

Are the Structured Products a Sustainable Financial Innovation?

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Abstract

Structured products are one of the most complex outcomes of the financial innovation process. Our analysis comes from the recent debate on the social welfare implications of financial innovation and how much the financial innovation process could be let free or should be more regulated. Our research questions are the following: who profit from the financial innovation, represented by the structured products? Is the issuers behavior, proposing new products, influenced by the market trends? Answering this questions, we analysed two different datasets.

Considering the structured products complexity, we prefer to keep simple our research methodology, looking for the first answer, we analyze at the payoff frequency of 11,448 structured products issued in Italy, Germany, France, Switzerland, Belgium, United Kingdom and Spain and expired from January 1st 2008 to December 31, 2012. According to our sample, 62,1% of the structured product expired is “above par”, 13.6% is repaid “at par” (without considering transaction costs) and 24.3% of the sample is “under par”, but the comparative analysis of the samples can reach various conclusions, depending on the country. For example, focusing on Italy, the gross performance data of the products are much more negative than in all the others: only 27.1% of the Italian sample is “above par”, 17.1% is repaid “at par” and 55.7% of the sample is “under par”. The difficulty of obtaining complete data for all the analyzed products and the differences among the samples of countries induce to hypothesize some selection bias in our dataset. In other words, it seems that the information is more available, if the performances are positive.

Answering the second question, we focus our analysis on 1,399,005 structured products, launched in the same markets from January 1st, 2008 and December 31, 2012. Watching at the issuers time-to-market, our research shows a very interesting negative relationship between the volume issued and the number of listed products. This trend could be the signal of a stimulating demand process by the issuers, trying to attract the investors. Additionally we note the tendency to increase the number of instruments issued during positive market trends, when investors are more likely to accept the offers for investment in new products.

Combining this findings, the “product intervention” approach, adopted by the Regulators during the product design phase could be useful to discourage pushing behavior.

EFM classification: 440, 450, 350, 360

JEL classifications: G10, G18, G21

Keywords: products performance, behavior of issuers, stimulating demand process, certificates, zero-sum games

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Introduction

Structured products are one of the most complex outcomes of the financial innovation process. Our research comes from the recent debate on the social welfare implications of financial innovation (Arcand J.-l., Berkes E.- Panizza U, 2012; Palmer A., 2012; Law, S.H., Singh, N., 2014) and how much the financial innovation process could be let free or should be more regulated (Lerner J. and Tufano P., 2011).

As options and futures, structured products are zero-sum games between investors and issuers/arrangers, the investor's loss is the issuer's gain (Chang et al., 2012). In our research, we focus on structured product because, due to their characteristics, they offer a fascinating plan of survey of financial innovation. In fact, the ability to combine bonds and one or more options has allowed issuers to draw increasingly complex payoff structures. Through the market of structured products, investors are now able to take a position on international markets, commodity markets, exchange rates, on the directionality of single shares or indices. The exposure can be linear, benefit from leverage or limited. Finally, it can be envisaged guarantee the capital invested complete or partial. Currently, this innovative process offers us an ideal investigation plan, where test our research hypotheses:

- first of all, we try to understand who profit from this kind of innovation, represented by the structured products (“cui prodest?”). As the last financial literature confirm (Hens T. e Rieger M.O., 2009; Wallmeir M., 2011; Henderson B. J. and Pearson N.D, 2011; Célérier C. - Vallée B., 2013), the structured products are complex, that's why we'd like to keep simple the research methodology, looking at their payoff frequency. We know that could be a limit, but our aim is to give some results, easy to understand, for the final investors. We analysed a basket of 11,448 structured products, issued in Italy, Germany, France, Switzerland, Belgium, United Kingdom and Spain and expired from January 1st 2008 to December 31, 2012. By the end of 2012, Italy, Germany, France, Switzerland, Belgium, United Kingdom and Spain dominate the market with 85% of total volumes in Europe. Our first research question has broad implication in terms of financial regulations;

- then, we sought to investigate the behavior of issuers in proposing new products and we examine how much the financial innovation process is influenced by the market trends. Adopting this point of view, we analyze 1,399,005 structured products, issued in Italy, Germany, France, Switzerland, Belgium, United Kingdom and Spain from January 1st, 2008 to December 31, 2012. This second research question has an important implication in term of financial fragility (Gennaioli N., Shleifer A. and Vishny R.W, 2012).

Due to the limited period of time analysed, but very interesting in terms of volatility, our analysis can only be considered indicative.

The first section is focused on the financial innovation literature, the latest tendency and the most recent debate on its nature. The second one shows the research methodology and data, the third one the results. Then, looking at the structured product performances and the market timing in their issuance, we try to give some conclusions.

