

# Exchange Traded Products on the Warsaw Stock Exchange

Piotr Prewysz-Kwinto

**Abstract**—A dynamic development of financial market is accompanied by the emergence of new products on stock exchanges which give absolutely new possibilities of investing money. Currently, the most innovative financial instruments offered to investors are exchange traded products (ETP). They can be defined as financial instruments whose price depends on the value of the underlying instrument. Thus, they offer investors a possibility of making a profit that results from the change in value of the underlying instrument without having to buy it. Currently, the Warsaw Stock Exchange offers many types of ETPs. They are investment products with full or partial capital protection, products without capital protection as well as leverage products, issued on such underlying instruments as indices, sector indices, commodity indices, prices of energy commodities, precious metals, agricultural produce or prices of shares of domestic and foreign companies. This paper presents the mechanism of functioning of ETP available on the Warsaw Stock Exchange and the results of the analysis of statistical data on these financial instruments.

**Keywords**—Exchange traded products, financial market, investment, stock exchange.

## I. INTRODUCTION

STRUCTURED products are one of the newest financial instruments, but they are attracting more and more investors. They can be defined as instruments whose price depends on the value of the underlying instrument [1], [2]. They thus offer investors a possibility of making a profit that results from a change in value of the underlying without having to buy it. The profit can be reached provided that the value of the underlying will change according to the assumptions included in the structure of a structured product.

The underlying instruments of structured products can be shares or baskets of stocks as well as indices, bonds, commodities, FX rates or interest rates, i.e. similarly to derivative instruments - instruments whose value changes over time.

Structured products constitute a highly diverse group of financial instruments [3], [4]. They can be offered on the over-the-counter market as components of investment offer of commercial banks and on regulated markets as stock exchange instruments. They differ in the risk level (low, high) and the extent of protection of invested capital (instruments with full or partial protection or without capital protection). They can be issued for an indefinite term (open-end instruments) or with a predetermined redemption date; they also differ in the way of determining the level of profit that investors can make.

The aim of this paper is to present the principles concerning ETPs available on the Warsaw Stock Exchange and the analysis of the development of this market. The objective was achieved based on the analysis of the available subject literature, prospectuses of selected structured products and the analysis of statistical data on structured products offered on the WSE.

## II. CLASSIFICATION OF ETPS

ETPs are usually classified according to the level of risk associated with the investment. Therefore, instruments that can be distinguished are instruments with low, moderate and high risk. Products with low or medium risk are often defined as investment products while those with high risk as leverage instruments or instruments with leverage [5].

ETPs are issued by large financial institutions (e.g. banks or brokerage houses) [6]. Every product introduced to the stock exchange has a prospectus and the so called "Final Terms" which present all relevant information on the issuer and the instrument [5]. They contain information key to investors, such as the rules of payment, which allows tracking a present value of held instruments, and descriptions of risk factors.

### A. Low Risk Structured Products

Low risk structured products are instruments whose final value cannot be lower than their initial value; hence, at the end of investment investors will receive full invested capital [1]. They can be structured bonds or certificates with full capital protection; the way they work is, however, similar. An investor buys a certificate or a structured bond with a specified par value. A redemption price of the instrument after a lapse of a fixed term depends on a change in value of the underlying. If a condition regarding a change in that value predetermined at issue is met, an investor will receive the par value plus additional gains which can be determined in two ways: either as a fixed coupon rate or as part of profit predetermined at issue which will be generated by the underlying [7]. Otherwise, i.e. if a given condition is not met, an investor will receive only the par value of the instrument. In fact, there can also be products not with full, but with partial, e.g. 90%, capital protection.

### B. Moderate Risk Structured Products

Moderate risk structured products constitute a large group. They include index certificates (Tracker), bonus certificates, Twin Win certificates, discount certificates, express certificates and reverse convertible notes.

