute trades faster and easier. In spite of significant increases in trade volumes and quotes during the past decades, trades are now executed within fractions of seconds. Figure X5 illustrates the development in trading technology between 1998 and 2008 at the Eurex exchange. Within the period under review, trading volume grew by 930% and the number of quotes grew annually by 83%. At the same time the processing time of a transaction could be reduced by 95%.

Those efficiency improvements have been achieved by a constant automation of trading. Figure X6 gives an overview when major exchanges have introduced electronic trading systems to increase trading efficiency. However, mostly small start-ups pave the way for successful innovations as those firms are not as reluctant as larger exchanges to test and market new ideas. This is also because experienced market participants with an already established client base can fall deeper in case of a fail. Due to the favourable regulatory environment, the implementation of new derivative products on the OTC market require
less time and capital compared to the regulated exchange market (Tashjian & Weissman 1995). Therefore the derivatives market constitute a highly competitive market which require the ability to innovate constantly to gain customers and increases the efficiency of the derivative exchange. A sophisticated technology for derivatives trading is also key to bring innovative derivatives to the market (FIA 2014). For new complex derivative products huge initial investments in technology are required to represent the pricing of the product correctly and to facilitate daily trading. Therefore, technological innovations can also be seen as a driver for product innovations.

4.3 Profit Opportunities

The derivatives market offers large profit opportunities to all market players. Exchanges generate revenues by charging transaction fees for trading and clearing derivatives and financial institutions profit from trading respective contracts especially on the OTC market (Deutsche Börse AG 2013). The profitability of exchanges is dependent on the trading volume and the ability to launch new innovative derivative contracts to attract new customers and thus achieve a competitive advantage (Madhumathi & Ranganatham 2012). However, the introduction of derivative contracts has to be considered thoroughly as new contracts with similar underlying and payoff characteristics can gain trading volume at the expense of existing contracts (Pennings & Leuthold 2001). Innovative derivative contracts, to be successful in terms of trading volume, should put special emphasis on hedging effectiveness (Tashjian & McConnell 1989). The innovativeness of market participants is dependent on a profitable environment within the derivatives market. The era of financial deregulation in the 35-years until the breakout of the financial

Figure X6 shows when fully electronic trading at major derivatives exchanges has been introduced since 1985 until 2008 (Deutsche Börse 2008)
crisis in 2008 constituted an excellent time for developing and distributing financial derivatives (Turbeville 2013). This era came to an end after the financial crisis when American and European regulating authorities decided to put further emphasis on monitoring the OTC market (more to regulation in section 5.1). Tailor-made derivatives for individual customers which used to offer high profit margins prior to regulations are likely to be replaced by standardized contracts with usually smaller margins (Elliott, Salloy & Santos 2012). However, dealers on the other side can profit in some degree from the regulations as they can generate revenues with clearing and collateral management and, moreover, split revenues with Central Counterparties (CCPs) (Elliott, Salloy & Santos 2012). Nevertheless, it is likely that overall the increasing regulatory requirements will have a negative impact on the profitability of the derivatives industry (PWC 2014).

4.4 Increasing Volatility and Frequency

Any sectors of global financial markets are subject to an increasing volatility and frequency (figure X7). One approach to explain these ever higher amplitudes, appearing in ever shorter intervals, is Schnabel’s theory on “Wandering Bubbles”. The basis for the model is the assumption, that on globalized financial and goods markets, speculative capital is attracted by any new possible markets, offering profitable investment opportunities.