1. Do we really need this kind of financial innovation? A literature review

The starting point of our research questions is coming from the recent debate on the social welfare implications of financial innovation and how much the financial innovation process could be let free or should be more regulated. We are far from the time when “looking at financial innovations - from the perspective of physiology rather than pathology - one sees them as the force driving the global financial system towards its goal of greater economic efficiency (Merton R. C., 1995). The view that every type financial innovation is useful to “complete the market” and the Arrow-Debreu efficiency assumptions were profoundly shocked by the financial crisis. Learning from the crisis, now we “recognize that not all financial innovation is valuable, not all trading plays a useful role, and that a bigger financial system is not necessarily a better one. And, indeed, there are good reasons for believing that the financial industry, more than any other sector of the economy, has an ability to generate unnecessary demand for its own services... In the past, in the years running up to the crisis... we assumed financial innovation was always beneficial, that more trading and more liquidity creation was always valuable, that ever more complex product were by definition beneficial because they completed more markets, allowing a more precise matching of instruments to investors demand for liquidity, risk and return combination... We have had to change that mindset and we have now done so. But it does mean that the top management of banks, and in particular of any banks which are involved both in complex trading activities and in retail banking activities need to operate within limits. They need to be willing, like the regulator, to recognize that there are some profitable activities so unlikely to have a social benefit, direct or indirect, that they should voluntarily walk away from them. They need to ask searching questions about whether the complex structured products they sold to corporate and institutional customers, truly did deliver real hedging value or simply encouraged those institutions into speculative and risky exposures which they did not understand: and, if the latter, they should not sell them even if they are profitable “ (Turner A., 2009).

Litan (2010) in his paper makes a financial innovation critique review: “Individually and collectively, these innovations have improved access to credit, made life more convenient, and in some cases probably allowed the economy to grow faster. But some innovations ... contributed to the financial crisis and/or amplified the downturn in the economy when it started.”¹

Also Lerner and Tufano (2011) review the literature on financial innovation and make a comparison between financial innovation and other forms of innovation. They underline three issues that make the financial innovation very specific: “1) The financial system is highly interconnected. As a result, a financial innovation is likely to generate a complex web of externalities, both positive and negative. Therefore, assessing the social consequences of financial innovation can be very challenging. 2) Financial innovations are highly dynamic. As an innovation diffuses from pioneering adopters to more general users, these products frequently change in their underlying structure, the way that they are marketed, and how they are used. These transformations mean that the consequences of an innovation may change over time. 3) While certainly many forms of innovation, such as pharmaceuticals, are subject to regulation, the regulation of new financial products and services is particularly complex and dynamic, and new financial reform has an uncertain impact on the pace and direction of financial innovation” (Lerner J. Tufano P., 2011).

¹ “Perhaps the most devastating critique of financial innovation comes from one of finance’s greatest living giants (both figuratively and literally): Paul Volcker, the widely and deservedly acclaimed former Federal Reserve Board Chairman, who is now Chairman of President Obama’s Economic Recovery Board. Volcker has provocatively asked: “How many other [recent] innovations can you tell me that have been as important to the individual as the automatic teller machine, which in fact is more of a mechanical than a financial one?” Volcker’s implicit response is that there are none”, Litan R.E. (2010), *In Defense of Much, But Not All, Financial Innovation*, W.P. February.
<http://www.brookings.edu/research/papers/2010/02/17-financial-innovation-litan>

In her speech Gritith Jones (2012) fully supports this approach: “The key point is that the financial sector should be designed and regulated so it serves the interests of the real economy; indeed, the financial sector must not be a bad master, but a good servant of the real economy... In the wake of the crisis, we talked a great deal about the need to curb harmful financial innovation, the kind of financial innovation that seems to be good mainly because it helps to maximize profits for parts of the financial system. It reflected a lot of creativity in financial engineering, but has tended to generate more systemic risk rather than leading to better risk management and diminishing risk, which are the goals of the financial system.”

Also Sriram, Chaturvedi and Neti (2012) in their analysis highlight the financial innovation’s specific attributes: “The crisis demonstrated the downside of unfettered innovation and strengthened the case for ‘responsible innovation’. In the non-financial world, innovation is considered a virtue. However, the financial sector is different for three reasons: (a) the financial sector leverages on public funds; (b) the financial sector inherently has asymmetric payoffs; and (c) deep interconnectedness leads to an extremely sensitive contagion. All these accentuate the adverse outcomes of innovation.”.

First of all, in our empirical study, looking at the structured products, we try to understand who profit from this kind of financial innovation (“cui prodest?). To find the answer our analysis is based on a European database of structured products. Since the structured products are complex, at least we’d like to keep our research’s methodology simple, looking at the payoff frequency, we know that could be a limit, but our aim is to give some results, easy to understand, also for the final investors.

Research on structured products are already available, the common observation is the product complexity. For example, Thorsten e Rieger (2009), looking at the “dark side of the moon” or, in other words, at the structured products market from the customer's perspective, found that “the currently most popular products clearly cannot be explained, even within the framework of prospect theory, but only when taking into account probability mis-estimation. Thus, we come to the conclusion that by and large the market for structured products, which is a huge business for banks, offers a utility gain for investors which is most likely only an illusion.”

Wallmeier (2011), observing the structured product markets in Germany and Switzerland, affirms “From a theoretical point of view, the market for structured products creates value by offering risk return profiles which cannot be easily replicated by traditional financial instruments. On the one hand, structured products provide exposure to non-traditional asset classes such as commodities, to which investors might not have direct access. On the other hand, the payoff functions often have special characteristics, such as a minimum or maximum payoff and a nonlinear profile in-between. This allows sophisticated investors to optimize their portfolios with respect to the degree of risk aversion, their market expectations and hedging concerns. However, this view is challenged by observations about product design and actual investor behavior. In particular, some products appear to be overly complex”.