### Index Certificates (Tracker)

Index certificates are the simplest form of moderate risk structured products and at the same time the most popular one. They are open-end instruments which track the underlying on which they are based [6]; their value changes in the same way as the value of the underlying. Thus, they allow investment in commodities which investors find difficult to buy in normal conditions (e.g. oil) or even impossible to buy (e.g. indices). Investors' gains depend on a subscription factor predetermined at certificate issue which specifies what fraction of the underlying can be received for one certificate [7]. If a subscription factor is 1:10, it means that a certificate is 1/10 of the underlying and this is its price. Return on investment in a structured product is identical to return on investment in the underlying, both in the case of increase or decrease in its value. In fact, there are two types of index certificates: long and short. In the case of long certificates, change in value tracks the value of the underlying. They thus allow making profit on the increase in value of the underlying. In the case of short certificates, their value changes opposite to the change in value of the underlying, and thus they allow making profit on the decrease in value of the underlying.

### Discount Certificates

Discount certificates work similarly to tracker certificates, but the price of the certificate at the moment of issue is determined on the lower level than the value of the underlying on which it is based. The difference is called discount. In return for discount, thanks to which an investor will make a loss only when the value of the underlying instrument falls under the value of the discount, the certificate has a maximum possible value predetermined at the moment of issue, called *cap*. This value may not be exceeded, thus the profit an investor may reach is limited.

### Bonus and Twin Win Certificates

A bonus certificate is yet another modification of an index certificate. The modification is that at the moment a bonus certificate is issued, two values are determined: barrier level (below the value of the underlying at issue) and bonus level (above that value). If the value of the underlying until maturity does not touch or fall below the barrier level, at maturity, an investor will receive a payout equal to the bonus level or higher if the value of the underlying rises above that level and a maximum return, i.e. *cap*, has not been predetermined. If, however, the price of the underlying touches or falls below the barrier level, at maturity an investor will receive a payout equal to the value of the underlying [1].

A possibility of gains from the certificate depends on the barrier level and the bonus level which depend on the term of the certificate and volatility of the underlying. The value of the bonus depends on the barrier level. If at the moment, a certificate is issued the barrier level is predetermined much below the value of the underlying, a probability that its price will fall to the barrier level is low, hence the bonus level will be lower. Reversely, if the barrier level is predetermined close to the value of the underlying, a probability that it will be

touched is high; hence, the bonus level can be higher as a bonus payout is less probable.

A certain type of a bonus certificate is a Twin Win certificate. In this case, except a barrier level, a reference level is predetermined, i.e. value of the underlying at the moment a certificate is issued. If the value of the underlying until certificate maturity does not touch or fall below the barrier level, an investor will make a profit equal to the change (both positive and negative) in value of the underlying at maturity against the reference level. If the value of the underlying increases, an investor may make an unlimited profit, but if it decreases, the profit will be paid out only until the moment the barrier level has been touched. If the barrier level is touched or breached, the payout, similarly to a bonus certificate, will equal the value of the underlying at certificate maturity [7].

### Express Certificates

An express certificate is a specific type of a structured product that is issued for a fixed term to maturity of usually 3 to 6 years [6] and which gives a possibility to receive coupon according to a coupon rate predetermined at issue. The actual term of such certificates depends on not reaching a predetermined exercise price (strike price). For each year of the term of the certificate, a predetermined "observation day" (or days) is set, on which day it is checked whether the certificate may be redeemed prematurely. It happens when on the observation day the value of the underlying is higher than the strike price of the certificate. An issuer pays out the par value plus coupon and the certificate is redeemed. If on the observation day the value of the underlying is below the strike price, the maturity is extended until the next observation day without a coupon rate payment. A coupon does not expire, but it will be paid out if on one of the next observation days the value of the underlying goes above the strike price. If the value of the underlying does not go above the strike price on any of the observation days, at the end of the term of the certificate an investor will receive only the par value. If, on the other hand, at certificate maturity the value of the underlying goes below a safety threshold predetermined at issue, an investor will receive only the actual value of the underlying.

