

# Options strategies of the Polish companies during the global financial crisis

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## Abstract

FX options can be used as an instrument: to protect against the foreign exchange risk, to carry out speculation transactions, to limit transaction costs up to the amount of the options premium paid out, to combine into complex safeguarding and investment structures. FX options have been used widely in the national business trading in Poland since many years now. This article sets out the problem with options strategies applied by non-financial enterprises at the FX options market in Poland in the years 2007-2009, along with their outcomes. It may be easily stated that in the said period in many Polish enterprises it was difficult to find properly prepared strategies, and in some cases it ended up with substantial financial losses. Application of option contracts is a complex process that requires specialist know-how, precaution, and common-sense.

## Key words:

Option strategies, directional strategies, volatility strategies, currency exchange rate

**JEL Classification:** G32

## 1. Introduction

In the past years, the global financial crisis impacted individual segments of the Polish financial market with a varying intensity. A clear example of negative consequences of this crisis, in respect of market participants from the financial and actual sector, were events at the FX options market. FX options offer numerous benefits to their counterparts (including exporters), i.e. possibility to protect against exchange rate volatility or transaction costs limitation up to the amount of option premium paid, and can be also used to carry out speculation transactions, can be combined into more complex safeguarding and investing strategies, all corresponding to specific needs of an enterprise. However, application of an improper strategy can lead to severe financial losses. This article aims at setting out options strategies applied by non-financial enterprises at the FX options market in Poland in the years 2007-2009, along with specifying this phenomena and its outcomes.

## 2. Options strategies - basic terms

FX option is a contract where the option's purchaser is entitled to call or put a specific amount of currency at a predefined exchange rate, prior to or at a specific future date; the option's seller (i.e. writer, option guarantor, option issuer) is bound to submit or collect a specific currency amount at a predefined exchange rate, prior to or at a specific future date. Two parties participate in every option transaction (call and put): option purchaser - taking the long position, and option writer - taking the short option. Based on the aforementioned, we may say that four basic option strategies are possible, i.e. directional (simple) strategies,

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which are based on the exchange rate increase or decrease expectations (in a single direction). Such strategies include:

- long call strategy - giving the investor (purchaser) a right to buy the currency at a predefined price at a specific future date; the aim of the purchaser is to use the potential increase of the base exchange rate to gain profit or protect against its increase; options purchaser can (theoretically) acquire a potentially unlimited profit, whereas the loss is limited to the amount of premium paid;
- short call strategy - means issuing the purchasing option; the aim of the option writer is to achieve profit from a stable or declining base foreign exchange or protecting against decline of the base foreign exchange; the seller can achieve an unlimited profit - up to the amount of premium received, where he/she is endangered to potentially unlimited losses due to an increase of the basic exchange rate;
- long put strategy - giving the investor (purchaser) a right to sell the currency at a predefined price at a specific future date; the aim of the purchaser is to use the potential decrease of the base exchange rate to gain profit or protect against a decrease of the basic exchange rate; options purchaser can potentially acquire an unlimited profit in case the base foreign exchange decreases, whereas the loss is limited to the amount of premium paid;
- short put strategy - means issuing a sale option; the aim of the option's writer is to gain profit from the stable or increasing base exchange rate or protect against the increase of the base currency's price; the maximum profit of the seller is up to the premium received; whereas he/she may incur an unlimited loss in case the base currency dips (Kowalik and Pietrzak, 2005).