Also Henderson - Pearson (2010) underlined this critical point: “The ability to create securities providing state-contingent payoffs tailored to specific investors seems conducive to improving allocative efficiency. But if some investors assign incorrect probability weights to events, financial institutions can exploit these errors by creating financial instruments that investors overvalue... the hypothesis is that investment banks design structured products to exploit investors' valuation errors”.

“Product complexity may be a necessary feature to obtain benefits for the customer (such as the range of illnesses covered by critical illness policies). Or the complexity may be an unnecessary complication, providing limited benefits that the consumer could have obtained elsewhere with a simpler, cheaper strategy” (FSA, 2011). Complexity increases opacity, so it’s difficult for non-expert investor evaluates what they are buying.

Célérier and Vallée (2013) develop a measure of product complexity, based on a lexicographic analysis and applied to a comprehensive European dataset of retail structured products. They “observe that financial complexity is more prevalent among distributors, targeting low sophisticated investors and during high volatility periods and show that financial institutions strategically use financial complexity to escape competition”.

Given this framework, our first research question is also related to how much the financial innovation process could be let free or should be more regulated.

According to Litan (2010), “policymakers must do a much better job than they have in the past of stopping destructive innovation and the misuse of constructive innovation, either or both of which can lead to future financial bubbles that expose the economy to financial crises.” The need of regulation is a bitter lesson from crisis: “Structured and derivatives products will need to be carefully evaluated in terms of the pace of introduction and their suitability and appropriateness for customers. Consumer protection policies and their implementation will have to be strengthened considerably in order to strike a judicious balance between financial innovation and financial stability” (Sinha A., 2012). “The crisis has highlighted one specific area of difficulty: judging the sophistication of a client... Even supposedly expert investors may not know what they are getting into” (Palmer A., 2012).

Many European Financial Authorities are already driving in the same direction, focused on both the structured products distribution phase or the production phase.

In Norway, starting from March 2008, the sale of structured products is more difficult, Kredittilsynet, the Financial Supervisory Authority of Norway, presupposes that the institutions should not sell structured products or other complex products to customers who cannot be regarded as professional investors.²

In Belgium the Financial Services and Markets Authority (FSMA) calls upon the financial sector not to distribute to individual investors structured products that are considered particularly complex. Distributors that sign on to the moratorium commit themselves not to distribute structured products that do not fulfill the criteria that have been established. The “voluntary” moratorium is starting from August, 1st, 2011.³

In United Kingdom, according to the “product intervention” approach, FSA (2013) affirms: “Structured products are rising in popularity and we are concerned that the growing number of structured product sales, as well as increasing product complexity, is placing a strain on firms’ systems and controls. A lack of robustness in firms’ product development and marketing processes can increase the risk of poorly designed products and lead to mis-selling, or mis-buying by consumers... We still want to see innovation, but only where it is in the interests of consumers”⁴. The European process of MiFID review is aligned with this view.⁵

² See Circular 4/2008 from Kredittilsynet, “[Structured products – changes in regulations on the duty of disclosure in relation to structured products offered for purchase](http://www.finanstilsynet.no/en/Secondary-menu/Documents/Press-releases/Kredittilsynet-tightens-up-on-structured-products/offered-for-purchase)”, <http://www.finanstilsynet.no/en/Secondary-menu/Documents/Press-releases/Kredittilsynet-tightens-up-on-structured-products/>
³ See http://www.fsma.be/en/Supervision/finprod/Article/nipic/nipic_tspersonen.aspx and FSMA, Rapport Annuel, 2012, <http://www.fsma.be>

⁴ On the Financial Conduct Authority’s website, according to the “product intervention” approach, the statement is: “Improving how structured products are sold: We want firms to improve the way they design and then distribute structured products to investors. Find out what we expect from product providers and what this means for you. Structured products are investments or deposits that aim to make you money based on the performance of a specific market, such as the FTSE 100. Some structured products may provide a degree of capital protection; others do not. Structured products are becoming more popular with customers looking for alternatives to low interest rates. However, due to the number of products available, some of which are becoming more complicated to understand, we are concerned that you could potentially be sold a product that is not

Our second research question is related to the question of how much this kind of financial innovation process is influenced by exogenous elements, especially, market trends, looking at the structured products timing issues.

This research question has an important implication in term of financial fragility. Gennaioli, Shleifer and Vishny (2012) argue that financial innovation can increase financial fragility: “While we recognize the benefits of financial innovation, we take a more skeptical view about the social value of liquidity creation when investors neglect certain risks. In such a system, security issuance can be excessive and lead to fragility and welfare losses, even in the absence of leverage”.

Starting from this literature review, in the next section we present our data and methodology, using a European perspective.