### Reverse Convertible Notes

Reverse convertible notes are one of the most recent structured products. They are issued for a fixed term only on stocks of companies. The value of the certificate at issue is calculated by stocks according to their actual price. At maturity, irrespective of the stock price, an investor always receives a payout according to a coupon rate predetermined at issue. A return of the par value depends on the stock price at certificate maturity. If it is higher than the price at issue, an investor receives the total par value and if it is lower, an investor receives a number of stocks predetermined at certificate issue [7].

### C. High Risk Structured Products

High risk structured products are products with leverage or leverage products. They provide an opportunity of making a profit by engaging capital which represents a small part of the

value of the underlying. They include Turbo certificates and Factor certificates.

#### Turbo Certificates

A Turbo certificate is an open-end certificate which allows investment in the underlying, but without a necessity of paying its total value. At certificate issue two levels are predetermined: barrier level (knock-out) and financing level. At the moment of buying a certificate, an investor does not pay the total price of the underlying, but only part which represents a difference between its value and the predetermined financing level. Hence, an investor having a given sum of money can buy more certificates than underlying instruments and at the same time profits (and losses) that can be made on the change in value of the underlying will be multiplied (leverage). In order not to expose investors to a risk of high losses, a certificate works only until the value of the underlying falls to the barrier level (knock-out). Once the barrier level is reached, the certificate expires and the investor receives a payout including the incurred loss. There are two types of certificates: Turbo allowing to benefit from rising prices (Turbo Long) and falling prices (Turbo Short) where the price of the certificate increases with the falling price of the underlying. Turbo certificates are certificates with variable leverage because its value depends on the difference between the underlying and the financing level.

#### Factor Certificates

Factor certificates have a structure similar to index certificates, meaning they track the price of the underlying on which they are based. They do not have an expiry date and a major difference is that it is an instrument with leverage, which means that a change in the price of a certificate is faster than a change in the price of the underlying. The leverage is fixed and it is usually 2 or 3, which means that the price of the certificate changes two or three times faster than the price of the underlying [1]. The change occurs every day against the change in the price of the underlying as of the previous day. Factor certificates similarly to Turbo certificates have two variations: long and short, and at the same time they allow making a profit on rising prices as well as falling prices.

### III. THE ANALYSIS OF STRUCTURED PRODUCTS OFFERED ON WSE

Structured products were introduced to the WSE in 2006. Since then the market has been continuously expanding [8]. It has thus been evaluated using available statistical data [9], [10]. First, structured products offered on the WSE were specified using two criteria, i.e. a type of a structured product and the related level of investment risk. The results are presented in Table I.

High investment risk products are dominant on the WSE. They constitute nearly 80% of all structured products offered. Low risk products, on the other hand, account for the smallest share - less than 5%. It should be indicated that the structure of the market was the same in 2014 and 2015. Regarding the type of structured instruments, Turbo certificates are dominant, the

number of which constitutes 2/3 of all analyzed instruments. Factor certificates also offer investors a wide choice - their share as of May 31, 2016 was 12.3% and index certificates (Tracker) - 12.1%.

TABLE I  
STRUCTURED PRODUCTS OFFERED ON THE WSE AS OF MAY 31, 2016

Investment risk	Type of product	Number	Share
Low	Capital protected certificates	35	4.96%
	Structured bonds	0	0.00%
	Index certificates (Tracker)	85	12.06%
Moderate	Bonus certificates	3	0.43%
	Discount certificates	0	0.00%
	Express certificates	6	0.85%
	Reverse convertible notes	13	1.84%
	Twin Win	3	0.43%
High (products with leverage)	Factor certificates	87	12.34%
	TURBO certificates	473	67.09%
<b>Total</b>		<b>705</b>	<b>100.00%</b>

Source: Author's own compilation based on the WSE statistical data [5]

As the data in Table I show, the offer of structured products on the WSE is very wide. Their number is, for example, 44% higher than the number of shares listed on the WSE main market and nearly three times higher than the number of offered futures contracts. The question is whether all offered products attract investors. To answer that question a rate was calculated which shows a share of products which were traded at least once in a year against all products offered to investors in the same year. Table II shows results for years 2015 and 2014.

