

Monika Hadaś-Dyduch
University of Economics in Katowice
e-mail: monika.dyduch@ue.katowice.pl

The impact of changes in the labor market for structured products

The analysis paper is structured deposit, in other words, the structure, which consists of several modules. One element is a bond that does not involve any financial risk. The second element of the investment is fraught with risk - a fund or option. Furthermore, the article is an implementation of the unemployment rate in the banking product, which in the presented analysis is structured deposit.

Keywords: banking product, a structured product, labor market.

1. Introduction to the classification of structured products

Structured products are financial instruments whose value depends on a specific market (the underlying instrument) [Warsaw Stock Exchange]. Depending on the design of the instrument can distinguish basic types of structured products [1]:

1. Certificates KNOCK -OUT - instruments with leverage and with built-in barrier level (called knock-out) after reaching that trading is suspended, then the withdrawal of the certificate from the market. It allows you to achieve higher returns than the underlying, both with an increase and decrease in the price of the underlying touching the level of the barrier (the so-called knock-out event) is associated with loss of funds invested in the certificate. An investor may obtain possibly residual value. Profile of payment certificates KNOCK -OUT is very close to the intrinsic value of the warrants or options. The level of financial leverage depends on the distance from the base price of the knock-out barrier (the closer, the more leverage).

2. Warrants option contracts - payment profile similar to the option buyer. Product with the issuer. Instruments of leverage for the possibility of earning on rallies and declines in the underlying.

3. Trackers - instruments that mimic the evolution of the market (mainly raw materials, agricultural products, stock indexes, foreign shares, baskets of different instruments, etc). Allow you to earn both increases and declines in market index (ie certificates short). Some trackers may include leverage.

4. Products with partial capital protection instruments - less risky than trackers and warrants optionally. The bulk of the invested capital is invested in safe assets (eg bonds, deposits). The second part of the investment is working to generate the assumed rate of return. These products may

expire earlier (so-called knock out), with the document stored in the Final Terms conditions [3].

5. Products ensure full protection of capital - very safe, give the investor a share of the profits, which generates a built-in product market indicator, while a 100-percent guarantee of return on invested capital (investor suffers a loss).

6. Other types of products that payment profile depends on the fulfillment of the conditions described in the «Final Terms».

2. Description of the study

Aim of this study is to construct and also the valuation of structured products, which the index is based on changes in the labor market.

2.1 Characteristics of the product

The study was constructed in the form of a structured product investments structured based on the labor market (Table 1). It was assumed that:

- Minimum investment amount: 1000 zł.
- Duration of project: 24 months.
- Subscription period: 20.06.2012r. - 30.06.2012.
- The contractual period of deposit: 01.07.2012. - 01.07.2014r.
- Day observation index: 01.07.2012, 01.07.2014r.
- Maturity date (measures of customer) on 09.07.2014
- Security: 100% capital protection
- Participation rate: 60%.

The interest rate structured deposit for the duration of the contract period the deposit is dependent on the value of the underlying asset, ie the unemployment rate from 01.07.2014 on if :

- unemployment rate on 01.07.2014, the rate is above the initial dated. 01.07.2012. (condition 1) and at least once during the contract period will reach the level of Course starting 01.07.2012. decreased by 0,8% (condition 2) - 11% interest per annum for the period of the deposit will be calculated after the end. In addition, the investor receives 2% of the profit from each percentage point in the unemployment rate which is above the initial value of the unemployment rate.

- unemployment rate on 01.07.2014, the rate is below the start or during the contract period will not reach the initial Course decreased by 0,8% - the Customer will receive 100% of the invested capital and interest on deposits will not be charged. Profits from investments subject to tax on capital income. The design of a structured product is based on the «European Digital with Knock In».

Table 2 Parameters structured deposit linked to the return on investment

Interest rate max:	11% per annum
Interest rate min:	0% p.a.
Underlying:	The unemployment rate
Course start:	On the first day of the contract period, ie 01.07.2012.

Source:[4]

Product as mentioned above is covered by a 100% capital protection on the end of the deposit. However, if the deposit is before the end of term deposits, the handling fee is charged (depending on the number of days remaining until the maturity date) in the amount of 1.0% to 3.0% of the invested capital. Structured deposit agreement can be broken once every working day during the contract period the deposit. In case of withdrawal from the contract during the subscription period, the customer will receive 100% of the invested capital. Cash deposits credited to the account during the subscription period shall not bear interest.

2.1. Investment scenarios, depending on the changes in the unemployment rate

In accordance with the characteristics set out a structured product can be divided into at least nine scenarios on completion. The scenarios described in detail in Table 2.