2. Data and Methodology

2.1 Empirical methods

First of all, we argue that, not just the structured products pay-off is very complex to understand for the final investors (Hens T. e Rieger M.O., 2009; Wallmeir M., 2011; C  l  rier C. - Vall  e B., 2013), sometime also for the so called qualified investors, but we affirm that should be very important for the final investor to understand the probability of their pay-off (Wallmeir M., 2011). In fact, looking at the pay-off historical frequency, the investors could be much more conscious of their decisions.

In our first research hypothesis we want to understand who profit from the financial innovation represented by the structured products (“cui prodest?”). We have already pointed out that the issue and sale of structured products is a zero sum game. So the first research question is: looking at the final performances, what is the overall performance of the structured products, expired in Italy, Germany, France, Switzerland, Belgium, United Kingdom and Spain (in order of outstanding volume of sales) from January 1st, 2008 to December 31, 2012. All of them represent 85,0% of the total outstanding volume of sales in Europe.

For the expired structured products complete of all information, it is possible to calculate the investor’s performance: if the investor buys the instrument at issuance and holds it until maturity date, the return is the difference between the purchase price and the redemption price, plus any coupons received. If the investor sells the product before its natural end, the overall investment

suitable for your needs. Reviewing how structured products are designed: We reviewed seven providers that are responsible for around half of all structured products sold and found that there had been improvements in the way products are designed, but that there is still some room for further improvement. We also found that some firms were not giving enough consideration to which type of customer the product was designed for. Where we found problems we have taken action with the firms involved. New measures for structured products . Following our review, we want firms to consider the following when creating structured products and explaining them to the people who sell the products to you: identify customers’ needs and then design products that meet these needs; pre-test new products to ensure that they are likely to perform for the customer as they were designed to do; have a thorough checking process for new products before they reach the market; and monitor details of sales to ensure the product is delivered to the type of customer it was designed for.” <http://www.fca.org.uk/>

⁵ See the Proposal for a Directive of the European Parliament and of the Council on markets in financial instruments repealing Directive 2004/39/EC of the European Parliament and of the Council: “Article 72 Remedies to be made available to competent authorities 1. Competent authorities shall be given all supervisory remedies that are necessary for the exercise of their functions. Within the limits provided for in their national legal frameworks they shall exercise such remedies: (a) require the cessation of any practice or conduct that is contrary to the provisions of Regulation(EU) No .../... [MiFIR] and the provisions adopted in the implementation of this Directive and to desist from a repetition of that practice or conduct; (b) request the freezing and/or the sequestration of assets; (c) adopt any type of measure to ensure that investment firms and regulated markets continue to comply with legal requirements; (d) require the suspension of trading in a financial instrument; (e) require the removal of a financial instrument from trading, whether on a regulated market or under other trading arrangements; (f) request any person that has provided information in accordance with Article 71(2) (i) to subsequently take steps to reduce the size of the position or exposure; (g) limit the ability of any person or class of persons from entering into a commodity derivative , including by introducing non-discriminatory limits on positions or the number of such derivative contracts per underlying which any given class of persons can enter into over a specified period of time, when necessary to ensure the integrity and orderly functioning of the affected markets; (h) issue public notices.” , <http://eur-lex.europa.eu>

result can be read from the perspective of the issuer: a negative performance corresponds to a gain realized by the issuer, regardless of the dynamics of market trading. The performance results are calculated gross of transaction costs, due to the broker, and any other fees and without regard to the tax profile. The performance of each instrument was calculated by comparing the issue price and the value of final redemption (whereas some certificates are issued below par). If the certificate had paid coupons, cash flows were taken into account, capitalized and added to the redemption price. The result was expressed in terms of future value of an investment of 100 Euros, for example a redemption value of 120 is equivalent to a performance of 20% over the whole period of life of the instrument.

We are conscious that, following this way, we are missing the single investor overview during the meantime, but, given the complexity of the instruments, we prefer to use a simple method of analysis, avoiding to add complexity to complexity. Looking at the final performances, our perspective is much more focused on the market as a whole, than on the single investor. In this zero-sum game the investors are playing a game with sellers that have a significant advantage, that's why they need clear and simple information.

In our second research hypothesis, we sought to investigate the behavior of issuers in proposing new products. More exactly, the second research question is: the market momentum influences the tendency to issue new instruments by intermediaries?

To understand the propensity of financial intermediaries to emit new products, we develop specific linear regression models. The exchange markets where the instruments are traded are mainly domestic, thus we conduct separate OLS regressions for each country.

We assume as the dependent variable the number of products issued each month. We try to investigate whether the market sentiment could boost the number of emissions. As independent variable, we adopt the log-return of the last six months in the domestic stock exchange. For this purpose, in each country, we assume the main equity index as proxy of the market: FTSE MIB for Italy, DAX for Germany, CAC 40 for France, SMI for Switzerland, BEL 20 for Belgium, FTSE 100 for United Kingdom, IBEX 35 for Spain. In the OLS model we introduce as independent variable, also the volume sold. This allow us to investigate, not only the number of instruments issued, but also the amount of capital raised from investors. In other words, the regression model for each country brings together: the number of products issued, with the performance of the domestic market in the last six months and the monthly issued volume.

2.2 Data Collection

In Europe there is not a unique database of structured instruments held by public authorities. National exchanges, where the structured products are traded, have different levels of transparency. In no country it is possible to get information about the expired products through the exchange company. Information available on the websites of the exchange concern only products still negotiable.