Figure X7 shows empirical evidence for the first bubble, developing in Japan (black curve) in mid-1980. To avoid negative appreciation effects from the Plaza-Treaty the Japanese central bank significantly lowered interest rates in 1986 and 1987. This

![Abb. 2: Wandernde Blasen](image)

Figure X7: Illustration of the theory of wandering bubbles (Schnabl, Nov. 2013)
expansion of liquidity substantially enhanced speculations on Japanese stock and real estate markets. The 1989’s burst of the bubble resulted from increased interest rates by the central bank, which tried to dampen the hype in investment markets. As a measure to recover the economy, the Bank of Japan intensely decreased the interest rates at a certain point to fuel national investment activity. This however led to extensive Carry Trade of Japanese financial institutions and international hedge funds, mainly in East-Asia. The massive capital inflows in countries like Indonesia, Malaysia (figure X7, representative illustration at the example of Malaysia: blue curve) and the Philippines disembogued in new exaggerations and finally into the Asian Crisis in 1997 and 1998.

As investors seek for safe investment opportunities in times of crises in emerging markets, they return to markets of the developed countries. As a result, rising share prices of US and European IT companies increased drastically due to the visions of the New Economy (Figure X7, representative illustration by the steep increase of the NASDAQ: red line). This development reversed by 2000 with dropping share prices. The US Federal Reserve lowered the Federal Funds Rate to 1% in order to protect the financial and real economy, allowing the financial institutions to compensate their losses by investments in new financial operations such as the US real estate market. This led to a doubling of US house prices between 2000 and 2005 (figure X7, green curve), creating a bubble in the US real estate market.

By 2007 the US real estate market collapsed, leaving increasing numbers of debtors insolvent. Thus major US investment banks reported losses into the billions. In 2008 these developments culminated into the insolvency of US investment bank Lehman Brothers and the subsequent collapse of other US investment banks and mortgage institutions such as Merrill Lynch, Fannie Mae and Freddie Mac. Figure X8 undermines the continuous use of interest rate cuts by the central banks worldwide, in order to bring capital market crises under control. By exemplary comparing the burst of the so called Dotcom Bubble in 2000 (figure X7, red curve), the subsequent lowering of interest rates to a historical low in 2004 (figure X8) and the emerging of the US real estate bubble (figure X7, green curve) implies a shift of bubbles from one market to another.
Schnabel’s hypothesis is, that every countermeasure of central banks\(^6\) leads to a wandering of the bubble towards a new market (Bloss et al. 2009). Accordingly the increasing liquidity, generated by interest rate cuts in 2009 (figure X8), to counteract the consequences of the collapsed US real estate market determined the conditions for the emerging of a new bubble. The ever higher amount of cheap liquidity leads to an ever higher volatility of the markets. Additionally the advancing globalization seems to improve the frequency of boom and bust of global markets.

This was supported by the steep growth of the global government bonds market (figure X7, representative illustration at the example of the US government bonds market: blue dotted curve), followed by its downturn since 2010 (Schnabl 2013).

4.5 Acceleration of Society

The development of modern society is accompanied by an increasing acceleration of all parts of work and life. Main drivers are the advancing globalisation, an increasing individualization of society and the progressing technical interconnection of the world. This leads to an ever higher degree of innovation cycle times and therefore decreasing product cycle times.

As of globally-intertwined commercial relations, local products and services are increasingly offered to global clients. Through new means of transport and communication this trend fuels growth of the global economy. The resulting fundamental

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\(^6\) “such as interest rate cuts towards zero, unconventional means of monetary policies and continuation of monetary bailouts” (Schnabl, Nov. 2013)
change in the variety and quantity of available products and services is perceptible for several years now. This globalization trend will continue to expand in the future. Gross domestic product (GDP) as an indicator for economic performance by measuring the income of an economy represents one opportunity to determine the growth of global economic power. Combining this by a comparison to an economy’s exports enables the measurement of the competitiveness of a country’s industry. As indicated in figure X9, worldwide exports will surpass worldwide GDP by 2030. A noticeable increase of wealth will be realised especially by emerging and developing economies. The advanced economies will remain very competitive. Hence the available product variety will further increase. Furthermore foreign direct investment (FDI) persistently grows, supporting the ongoing global interlacing (Berger 2014).