The risk management level in enterprises very often decides to conclude contracts not for single FX options (mostly due to a relatively high price) but for complex strategies. By taking up, simultaneously, positions in different kinds of options, it is possible not only to adjust the payout profile to the enterprise needs, but it is also possible to decrease protection costs against the foreign exchange risk. One of such strategies is the combination strategy which based on the purchaser's point of view is connected with purchasing variable (call and put) options written for the same currency, whereas based on the writer's point of view it is based on writing (selling) variable (put and call) options featuring the same currency. The most common combination strategies include: straddle strategy - connected with purchasing (or selling) two options - one buy and one sell; both options need to feature with the same exercise exchange rate and the same exercise date; strangle strategy - connected with purchasing (or selling) two options - one buy and one sell; these options have a different exercise price, where the put option exercise price should be lower than the call option exercise price, yet they both have the same exercise date; strip strategy - where the investor opens a long position on one call option and two put options featuring the same exercise price and exercise date; strap strategy - where the investor has a long position in two call options and one put option featuring the same exercise price and exercise date (Kalinowski, 2007 and Tarczyński, 1999). Complex strategies cover also spread strategies where the investor takes the role of the purchaser and writer of an option for the same base instrument. The said strategies can be divided into three basic types: horizontal spread strategies (calendar spread) - horizontal range where options have the same exercise price, yet a varying expiration date; vertical spread strategies (money spread) - horizontal range where options have varying exercise prices and the same expiration dates. The most popular strategies of this type include: bear spread strategy - connected with a simultaneous purchase and sale of two different call or put options where the exercise rate of the purchased option should be higher than the exercise price of option written, or the bull spread strategy - connected with a simultaneous purchase

and sale of two call or put options, where the exercise rate of the purchased option should be lower than the exercise rate of the put option; diagonal spread options - where options have different exercise prices and different expiration dates (Kalinowski, 2007).

A special type of option strategies are zero-cost strategies connected with a simultaneous purchase and writing of a specific type option, so that the premium for purchased options is equal to the premium for written options. Risk reversal and participant are examples of zero-cost strategies frequently used by enterprises. The risk reversal strategy allows an enterprise conducting e.g. export operations, to safeguard against depreciation of foreign currency. It is based on a simultaneous purchase of a foreign currency sale option and this currency purchase option writing. Whereas, for a strategy to be the zero-cost strategy, the exercise rate of a sale option should be lower than the exercise rate of the purchase option. The participant strategy allows an enterprise to provide itself with a better foreign exchange conversion than the futures rate and it is connected (e.g. by the exporter) with a simultaneous writing of the put option and call option. Both options have the same exercise rate, where the put option written is "out of the money" (OTM), and the call option purchased is "in the money" (ITM). For a strategy to be a zero-cost one the put options need to have a higher denomination than the call options purchased, yet we should emphasise that this can increase the strategy's risk by using the financial leverage effect (Konopczak and Miklus and Wieprzowski, 2011).

The abovementioned strategies do not constitute a full list of all possible and applied assumptions. Apart from the said strategies, we deal also with: cylinder options, conversion, long and short box, ratio spreads, ratio backspreads, calendar spreads, and other. Moreover, it should be mentioned that there is an unlimited number of option strategies, the formation of which depends only on the ingenuity, innovation, specific needs, and size of the investor's wallet.

### **3. Options strategies in Polish enterprises in the years 2007-2009**

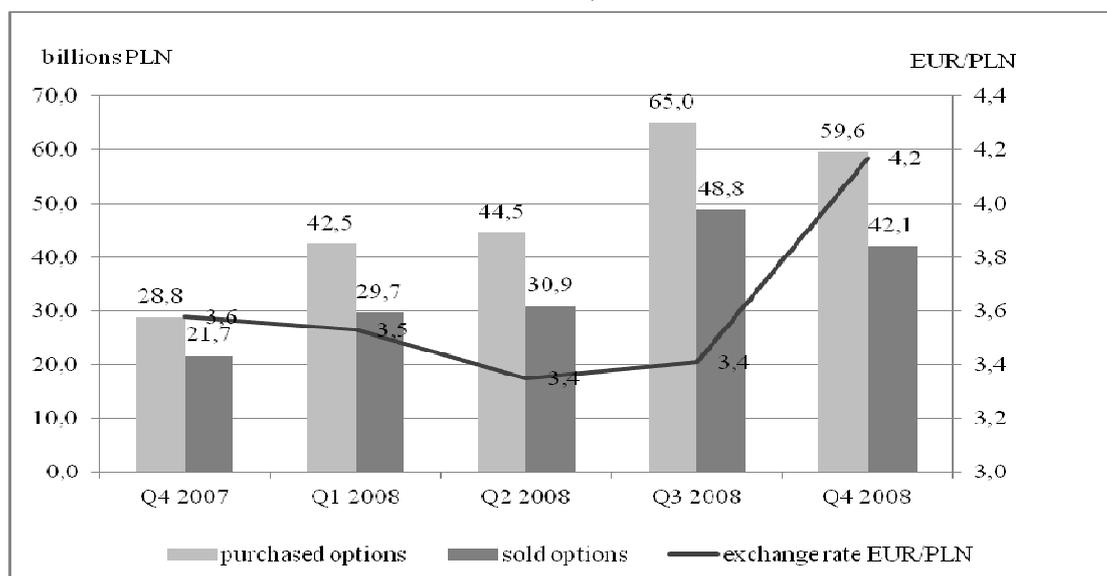
FX options have been applied on a wide scale in the national business trading in Poland for a couple of dozen years as an instrument i.e. minimising the foreign exchange risk and for speculations. Appreciation of the Polish currency took place between May 2004 and July 2008, whereas the activity of banks regarding sale of foreign exchange derivatives contributed to the increase of enterprises' engagement in the FX options market (fig. 1) which can be subdivided into three most important groups.