Our database comes from Structured Retail Product (SRP). SRP collects informations on all structured products issued in 41 different countries. Despite the high numbers of product and volumes monitored by SRP, is difficult to assess the quality of the data, since there is no benchmark available and any comparable competitor. For this reason, we double check the data collected looking also at different sources, as well as the companies' websites of the exchanges, local data vendors and public authorities.

As of December 2012, in Europe, volume sold and numbers of outstanding structured products were respectively EUR 826,487 and 1,109,404. Italy, Germany, France, Switzerland, Belgium, United Kingdom and Spain dominate the market with 85.0% of total volumes in Europe. Thus we focus on these seven countries. In Table 1 we show the volume and numbers of outstanding structured products by country.

Table 1: Structured products: volume and numbers of outstanding by country (December 31, 2012).

Country	Total outstanding number of products	Total outstanding volume of sales (EURm)
Italy	4,789	213,883
Germany	1,023,798	136,430
France	22,607	86,046
Switzerland	165,433	78,989
Belgium	20,219	78,435
United Kingdom	4,500	61,519
Spain	2,188	46,944
Total	1,243,534	702,246

Source: Our elaboration on SRP.

Looking for the answer of our two research hypotheses, we adopt two separate databases from the same data vendor (Structured Retail Product) and different perspective of analysis.

Specifically, to answer the first research question we need the closing prices at the time of maturity. Such data is reported for a small number of instruments. Only for Italy it was possible to use a domestic data vendor: Certificati e Derivati (CeD), this has allowed us to cross the data and get a very representative sample. We analyze a basket of 11,448 structured products, issued in Italy, Germany, France, Switzerland, Belgium, United Kingdom and Spain and expired from January 1st 2008 to December 31, 2012.

To answer our second research hypothesis, we adopted a different database from the previous. For the majority of structured products in the market is possible to have the date of issue. Hence, we are able to develop a specific criterion for extraction from the database Structured Retail Product, regarding the total number of instruments, issued in a given time period. This process has greatly increased the sample size of the survey. We focus our analysis on 1,399,005 structured products launched in the markets from January 1st, 2008 and December 31, 2012. The survey took place on a monthly basis. The volume of emission has been detected on the same data vendors SRP. The time series of market indices (FTSE MIB, DAX, CAC 40, SMI, BEL 20, FTSE 100, IBEX 35) are easily collectable from different sources, we use Datastream.

In Table 2 are reported the data concerning the structured products in the two survey samples.

Table 2: Sample: numbers of structured products by Research Hypothesis

Country	First RH. Products with performance	Second RH. Products issue date
Italy	2,135	7,714
Germany	3,323	1,108,503
France	774	38,034
Switzerland	1,796	224,370
Belgium	1,267	15,123
United Kingdom	1,423	5,253
Spain	730	8,148
Total	11,448	1,399,005

Source: Our elaboration on SRP and CeD data.

3. Results

As stated by Wallmeier (2011), “The complexity and diversity of the products leads to low transparency. The lack of transparency leads to incorrect assessment of the probability density function by the investor [...]. There is some evidence that typically investors underestimate the probability of hitting the barrier [...]. Generally they seem to focus on the measures coupons and tend to neglect the high repute in coupons is just one side of the coin, the other side being engraved high downside risk”. According to the Author, investors focus much on the profile of payoff, neglecting the information regard to the probability of a specific result.

Table 3 shows the results of our study with respect to the payoff of the instruments. The results are reported, showing the payoffs value by classes. The payoff value represents the upper limit of the class (not included into the class). The frequency is equal to the number of certificates, whose payoff is less than the maximum limit.

According to Table 3, 62.1% of our sample is “above par”, 13.6% is repaid “at par” (without considering transaction costs) and 24.3% of the sample is “under par”. The observation of the final payoff does not allow to evaluate the opportunity to earn performance, offered by the actual trend of the time series of prices of the instrument. In other words, the individual investor can negotiate on market days in which the price trends in the specific sub period is favorable to him. Nevertheless, in the presence of a negative total return, any configuration, taken from the time series of prices, implies that the sum of the returns achieved by any investor, which over time have held the instrument, is negative.

Table 3: Frequency and cumulative distribution of the payoff for the structured products expired from January 1st , 2008 to December 31, 2012.

Class	Frequency	% Freq.	Cumulative	% Cum.
10	262	2.3%	0	0.0%
20	47	0.4%	309	2.7%
30	47	0.4%	356	3.1%
40	97	0.8%	453	4.0%
50	183	1.6%	636	5.6%
60	343	3.0%	979	8.6%
70	405	3.5%	1,384	12.1%
80	398	3.5%	1,782	15.6%
90	393	3.4%	2,175	19.0%
100	610	5.3%	2,785	24.3%
AT PAR	1,559	13.6%	4,344	37.9%
110	3,901	34.1%	8,245	72.0%
120	1,737	15.2%	9,982	87.2%
130	656	5.7%	10638	92.9%
140	296	2.6%	10,934	95.5%
150	159	1.4%	11,093	96.9%
160	83	0.7%	11,176	97.6%
170	59	0.5%	11,235	98.1%
180	30	0.3%	11,265	98.4%
190	21	0.2%	11,286	98.6%
200	22	0.2%	11,308	98.8%
Other	140	1.2%	11,448	100.0%

Source: Our elaboration on SRP and CeD data.