TABLE II  
SHARE OF TRADED STRUCTURED PRODUCTS

Type of product	2015	2014
Capital protected certificates	94,7%	90,0%
Structured bonds	25,0%	100,0%
Index certificates (Tracker)	69,4%	60,6%
Bonus certificates	63,6%	17,2%
Discount certificates*	0,0%	0,0%
Express certificates	83,3%	75,0%
Reverse convertible notes	62,5%	76,5%
Twin Win	71,1%	79,4%
Factor certificates	71,1%	79,4%
TURBO certificates	94,7%	90,0%
<b>Total</b>	<b>71,9%</b>	<b>63,2%</b>

\* discount certificates were not offered in 2015

Source: Author's own compilation based on the WSE statistical data [9]

The results show that in 2015 structured products which were not traded at all constituted nearly 30% of all products. What should be evaluated as positive is the fact that this percentage decreased in comparison to 2014 when "dead" structured products constituted over 1/3 of all products. It may mean that the offer of structured products is too wide in relation to investors' interest and expectations.

Considering the type of structured products, it should be indicated that in 2015 the highest share of traded instruments was held capital protected certificates - 94.7%. Such a high value may result from the previously mentioned fact that structured products with low investment risk constitute the

lowest percentage of all structured products on the market, and during recession they can be an interesting alternative for investors.

A high share of products which were traded was also held by express certificates - over 83%, which may also be related to their limited number on the market (in 2015 only 11 such instruments were offered, and in 2014 only 8). Structured bonds attracted the lowest number of investors - in 2015 only 1/4 of all offered instruments was traded. It should be indicated that they were the instruments for which the biggest drop in comparison to 2014 was recorded. In 2014, discount certificates were not traded at all (in the whole year as many as 23 such certificates were offered). Due to a lack of interest, they were withdrawn from the offer in 2015.

The analysis of the data in Table II also shows a change in value of the rate calculated for individual structured products between 2014 and 2015. It increased for more than half products (especially for bonus certificates from 17% to 63%). For one third of the instruments (structured bonds, Factor certificates and reverse convertible notes) their share decreased. However, no clear change in investors' interest in structured instruments regarding investment risk was noticed. In every group there were instruments for which the calculated rate increased as well as decreased between 2014 and 2015.

Structured products offered on the WSE were also analyzed according to a type of the underlying on which they were based. Five groups of underlying instruments were identified: shares or baskets of stocks, indices, bonds, commodities or FX rates. A share of specific types of structured products according to the type of the underlying is presented in Fig. 1.

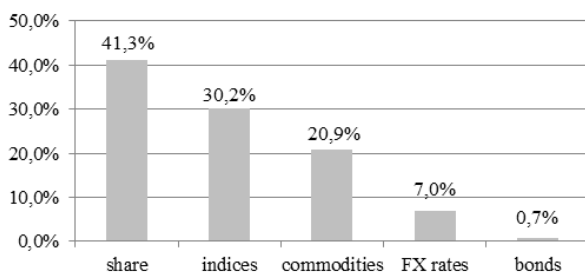


Fig. 1 Structured products according to the type of the underlying as of May 31, 2016 (Source: Author's own compilation based on the WSE statistics [5], [10])

At this moment, the biggest number of products on the WSE are those whose underlying instruments are shares or baskets of stocks of domestic as well as foreign companies. They constituted 41.3% of all products offered on the WSE. Products based on commodities and indices or baskets of indices also offered a wide choice.

The underlying instruments for commodity based structured products include:

- agricultural produce such as sugar, cocoa, coffee, maize, wheat, soy;
- precious metals such as copper, platinum, silver, gold;
- energy products such as natural gas, crude oil, gas oil.

For products based on indices, the underlying is a value of indices of the world's biggest stock exchanges such as: Dow Jones, S&P 500, Nikkei225, Nasdaq100, DAX or WIG20. For products based on shares or baskets of stocks, the underlying instruments are stocks of the largest Polish companies which compose the main index on the WSE - WIG20 as well as foreign companies such as: Apple, BMW, Amazon, Google or Facebook.