The first group of enterprises operating on the FX market in Poland covers entities the objective of which was to safeguard against the foreign exchange risk and where such goal managed to be satisfied (i.e. safeguarding instruments turned out to be effective). The Polish Financial Supervision Authority (Komitet Nadzoru Finansowego – KNF) estimates that approx. 80-85% enterprises which used option contracts were part of this group. The second group composed of entities the objective of which was to safeguard against the foreign exchange risk, yet which incurred some losses. The source of this state of affairs can be sought i.e. on the part of the following factors: external - in failure to gain by such enterprises income due to trade exchange at the assumed level, mostly due to weakening of the foreign demand for export from Poland, connected with a global deterioration of the business trend; internal - the cause for which the outcome on derivative transactions failed to meet the expectations could be lack of knowledge of enterprises about the actual risk profile of transactions concluded.

According to the KNF data, such entities constituted approx. 10-15% of enterprises using options. The third group of enterprises used option strategies to obtain short-term profits. The Polish Financial Supervision Authority estimated that non-financial entities which actively

speculated using options at the FX market, constituted approx. 5-10% of all non-financial market members.

*Figure 1: Gross positions of state banks in respect of the non-financial sector due to over-the-counter FX options (in the instruments' nominal value) and the EUR/PLN exchange rate at the end of individual quarters in 2007 and 2008 (Narodowy Bank Polski, 2010)*



It should be noted also that some enterprises opened positions in a couple of banks at the same time, as well as concluded strategic options using the so called financial leverage effect (i.e. leverage) (Konopczak and Miklus and Wieprzowski, 2011). High popularity of options, especially among non-financial clients, was due to the possibility to combine single options into complex option strategies that offered high flexibility in respect of adjusting the pay-out profile, acceptable scenarios, and their price (option premium) to the clients' needs (Narodowy Bank Polski, 2010). In the said period, taking into account a relatively high price of single options, many enterprises preferred zero-cost strategies where the nominal value of call options was higher than that of put options, and very often exceeded the planned income; moreover, such transactions were numerously concluded with a couple of banks. We should take into account that the strategy connected with sale of more call options than put options purchased has a speculation and not a safeguarding nature, and in case of an increase of the foreign to national exchange rates this can lead to unlimited losses. Asymmetry of contracts was connected not only with the difference between the nominal value of call and put options; contracts constituted asymmetrical conditions regarding expiration of rights and duties. Some contracts featured with a benefit limit for companies, yet not a loss limit (Wąsowski, 2009). Moreover, we should point out that many exporters concluded option contracts, without collaterals in export income - i.e. "naked" option positions (according to KNF data as of December 2008, not more than 15% of all transactions in the banks' portfolio). Moreover, banks very often offered enterprises (and they used this to build new option strategies) with the knock-down-and-out put options, with this barrier's monitoring throughout the option's term. Such options were part of the zero-cost option structure composing of the put barrier options purchased and call option issued with twice the nominal value (which was binding). Option with a barrier was relatively cheap in relation to call options issued, wherefore the bank seller could gain a high nominal margin per product offered to an entrepreneur (exporter) (Karkowski, 2009).