The above results can be usefully investigated by analyzing samples on a national basis. In the tables 4, we show the data of payoff of the products in the individual domestic samples (detailed data are shown in Appendix).

Table 4: Frequency and cumulative distribution of the payoff for the structured products expired from January 1st , 2008 to December 31, 2012 by countries.

	Italy	Germany	France	Switzerland	Belgium	United Kingdom	Spain	Total
UNDER PAR	1,190 (55.7%)	531 (16.0%)	57 (7.4%)	754 (42.0%)	162 (12,8%)	37 (2.6%)	54 (7.4%)	2,263 (24.3%)
AT PAR	366 (17.1%)	264 (7.9%)	93 (12.0%)	56 (3.1%)	236 (18,6%)	402 (28.3%)	142 (19.5%)	1,323 (13.0%)
ABOVE PAR	579 (27.1%)	2,528 (76.1%)	624 (80.6%)	986 (54.9%)	869 (68,6)	984 (69.1%)	534 (73.2%)	6,235 (61,2%)
TOT	2,135	3,323	774	1,796	1,267	1,423	730	11,448

Source: Our elaboration on SRP data.

Comparative analysis of the samples can reach various conclusions, depending on the country. The more representative sample, compared to the total of the market, both in terms of the number of products and in terms of volumes is the Italian one (Italy alone accounted for 25.9% of volume of the European market for structured product). This has been made possible by the availability of a

data source further than the original. In this sample, the gross performance data of the products are much more negative than in all the others, only 27.1% of the Italian sample is “above par”, 17.1% is repaid “at par” and 55.7% of the sample is “under par” (see Appendix Table 1).

The difficulty of obtaining complete data for all the analyzed products and the differences among the samples of countries induces to hypothesize some selection bias in our dataset. In other words, it seems that the information is more available, if the performances are positive.

Regarding the second research hypothesis, we tried to analyze the behavior of issuers with respect to market dynamics. We sought to investigate the behavior of issuers in proposing new products. We have built the survey sample, focusing on the issue date of each instrument. This information is found to be much more available in the original database. For this reason, the survey is made on a sample much more numerous. The issue day is available for 1,399,005 instruments of the sample. The survey period runs from January 2008 to December 2012 for a total of 60 month.

Table 5 shows the result of our regressions, where the dependent variable is the sum of the new emissions (in terms of numbers of products issued), recorded in the month, Constant term equals the constant term of our regressions, LogReturn is the log-return of the last six months of the domestic index (stated between brackets) and Vol is the volume of the products in domestic currency, issued in the month. Our aim is to find a connection in the behavior of issuers with respect to different market phases. The analysis was not run for predictive purposes, we do not intend to estimate the number of expected emissions at a given time in the market.

In all the countries, the regression produces significant coefficients for the constant term. The presence of the constant shows the tendency of issuers to maintain a minimum number of instruments available, almost certainly at the maturity, a part of them is replaced anyway.

Table 5: Multiple linear regression OLS model. Between brackets are shown the statistics of significance (* p<0.05, ** p<0.01, *** p<0.001). The last row of the table shows the r-squared adjusted.

	Italy	Germany	France	Switzerland	Belgium	United Kingdom	Spain
Constant term	73.13 (0.00)***	2559.67 (0.00)***	811.12 (0.00)***	2179.05 (0.00)***	451.56 (0,00)***	52.52 (0,00)***	158.39 (0,00)***
LogReturn FTSE MIB	0.02 (0.00)***						
LogReturn DAX		1335.02 (0.00)***					
LogReturn CAC 40			-0.09 (0.11)				
LogReturn SMI				475.61 (0.39)			
LogReturn BEL 20					188.06 (0.08)*		
LogReturn FTSE 100						0.04 (0.00)***	
LogReturn IBEX 35							-0.02 (0.18)
Vol	-8.09 (0.75)	-0.011 (0.043)**	498.19 (0.14)	-0.52 (0.075)*	-0.23 (0.00)***	-45.89 (0.00)***	-11.36 (0.8693)
R-adj	0.34	0,29	0.09	0.32	0.15	0.43	0.03

Source: Our elaboration on SRP data.

Looking at the new emissions of structured products, the analysis shows a very interesting relationship between the volume issued and the number of listed products. In Germany, Switzerland, Belgium and United Kingdom the data shows that an increase of the number of products relates to a reduction of the volumes of issued products and taken on by the investors. The same relationship, at lower significance applies also in Italy and Spain. This phenomenon is compatible with a process of stimulating demand. In other words, it is likely to assume that issuers tend to stimulate demand for structured products in the months, when the subscription is less. This stimulus takes place through the issuance of new products.