Among all structured products the narrowest offer concerns products based on FX rates (offered products include: EUR/CHF, EUR/USD, EUR/PLN and USD/PLN) and bonds.

What should be indicated is that not all types of structured products are based on all underlying instruments mentioned above. Among Turbo certificates which had the widest offer and were based on all available groups of underlying instruments, certificates on shares or baskets of stocks (44.4% of all) as well as indices (22.4%) and commodities (21.8%) were dominant. Index certificates (Tracker) and Factor certificates were offered for three groups of underlying instruments, i.e. commodities, shares and indices; in the case of index certificates the biggest offer (76.3%) concerned indices whereas for Factor certificates - shares (64.4%). It should be mentioned that bonus certificates were based only on indices whereas reverse convertible notes only on shares.

Further analysis showed that open-end products constituted over 91% of all structured products offered on the WSE. The remaining 9% were products with predefined maturity. It results from the fact that open-end products concern those structured products which have the widest offer on the WSE. Such was the case for all Turbo and Factor certificates and 98.8% of index certificates.

Issuers of structured products offered on the WSE are four international financial institutions: Deutsche Bank AG, ING Bank N.V., Raiffeisen Centrobank and UniCredit Bank AG. As of the day of the analysis the largest number of structured products was offered by ING Bank N.V - 54.8% and Raiffeisen Centrobank - 42.3%. What should be mentioned is the fact that ING bank offered only one type of structured products, i.e. Turbo certificates. Raiffeisen Centrobank, on the other hand, was an issuer of all types of structured products, except discount certificates and structured bonds. UniCredit Bank AG was an issuer of only index certificates (it offered 18.8% of all) while Deutsche Bank introduced express certificates (66.7% of all) to trading and capital protected certificates (5.7% of all).

Finally, popularity of individual structured products was analyzed, which was measured by the number of trades as well as value and volume of turnover. Data for 2015 and 2014 are presented in Table III.

Structured products do not belong to the most popular financial instruments on the WSE. Turnover value in 2015 constituted barely 4.3% of the annual share turnover and 3.8% of futures contract turnover. Nevertheless, in comparison to 2014 the turnover value of structured products increased by 27.4%, which proves a growing interest among investors. In 2015, the volume declined by 28.4%, but the number of trades

increased by 43.5%, which means that in 2015 investors traded a lower number of structured instruments.

TABLE III  
TURNOVER VALUE AND NUMBER OF STRUCTURED PRODUCTS TRADES

Type of structured product	Turnover value		Volume		Number of trades	
	[PLN million]		[thousand instruments]		[instruments]	
	2015	2014	2015	2014	2015	2014
Capital protected certificates	86.37	24.28	159.8	67.4	1,445	1,117
Structured bonds	0.04	5.28	0.4	54.4	12	863
Index certificates	73.47	46.15	5,330.0	1,448.5	8,597	5,009
Bonus certificates	2.77	2.64	3.3	2.8	73	30
Discount certificates	0.00	0.00	0.00	0.00	0	0
Express certificates	25.04	23.47	235.0	243.9	239	574
Reverse convertible notes	11.80	36.45	11.8	34.3	198	300
Factor certificates	170.65	109.92	9,095.5	1,708.4	24,288	9,592
Turbo certificates	341.80	310.72	33,235.1	63,561.3	48,879	40,855
<b>Total</b>	<b>711.94</b>	<b>558.91</b>	<b>48,060.9</b>	<b>67,120.9</b>	<b>83,731</b>	<b>58,340</b>

Source: Author's own compilation based on the WSE statistics [9], [10]

Turbo certificates attract most interest of investors. In 2015, the turnover value of those certificates constituted almost 50% of the turnover of all structured products (48.1%) while the volume as much as 70%. Factor certificates were also very popular and their turnover value was 23.9% of the total turnover in 2015 while the volume was 18%. It means that investors were mainly interested in structured products with high investment risk. Other popular structured products were index certificates, the turnover value of which was 10.3% while the volume was 11.1%. In the case of other instruments, the turnover value and its volume were insignificant and did not exceed 5%. According to the number of trades, the most popular were the following: Turbo certificates (584%), Factor certificates (29%) and index certificates (10.3%).