Table 3 Suggestions of possible scenarios.

Scenario number	Detailed description of the scenario	Scenario number	Detailed description of the scenario
1	The unemployment rate on 01.07.2014 year is above the initial rate of 01.07.2012 and during the contract period the unemployment rate will reach once the initial course of 01.07.2012 .	6	The unemployment rate on 01.07.2014 , is above the initial rate on 01.07.2012 , and during the contract period had never reaches the level of the initial rate on 01.07.2012 , decreased by 0.8 %.
2	The unemployment rate on 01.07.2014 is above the initial rate of 01.07.2012, and once during the contract period will reach initial rate of 01.07.2012, less 0.8%.	7	The unemployment rate on 01.07.2014, is below the initial rate of 01.07.2012, and during the contract period will reach four times the initial exchange of 01.07.2012, decreased by 0.8%.
3	The unemployment rate on 01.07.2014 is above the initial rate of 01.07.2012, and during the contract period will reach four times the initial rate on 01.07.2012.	8	The unemployment rate on 01.07.2014, with an unemployment rate equal to the rate of the initial 01.07.2012, and during the contract period at least once reached the level of the initial course of 01.07.2012, decreased by 0.8%.
4	The unemployment rate on 01.07.2014. is above the initial rate of 01.07.2012, and six time during the contract period will reach an initial course of 01.07.2012, decreased by 0.8%.	9	The unemployment rate on 01.07.2014, with an unemployment rate equal to the rate of the initial 01.07.2012, during the contract period and had never reached the level of the initial exchange of 01.07.2012, decreased by 0.8%.
5	The unemployment rate on 01.07.2014 is below the initial rate of 01.07.2012 , and during the contract period will reach four times the initial exchange of 01.07.2012 , decreased by 0.8 %	10	The investor breaks an agreement with the issuer before the end of the deposit.

Source: Own

3. Simulation and calculation scenarios depending on the level of the unemployment rate

Scenario number	Detailed description of the scenario	Figure for the scenario
1	<p>The value of the unemployment rate on:</p> <ul style="list-style-type: none"> ➤ 01.07.2012 is: 12.30 ➤ 01.10.2014r is: 12.90 <p>Thus, the rate of unemployment on 01.10.2012r. is above the initial rate of 01.10.2010. So the first condition is met.</p>	<p>The unemployment</p> <p>Final course</p> <p>Start course</p> <p>Starting course less 0,8%</p> <p>Time</p>
2	<p>The value of the unemployment rate on 01.10.2014r. is 12.90. Thus, the value of the unemployment rate on 01.10.2012r. is above the initial rate of 01.10.2010. recorded at the level of 12.3. Thus, the first condition is met. Is also satisfied the second condition, because during the contract period, the unemployment rate reached once the initial exchange of 01.07.2012. decreased by 0.8%.</p>	<p>The unemployment</p> <p>Final course</p> <p>Start course</p> <p>Starting course less 0,8%</p> <p>Time</p>

3	<p>The value of the unemployment rate on 01.10.2014r. is 12.7. Thus, the value of the unemployment rate on 01.10.2012r. is above the initial rate of 01.10.2010. Thus, the first condition is met.</p>	
4	<p>The unemployment rate on 01.07.2014r. is 13.0. Thus, the unemployment rate is above the initial rate of 01.07.2012. The first condition is met. Is also satisfied the second condition, because the contractual period, the unemployment rate reached six times the Course starting on 01.07.2012. decreased by 0.8%. It would be enough to reach it only once</p>	
5	<p>The value of the unemployment rate on:</p> <ul style="list-style-type: none"> • 01.07.2012. is: 12.30 • 01.10.2014 is: 12.10 	

	<p>The value of the unemployment rate on:</p> <ul style="list-style-type: none"> • 01.07.2012 is: 12.30 • 01.10.2014 is: 10.90 	
6	<p>The unemployment rate on 01.07.2014, the rate is above the initial dated. 01.07.2012., And not once during the contract period will not reach the initial exchange of 01.07.2012. decreased by 0.8%.</p>	
7	<p>The unemployment rate on 01.07.2014, is below the initial rate of 01.07.2012, and during the contract period will reach four times the initial exchange of 01.07.2012, decreased by 0.8%.</p>	
8	<p>The value of the unemployment rate on:</p> <ul style="list-style-type: none"> • 01.07.2012. is: 12.30 • 01.10.2014r. is: 12.30 	

9	<p>The value of the unemployment rate on:</p> <ul style="list-style-type: none"> • 01.07.2012. is: 12.30 • 01.10.2014r. is: 12.30 	
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4. Conclusions from the analysis presented scenarios/

Considering the different scenarios we have:

➤ In the first scenario, we see that during the contract period, the unemployment rate once reached Course starting on 01.10.2010., but has not reached a level of less than the initial rate, on the contrary unemployment rate was greater than or equal to the initial value. Thus, the investor will receive only two years of investment return on invested capital - 1000PLN.