With regard to the impact of market trends on the behavior of issuers, the model identifies a positive relationship between the number of issued products and the domestic market trends in Italy, Germany, Belgium and United Kingdom. The positive coefficient between the phenomenon under investigation and the issuers time-to-market notes the tendency to increase the number of instruments issued during positive market trends, when investors are more likely to accept the offers for investment in new products. Conversely, during periods of negative market the number of instruments issued is reduced substantially. The same correlation, at lower significance applies also in Switzerland.

Conclusions

After the financial turmoil the literature's view on the financial innovation process is significantly changed. Left the assumption that any financial innovation is an opportunity to complete the market, the approach is more critical, looking at the positive, but also negative externalities and the social consequences of the financial innovation.

This paper starts from the observation that the market of structured products in Europe is concentrated in few countries. Italy, Germany, France, Switzerland, Belgium, United Kingdom and Spain dominate the market with 85.0% of total volumes sold in Europe.

First of all, we try to understand, looking at the historical frequency of their payoff, who profit from this kind of financial innovation ("cui prodest?"). The structured products could be very complex, at least we decide to keep simple our methodology. We know that could be a limit, but our aim is to give some results, easy to understand, also for the final investors. Using a sample of 11,448 structured products issued in Italy, Germany, France, Switzerland, Belgium, United Kingdom and Spain, we find that 62,1% is "above par", 13.6% is repaid "at par" and 24.3% of the sample is "under par", with interesting distinctions among countries, for example, looking at the Italian sample only 27,1% is "above par", 17.1% is repaid "at par" and 55.7% of the sample is "under par".

In addition, watching at the issuers time-to-market, our research shows a very interesting relationship between the volume issued and the number of listed products: an increasing number of new products correspond to a reduction of the volumes of the products issued. This trend could be the signal of a stimulating demand process by the issuers, trying to attract the investors. Additionally we note the tendency to increase the number of instruments issued during positive market trends, when investors are more likely to accept the offers for investment in new products.

Combining this findings, the frequency of negative payoff regarding a significant part of the sample and the relations between the number of new emissions, the volume of the emissions and the markets trends create a doubt on the issuer's practices: is it a kind of innovation "sustainable" for the final investors? From a regulatory point of view, could be "let free" this kind of financial innovation or could be useful a "product intervention" approach during the product design phase, in order to limit pushing behavior? This debate could be a stimulating field for future research.

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Appendix

Table I: Frequency and cumulative distribution of the payoff for the structured products, expired from January 1st, 2008 to December 31, 2012 - ITALY

Class	Frequency	% Freq.	Cumulative	% Cum.
10	250	0.0%		11.7%
20	25	1.2%	275	12.9%
30	35	1.6%	310	14.5%
40	57	2.7%	367	17.2%
50	107	5.0%	474	22.2%
60	160	7.5%	634	29.7%
70	142	6.7%	776	36.3%
80	151	7.1%	927	43.4%
90	94	4.4%	1,021	47.8%
100	169	7.9%	1,190	55.7%
AT PAR	366	17.1%	1,556	72.9%
110	111	5.2%	1,667	78.1%
120	168	7.9%	1,835	85.9%
130	87	4.1%	1,922	90.0%
140	33	1.5%	1,955	91.6%
150	13	0.6%	1,968	92.2%
160	12	0.6%	1,980	92.7%
170	9	0.4%	1,989	93.2%
180	6	0.3%	1,995	93.4%
190	6	0.3%	2,001	93.7%
200	8	0.4%	2,009	94.1%
Other	126	100.0%	2,135	100.0%

Source: Our elaboration.

Table II: Frequency and cumulative distribution of the payoff for the structured products, expired from January 1st, 2008 to December 31, 2012 - GERMANY

Class	Frequency	% Freq.	Cumulative	% Cum.
10	11	0.3%		0.0%
20	16	0.5%	27	0.8%
30	9	0.3%	36	1.1%
40	30	0.9%	66	2.0%
50	56	1.7%	122	3.7%
60	121	3.6%	243	7.3%
70	127	3.8%	370	11.1%
80	56	1.7%	426	12.8%
90	44	1.3%	470	14.1%
100	61	1.8%	531	16.0%
AT PAR	264	7.9%	795	23.9%
110	1,121	33.7%	1,916	57.7%
120	693	20.9%	2,609	78.5%
130	316	9.5%	2,925	88.0%
140	164	4.9%	3,089	93.0%
150	96	2.9%	3,185	95.8%
160	50	1.5%	3,235	97.4%
170	32	1.0%	3,267	98.3%
180	22	0.7%	3,289	99.0%
190	11	0.3%	3,300	99.3%
200	11	0.3%	3,311	99.6%
Other	12	0.4%	3,323	100.0%

Source: Our elaboration.

Table III: Frequency and cumulative distribution of the payoff for the structured products, expired from January 1st, 2008 to December 31, 2012 - FRANCE

Class	Frequency	% Freq.	Cumulative	% Cum.
10	0	0.0%		0.0%
20	0	0.0%	0	0.0%
30	0	0.0%	0	0.0%
40	0	0.0%	0	0.0%
50	0	0.0%	0	0.0%
60	0	0.0%	0	0.0%
70	1	0.1%	1	0.1%
80	6	0.8%	7	1.0%
90	21	2.9%	28	3.8%
100	26	3.6%	54	7.4%
AT PAR	142	19.5%	196	26.8%
110	510	69.9%	706	96.7%
120	20	2.7%	726	99.5%
130	2	0.3%	728	99.7%
140	1	0.1%	729	99.9%
150	1	0.1%	730	100.0%
160	0	0.0%	730	100.0%
170	0	0.0%	730	100.0%
180	0	0.0%	730	100.0%
190	0	0.0%	730	100.0%
200	0	0.0%	730	100.0%
Other	0	0.0%	730	100.0%

Source: Our elaboration.