The analysis of changes of parameters presented in Table III shows that the highest increase in turnover value was recorded for capital protected certificates (by 255%) and index certificates (by 60%). Considering the turnover volume, the highest increase was recorded for Factor certificates (by 432%), index certificates (by 267%) and capital protected certificates (by 137%). The highest increase in the number of trades, on the other hand, concerned Factor certificates (by 153%), bonus certificates (by 143%) and index certificates (71.6%).

The biggest drop was recorded for structured bonds whose turnover value and the turnover volume decreased by almost 99% and the number of trades decreased by 98%.

#### IV. CONCLUSION

The conducted analysis of statistical data regarding structured products offered on the WSE has allowed the following conclusions:

- structured products do not belong to the most popular financial instruments; in 2015, the annual turnover value constituted barely 4.3% of the share turnover value and 3.8% of futures contract turnover;
- despite decreased interest, the offer of structured products is the widest of all instruments available on the WSE. The number of structured products is three times bigger than the offered futures contracts and nearly half bigger than the number of shares listed on the Main Market;
- due to a wide offer of structured products, not all instruments attract investors' interest – a share of "dead" products, i.e. products which were not traded at all during a year was 30% in 2015, which may indicate that the offer is too wide in relation to investors' interest;
- among ETPs, high investment risk products (products with leverage) are dominant and they constitute nearly 80% of all products;
- majority of structured products are based on shares or baskets of stocks or indices.

To sum up, ETPs presented in this paper constitute a highly diverse group of financial instruments. The development potential of the market is high thanks to the fact that due to a varied risk level and varied level of capital protection, those instruments are dedicated to different groups of investors - those more cautious and those preferring more aggressive strategies. What is more, they can be an investment alternative to traditional financial instruments and they may also complement the already built investment portfolio in order to optimize risk. Responsible investment in such instruments, however, requires a precise knowledge of how they work, especially of specific conditions of generating profit so as not to expose oneself to unexpected losses.

#### REFERENCES

- [1] J. Tomaszewski, „Gieldowe produkty strukturyzowane jako forma ekspozycji na ryzyko cenowe rynku metali szlachetnych,” *Annales Universitatis Mariae Curie-Skłodowska*, Sectio H, vol. XLVII, 3, Lublin, 2013, pp. 564-572.
- [2] M. Krzywda, *Produkty strukturyzowane w praktyce*, Wydawnictwo Złote Myśli, Gliwice, 2010, p. 37.
- [3] T. Brydś, „Instrumenty strukturyzowane na rynku finansowym,” *Zeszyty programu Top 15*, no2, Akademia Leona Koźmińskiego, Warszawa 2008, pp. 9-36.
- [4] A. Zaremba, *Produkty strukturyzowane – inwestycje nowych czasów*, Wydawnictwo Helion, Gliwice, 2009, pp. 89-110.
- [5] Website of the WSE, <http://gpw.com.pl>, access 1.06.2016
- [6] M. Walczak, „Gieldowe produkty strukturyzowane – perspektywy rozwoju rynku w świetle badań nad kondycją finansową gospodarstw domowych w Polsce,” *Zeszyty Naukowe Wyższej Szkoły Bankowej we Wrocławiu*, no 31/2012, pp. 53-65.
- [7] Website of Raiffeisen Brokers: <https://r-brokers.pl/certyfikaty/gpw-opis>, access 1.06.2016.
- [8] T. Kondrakiewicz, „Rozwój rynku produktów strukturyzowanych na giełdzie papierów wartościowych w Warszawie”, *Acta Universitatis Lodzianis, Folia Oeconomica*, 2(301), 2014, pp. 115-127.
- [9] Warsaw Stock Exchange Yearbooks , 2014, 2015.
- [10] Statistical bulletin of WSE, 2016.