In the course of growing wealth, individualization of society is developing towards a global trend. Instead of following a life in heritage of family’s tradition, people tend to create their very individual meaning of life. This development implies one of the most influential drivers for a shift in customer behaviour (Naisbitt & Aburdene 1990). Demand for common mass-production products is declining. Thus clients tend to request an increasing number of tailor made products, in order to fulfil their specific needs and objectives. This trend continuously adapts to almost any sector of goods and even services (Horx 2013).
Resulting from a steady wider variety of supply and more individualized customer needs, competition in any market is rising. In order to remain competitive, companies need to differentiate themselves through their products or services on the market. Thus product life cycles (PLC) have been declining over the past decades. The average PLC halved within the last 30 years (figure X10). This development is enhanced by the diminishing time from breakthrough technology to mass-market application. While the telephone needed some 76 years to reach half the population of the US, the Smartphone took only ten years to attain this number. In addition the prices of new technologies are falling rapidly as innovations’ velocity is soaring whereas product development cycles and – costs are contracting (PwC 2014). This progression was fostered mainly by the acceleration of technological innovations such as 3D-printing and the rising global inter-linkage through the IT revolution.

Figure X10: Decreasing product life cycles between 1980 and 2006 on the example of the automotive industry (Volpato, Stocchetti, Jun. 2008)
5. Challenges

5.1 Regulatory Changes

As financial derivatives had a significant impact on credit events in the past two decades, regulatory pressure has risen significantly especially after the financial crisis in 2008 (Chui 2012). A recent and one of the biggest credit events was the $150 billion bailout package from the US government to prevent a default of AIG in 2008. Due to its excellent rating, AIG was excluded from providing collateral for the majority of its derivatives transactions. AIG was strongly engaged in selling credit protection via Credit Default Swaps (CDS) on the OTC market. At the height of the crisis, AIG's CDS portfolios lost heavily in value. As a consequence, AIG was requested to post $40 billion collateral, nearly leading to its collapse (Chui 2012). This event also partly changed the public perception that financial innovations have only positive impacts on the financial system. Policy makers nowadays claim that financial innovations, especially in the derivatives market, should be closely monitored to avoid such crisis in the future (Norden, Buston & Wagner 2014). This is why the global OTC market is currently going through a period of financial regulation (FIA 2014).

In this context, many authorities have set various standards to regulate the derivatives market since the breakout of the financial crisis. Currently, the main challenges for the derivatives market represent the European Market Infrastructure Regulation (EMIR) and its American counterpart the Dodd-Frank Act. Both regulations are aiming to reduce risks involved in OTC trading by setting duties for certain parties of derivative transactions.

Figure X1 depicts some key compliance dates for common areas under both Dodd-Frank and EMIR and reflects the staggered and overlapping nature of compliance obligations under the two regimes (PWC 2013)
(DB Research 2013). The aim is to improve the functioning of the market by increasing market transparency and improving counterparty risk management (Banque de France 2010). The regulations of EMIR and Dodd-Frank have a significant impact on all parts of a derivative transaction such as execution, confirmation, clearing and reporting while there are some differences in regards to timing and scope (PWC 2014). Figure X1 illustrates the key requirements of EMIR and Dodd-Frank and the respective due dates for OTC trading. In this regard, it is worth noting that the derivatives market is truly global as the majority of market participants have to conform to both sets of regulations due to their international activities (FIA 2014). For instance, American financial institutions operating in Europe or trading with European counterparties have to stick to both set of rules and vice versa (FIA 2014). It is argued which impact regulation has on innovation within the derivatives market. However, it is out of question that the OTC derivatives regulation offers possibilities for industry participants who successfully manage to adapt to the new rules. With innovative ideas and disruptive technologies market participants can gain market shares at the expense of competitors who are struggling with the new regulations (Kane, Kupiec & Kyle 2014). In this context, the need for innovation can have two different reasons. First, market participants are trying to increase their profitability by creating new innovative products or achieve efficiency enhancements. Secondly, innovation is driven by regulatory changes, meaning that market participants are required to innovate to meet the rules set by regulatory authorities. Therefore, the challenge for corporations is to innovate in a way which is conform to regulations but also provides benefits for the company itself and its customers.