Table IV: Frequency and cumulative distribution of the payoff for the structured products, expired from January 1st, 2008 to December 31, 2012 - SWITZERLAND

Class	Frequency	% Freq.	Cumulative	% Cum.
10	0	0.0%		0.0%
20	4	0.2%	4	0.2%
30	1	0.1%	5	0.3%
40	4	0.2%	9	0.5%
50	17	0.9%	26	1.4%
60	46	2.6%	72	4.0%
70	115	6.4%	187	10.4%
80	162	9.0%	349	19.4%
90	167	9.3%	516	28.7%
100	238	13.3%	754	42.0%
AT PAR	56	3.1%	810	45.1%
110	594	33.1%	1,404	78.2%
120	328	18.3%	1,732	96.4%
130	44	2.4%	1,776	98.9%
140	11	0.6%	1,787	99.5%
150	3	0.2%	1,790	99.7%
160	1	0.1%	1,791	99.7%
170	1	0.1%	1,792	99.8%
180	0	0.0%	1,792	99.8%
190	2	0.1%	1,794	99.9%
200	1	0.1%	1,795	99.9%
Other	1	0.1%	1,796	100.0%

Source: Our elaboration.

Table V: Frequency and cumulative distribution of the payoff for the structured products, expired from January 1st, 2008 to December 31, 2012 – BELGIUM

Class	Frequency	% Freq.	Cumulative	% Cum.
10	1	0.1%		0.0%
20	0	0.0%	1	0.1%
30	2	0.2%	3	0.2%
40	5	0.4%	8	0.6%
50	2	0.2%	10	0.8%
60	9	0.7%	19	1.5%
70	13	1.0%	32	2.5%
80	22	1.7%	54	4.3%
90	52	4.1%	106	8.4%
100	56	4.4%	162	12.8%
AT PAR	236	18.6%	398	31.4%
110	751	59.3%	1149	90.7%
120	113	8.9%	1262	99.6%
130	5	0.4%	1267	100.0%
140	0	0.0%	1267	100.0%
150	0	0.0%	1267	100.0%
160	0	0.0%	1267	100.0%
170	0	0.0%	1267	100.0%
180	0	0.0%	1267	100.0%
190	0	0.0%	1267	100.0%
200	0	0.0%	1267	100.0%
Other	0	0.0%	1267	100.0%

Source: Our elaboration.

Table VI: Frequency and cumulative distribution of the payoff for the structured products, expired from January 1st, 2008 to December 31, 2012 – UNITED KINGDOM

Class	Frequency	% Freq.	Cumulative	% Cum.
10	0	0,0%		0,0%
20	2	0,1%	2	0,1%
30	0	0,0%	2	0,1%
40	1	0,1%	3	0,2%
50	1	0,1%	4	0,3%
60	3	0,2%	7	0,5%
70	7	0,5%	14	1,0%
80	1	0,1%	15	1,1%
90	4	0,3%	19	1,3%
100	18	1,3%	37	2,6%
AT PAR	402	28,3%	439	30,9%
110	257	18,1%	696	48,9%
120	354	24,9%	1,050	73,8%
130	200	14,1%	1,250	87,8%
140	86	6,0%	1,336	93,9%
150	46	3,2%	1,382	97,1%
160	17	1,2%	1,399	98,3%
170	17	1,2%	1,416	99,5%
180	2	0,1%	1,418	99,6%
190	2	0,1%	1,420	99,8%
200	2	0,1%	1,422	99,9%
Other	1	0,1%	1,423	100,0%

Source: Our elaboration.

Table VII: Frequency and cumulative distribution of the payoff for the structured products, expired from January 1st, 2008 to December 31, 2012 - SPAIN

Class	Frequency	% Freq.	Cumulative	% Cum.
10	0	0.0%		0.0%
20	0	0.0%	0	0.0%
30	0	0.0%	0	0.0%
40	0	0.0%	0	0.0%
50	0	0.0%	0	0.0%
60	0	0.0%	0	0.0%
70	1	0.1%	1	0.1%
80	6	0.8%	7	1.0%
90	21	2.9%	28	3.8%
100	26	3.6%	54	7.4%
AT PAR	142	19.5%	196	26.8%
110	510	69.9%	706	96.7%
120	20	2.7%	726	99.5%
130	2	0.3%	728	99.7%
140	1	0.1%	729	99.9%
150	1	0.1%	730	100.0%
160	0	0.0%	730	100.0%
170	0	0.0%	730	100.0%
180	0	0.0%	730	100.0%
190	0	0.0%	730	100.0%
200	0	0.0%	730	100.0%
Other	0	0.0%	730	100.0%

Source: Our elaboration.