In the years 2007-2009 option contracts (including asymmetrically build FX option contracts) were concluded mainly by profitable and relatively large enterprises. Companies

were willing to make such types of transactions mostly due to (Główny Urząd Statystyczny, 2010):

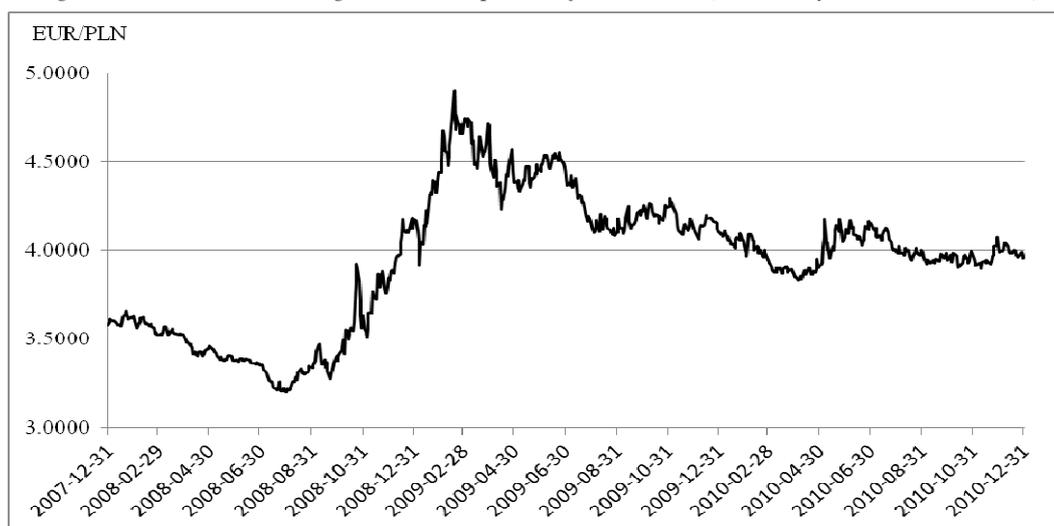
- high currency fluctuation the main reason of which was seeking to eliminate the impact of currency changes on receivables from export and income from import;
- basing on other enterprises concluding asymmetrically complex FX option contracts which gain profit;
- encouragement by an investment company without being aware of the product's nature and risk undertaken.

In the said period, the majority of asymmetrically complex FX option contracts was concluded directly (enterprise - bank), conditions were agreed by phone or using electronic communication systems, whereas some of them were concluded using state-of-art marketing channels: via a voice broker, electronic broker systems automatically associating call and put bids, electronic trade system for bank's customer service, and other.

When discussing the issue of option strategies we would focus on the legal and organisational aspects of option contracts concluded between Polish enterprises and financial institutions. The Polish Financial Supervision Authority focused i.e. on the following problems: application by financial institutions at the moment of concluding option contracts with enterprises of standard documentation and clauses describing the transactions' risk factors (approved by enterprises), presence of aggressive sale practices undertaken due to door-to-door activities of some financial institutions, incurring higher losses per options by enterprises undertaking active speculation as to the foreign exchange volatility, and not typical strategies safeguarding against the FX risk (Wisniewski, 2009). It has been commonly accepted that options used by Polish exporters will be called "toxic" - where the toxic nature derived mostly from the construction of such options (option strategies), manner of their presentation to the client, and mode of concluding such transactions (Sukiennik, 2010).

Due to option strategies accepted by enterprises, banks incurred the counterpart's loan risk which, in some cases, was underestimated. Reversal of the EUR/PLN rate tendency at the turn of July and August 2008 and strong depreciation of the Polish currency in the next months (Fig. 2) contributed to a negative, from the enterprises' point of view, valuation of option strategies.