➤ In the second scenario, both conditions are met. Thus, the investor on the completion of a structured product receives payment consisting of the following components:

- Guaranteed capital: PLN 1000
- Guaranteed profit: $11\% * 1000 \text{ PLN} = 110$
- Additional benefit:

$$2\% * (12,9 - 12,3) * 1000\text{PLN} = 2\% * 0,6 * 1000\text{PLN} = 0,012\% * 1000\text{PLN} = 7,2\text{PLN}$$

Taking into account the participation rate at 65%, eventually the investor on the withdrawal of funds from the investment will receive: $1000 \text{ PLN} + 60\% * 117.2 = 1070.32 \text{ PLN}$

However, the issuer shall: $1000 \text{ PLN} 1\% * 40\% * 117.2 = 56.88 \text{ PLN}$.

➤ In the third scenario, we observe that during the contract period, the unemployment rate reached four times the initial rate on 01.10.2010. And often reached levels lower than the initial

rate. However, the value of the unemployment rate during the product had never dropped below 0.8% of the initial value. Thus, the investor will receive only two years of investment return on invested capital, ie PLN 1000, and the issuer receives a premium of 10PLN from each 1000PL investment capital.

➤ In the fourth scenario, both conditions are satisfied the investor on the completion of the structured product will be paid:

$$1000\text{PLN} + (11\% * 1000\text{PLN} + 2\% * 0,7) * 60\% = 1066 \text{ PLN.}$$

However, the issuer will receive:

$$1\% * 1000\text{PLN} + (11\% * 1000\text{zł} + 2\% * 0,7) * 40\% = 54 \text{ PLN.}$$

Finally, in the fourth scenario, the investor receives a gain of 6.6% on invested capital and the issuer receives 5.4%.

➤ In the fifth scenario, in both the situations described, the unemployment rate on 01.07.2014 is below the initial rate of 01.07.2012. Thus, the first condition is not met. The investor will receive only the return on invested capital, even though the second condition is satisfied in both cases.

➤ The sixth scenario, the investor receives only a return on invested capital, which follows directly from the parameters of the structured product.

➤ The figure represented a seventh scenario, it is evident that the unemployment rate on 01.07.2014 was below the initial rate on 01.07.2012. and during the contract period reached four times the initial rate on 01.07.2012. decreased by 0.8%. However, despite the fact that the second condition is met you will not get the return on investment because the first condition is not met.

➤ The eighth scenario, the unemployment rate on 01.07.2014r. does not exceed the level of the unemployment rate on the date of investment. So not met the first condition, so the investor despite the situation meets the second condition, namely the fact that the contractual period two once the unemployment rate initial course of 01.07.2012. decreased by 0.8% did not receive a return on investment.

➤ In the scenario of the ninth, the situation is analogous to the situation described in the scenario of 8. However, in the scenario of the ninth, as shown in figure, is not fulfilled any of the conditions guaranteeing return on investment.

➤ The tenth scenario, due to the discontinuation of deposit by the investor before the end of the term deposit is charged by the issuer fee of between 1.0% and 3.0% of the invested capital. Investor capital will be paid less than about 3% and inflation. If the investor breaks deposit to:

— to 8 months, it shall: $1000\text{PLN} - 1000\text{PLN} * 0,01 = 990\text{PLN}$

— to 16 months, it shall: $1000\text{PLN} - 1000\text{PLN} * 0,02 = 980\text{PLN}$

— to 24 months, it shall: $1000\text{PLN} - 1000\text{PLN} * 0,03 = 970\text{PLN}$

Investor addition to the above losses are borne by a loss of inflation. Assuming that inflation averaged 3.5% in one year. Investor in case the deposit is in:

— 8 month is obtained:

$990\text{ PLN} - 1000\text{ PLN} * 0,23\% = 756,67\text{PLN}$

— 16 month is obtained:

$990\text{ PLN} - (1000\text{ PLN} * 0,35\% + (1000\text{ PLN} * 0,35\% + 1000\text{ PLN}) * 0,17\%) = 513,33\text{ PLN}$

— 24 month is obtained: 270PLN.

Ending. The set of nine scenarios, only two have been successful for the investor. Thus, it can be concluded that the probability of investment success based on the unemployment rate is 20%. It is an investment that brings profit and return on invested capital only, but this is definitely an investment alternative to existing forms of capital investment.

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