5.2 Competition

Global competition exists in both segments of derivative markets. The former among derivative exchanges themselves, the latter between derivative exchanges and OTC markets. All market participants find themselves in a fierce competition as new market participants enter the derivatives market on a regular basis and clients can select derivative products from a large range of suppliers. The market with a total notional amount of approximately $780 trillion remains attractive for any kind of financial institutions and exchanges, however the colossal growth rates between 2004 and 2007 have slowed down dramatically in the course of the global financial crisis (figure X1). Suffering a decades’ largest decline in volume in 2012, global exchange trading activity is slightly rebounding by approximately 2% since then (FIA 2014).
Starting in the 1970’s major foundations of derivatives exchanges began to take place in the US. Main drivers have been academic breakthroughs in options valuation and the increasing utilization of information technology. A decade later exchanges started to evolve in almost every Western European financial market. In the early 2000’s some new derivative exchanges started to compete with existing ones. These focussed on specific markets as for instance the ICE, founded in 2000, successfully entering the commodity derivatives market. This could be seen as a first indication for increasing competition as of the uprising need for new entrants to create a competitive advantage. The example of ICE shows a differentiation towards a market wide focus strategy\(^7\) in order to gain an informational advantage that creates value. Other examples for such focus strategies are ISE who together with CBOE became market leader in US equity options trading in 2003 (Dt. Börse 2008). A further hike of competition within the European exchange traded markets could be expected after the settlement of the Markets in Financial Instruments Directive (Mifid)\(^8\).

As of stagnating growth in terms of market volume in exchange traded derivatives, participants increasingly seek to diversify. This is emphasized by mid-2013 reports about worlds’ biggest investment banks trying to hinder Deutsche Börse and CME from entering credit derivatives business between 2006 and 2009\(^9\).

For years Investment Banks (IB) occupied the predominant position within the OTC sector. Nevertheless examples such as the attempt of derivatives exchanges, trying to enter the market illustrates a growing attractivity of these markets in the past decade. Even though entry barriers exist and increase with growing regulation, especially NBFI are entering the market. NBFI enjoy high entry figures making up more than half of the foreign exchange and interest rates trading for instance (BIS 2013). Figure X12 illustrates this shift at the example of market turnover contributions by counterparty type.

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\(^8\) Financial Times “Europe in securities markets shake-up”, Jan. 2014

<http://www.ft.com/intl/cms/s/0/b6e0a846-7d3f-11e3-81dd-00144feabdc0.html>

\(^9\) BBC: “EU says banks blocked competition in derivatives market”, Jul. 2013,

According to the Global Financial Stability Report 2014 growth of NBFI has seen a significant increase since 2000. It points out that especially in advanced economies the growth will continue due to stricter regulations on banks as well as an environment with low interest rates and yield spreads (IMF 2014). Additionally as NBFI are largely focussing on a specific market segment, they are able to get a deeper insight into client’s requirements compared to the IB. Thus they are able to exploit this informational advantage and offer tailored products, based on standard products of IB. As banks might reverse the issuance of tailored products due to decreasing profit opportunities in the run of more comprehensive regulation this could pose a further opportunity for rising numbers of NBFI.

Another observable development is the rising importance of the Asian market. In response to large economic growth in countries like China and India throughout the past decade, the Asian derivatives market increased tremendously. At the example of the global traded futures and options volume (figure X13) the growth of the Asian market seems to stagnate for the current time. Nevertheless, economists predict an annual growth of 7.9% in real GDP for the BRIC-countries (Roland Berger 2014).
In this context a number of Asian, especially Chinese and Indian derivatives exchanges have been founded from the early 1990 on. With a volume of approximately 2.1 billion traded contracts in 2013 the National Stock Exchange of India is at the top of all Asian...
derivatives exchanges, ranking position four in 2013 “FIA Annual Volume Survey”.