Figure 2: EUR/PLN exchange rate in the period of 2008-2010 (Narodowy Bank Polski, 2012)



Taking into account information published, it may be said that the substantial part of option strategies concluded in the first three quarters of 2008, had exercise rates distant from

the current forward rate by 5-10%. For EUR/PLN rate options with a one-year maturity period concluded in the summer of 2008 this amounted to approx. 3.50-3.7019. Polish currency's depreciation between August and December 2008 caused that issued OTM options became ATM options, whereas the next depreciation of zloty (between December 2008 and March 2009) caused that the majority of call options written by clients became deep ITM, which made the risk profile generated by such options similar to forward transactions. Therefore, intensification of zloty's depreciation caused huge changes to the option strategies' valuation level at the client market, and was a surprise both to banks offering safeguarding strategies at the foreign exchange market and to enterprises being their clients. For many enterprises, the level of a negative valuation of option strategies was difficult to accept because it exceeded highly the loss level at the financial market permitted by owners.

It should be noted that this situation was made worse by the global financial crisis growing since autumn 2008. Losses of enterprises due to option strategies were to be settled on the option exercise date. Moreover, in case of a substantially negative valuation of option strategies, banks called clients to supplement collateral deposits. However, as it turned out, not all enterprises could make such a supplementation, because the maturity dates for option strategies were adjusted to the dates of payments received by them, e.g. due to export. In the situation where the bank demanded to provide additional means prior to the lapse of contract expiration dates, many enterprises suffered a financing gap wherefore they could not pay their obligations towards banks. Moreover, due to the global crisis in countries being recipients of the Polish export, export contracts started to be terminated or reduced, and it turned out that option strategies concluded prior to the crisis stopped to be required. However, at the same time - under the framework contract - enterprises could not terminate them without incurring substantial costs (Konopczak and Miklus and Wieprzowski, 2011). Due to the situation mentioned above, part of banks terminated option contracts with their clients, and at the same time their negative valuation automatically became the required obligation towards banks. The majority of exporters balanced the negative valuation of option strategies with foreign exchange income from export. In case of a specific group of enterprises, such income turned out to be too low further to financial losses, stemming from option's exercise.

Problems connected with option strategies were resolved in many different ways. Solutions applied most often included: leaving an obligation indisputable with a negative settlement for the enterprise, settlement of all obligations by the enterprise and withholding from any dispute, granting of a loan by the bank for debt restructuring, "rolling" the financial instrument (closing a position and opening a new position), seeking one's rights before the court of law (Główny Urząd Statystyczny, 2010).

All events on the option market in the years 2007-2009 caused that in 2010 participants' approach to option contracts changed. Enterprises started to apply options and simpler strategies with higher awareness; moreover, the care for adjusting the product to actual client's needs increased, and options were not offered in the case of some banks. It should be also noted that the quality of information transmitted by banks and regarding risk connected with products offered improved. This had a substantial impact on improvement of the client's awareness level which started to result in a better assessment of option strategies' use and their proper adjusting to specific needs (Urząd Komisji Nadzoru Finansowego, 2011).

#### **4. Financial outcomes of options strategies**

Information about the scale of non-financial enterprises engagement on the FX market were published by the Polish Financial Supervision Authority, the National Bank of Poland (Narodowy Bank Polski), and the Central Statistical Office (Główny Urząd Statystyczny). They referred mostly to the seize of enterprises' obligations towards banks, stemming from a

negative assessment of transactions concluded. Information about the scale of actual losses were less frequent.

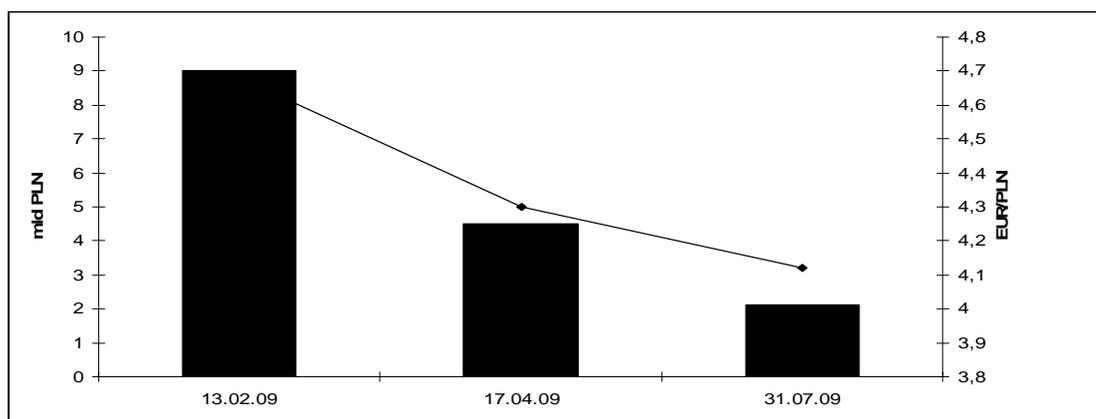
The dynamics of enterprise's engagement changes are best depicted in the messages of the KNF about the size of the negative valuation of transactions using options (table 1 and fig. 3).