Especially Chinese exchanges have managed to increase their market share steadily. With annual growth rates of 43% in 2012 and 39% in 2013 the Dalian Commodity Exchange shows the prevailing development of Asian derivatives exchanges 10.

6. Conclusion

Innovation in derivative products flourished in the era of financial deregulation which started in the seventies and came to an abrupt end in 2008. The current period of financial regulation characterized by the two main regulatory frameworks Dodd-Frank and EMIR is significantly changing the OTC market. It remains to be seen which concrete impact regulation will have on product innovations. However, it is acknowledged that industry players will have to pay big investment bills to design and implement processes and procedures for an adequate reporting environment to conform with all regulatory requirements. Apart of the regulation, several factors indicate further growth in derivative innovations. The trend away from standard mass products to more individualized products is also affecting the derivatives market. In the future, financial engineers are even more required to create financial solutions to meet the increasingly complex customer needs. The progress in technologies will also continue and thereby support structuring and trading new types of derivatives.

It is out of question that the public perception of financial innovations has changed due to the financial crisis. While prior to 2008, innovation usually carried a positive

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association, nowadays product innovation in derivatives is often connected with credit events during the financial crisis partly caused by innovative derivatives, especially CDS.

While the profitable appearance of derivatives markets contious to attract numerous new participants the whole market has to face single figured growth or even stagnation in consequence of the global financial crisis. Hence exchanges and institutions face ever fiercer rivalry and increasingly need to differentiate or diversify themselves by any available means. Participants evermore diversify into the OTC market as examples such as Deutsche Börse and CME prove. They try to link their available knowledge and assets with the larger potential of a less regulated market, providing more promising growth rates. NBFI particularly benefit from a growing trend to adapt to increasing client’s needs for specialized products with tailored solutions. Their empowerment is facilitated by stricter regulations on banks as well as persistently low interest rates. The continuation of states’ low interest policies, following Keynesian monetary policies will fuel this development in the foreseeable future. However by the application of further regulatory measures it remains to be seen if the NBFI are able to maintain their margins despite increasing investment such as central clearing.
List of Exhibits

Figure X1:  "OTC vs. ETD Notional Amount Outstanding by Type in $bn"
Federal Reserve Bank of Chicago 2014, 'Over-the-Counter Derivatives';
*Understanding Derivatives: Markets and Infrastructure*, p. 34
<http://chicagofed.org/digital_assets/publications/understanding_derivatives/understanding_derivatives_chapter_3_over_the_counter_derivatives.pdf>

Figure X2:  “Top 5 Banks in Derivatives”
Own calculations upon official data from bank’s websites; Nov 2014

Figure X3:  "Global Derivatives Exchanges"
Deutsche Börse 2008, 'The Global Derivatives Market – An Introduction'; p. 20,

Figure X4:  "Annual Growth Rates Options & Futures", Own calculations based on the Annual Volume Survey executed by the Futures Industry Association (FIA), <http://www.futuresindustry.org/volume-.asp>

Figure X5:  "Trading Technology Evolution - Eurex Example"
Deutsche Börse 2008, 'The Global Derivatives Market – An Introduction'; p. 20,

Figure X6:  "Introduction of fully electronic trading at major derivatives exchanges"
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Figure X7:  "Wandernde Blasen"
<http://wirtschaftlichefreiheit.de/wordpress/?p=13733>
Figure X8: "Globaler Zinstrend"
Schnabl, G. 2013, 'Geldpolitische Rettungsaktionen treiben wandernde Blasen – wandernde Blasen treiben geldpolitische Rettungsaktionen', Wirtschaftliche Freiheit, p. 2; <http://wirtschaftlichefreiheit.de/wordpress/?p=13733>

Figure X9: "Economic Performance Forecast 2030"

Figure X10: "PLC Development Automotive"

Figure X11: "Key Compliance Dates for EMIR & Dodd-Frank"

Figure X12: "Market Turnover by Counterparty"

Figure X13: "Global Futures and Options Volume by Region"
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