Based on statistics published by the Central Statistical Office, the net financial outcome of enterprises in December 2008 was the lowest when compared to the previous year. Therefore, the idea that decrease in profitability of Polish companies was influenced not only by objectively non-beneficial global conditions, but due to losses incurred in option strategies, became an established view.

Table 1: The Polish Financial Supervision Authority message about FX options (Urząd Komisji Nadzoru Finansowego, 2010)

date	Negative valuation (millions PLN)		Message
	companies	Banks' losses	
17.12.2008	5.5	0.6 – 0.8	No threat to the stability of the financial system. Explanations about roots of the FX option problem
11.03.2009	9.0	1.34	Negative valuation should not be identified with losses of companies. Encouragement to solve the problem amicably with an assessment of contracts typically concluded by banks and clients
28.04.2009	4.5		Focusing on a visible effectiveness of past recommendations. No threats to the system as only 10-15% options had a speculation nature
17.08.2009	2.21		Decreasing obligations due to reinforcing of the Polish currency (zloty). Higher awareness of enterprises as to the selection of derivatives

Figure 3: Modifications to the negative value of option valuation along with a change to the Polish currency's rate (Urząd Komisji Nadzoru Finansowego, 2010)



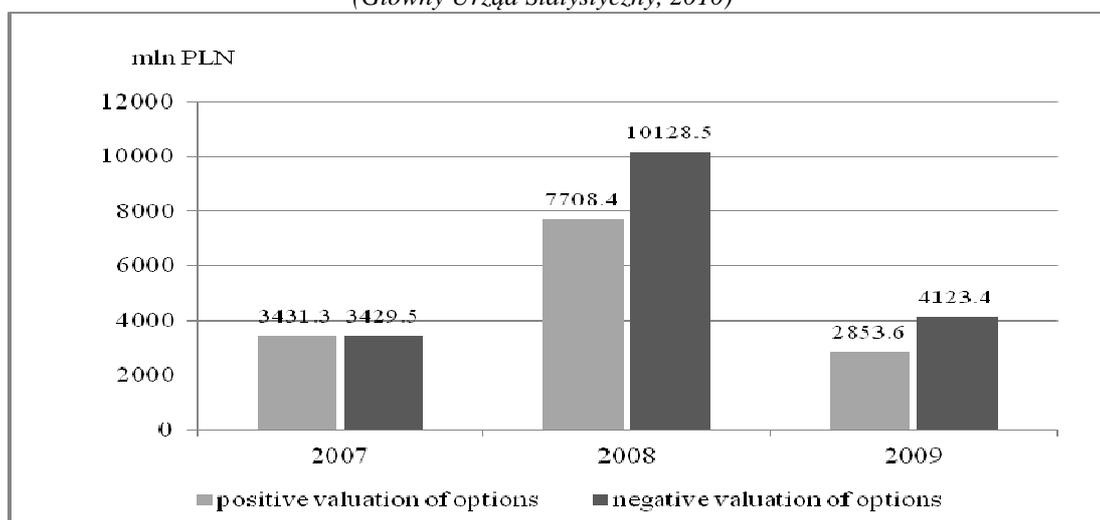
Such losses were more than once mistakenly identified with a negative option valuation, and the company's board and banks were blamed. However, we should remember that apart from the negative valuation of options, there were also option contracts with an additional

valuation, even though due to the global financial crisis - there was a declining tendency in enterprise portfolios subject to the Central Statistical Office survey (table 2 and fig. 4).

Table 2: Nominal value of option contracts concluded by respondents in organised and non-organised trading (in PLN millions) (Główny Urząd Statystyczny, 2010)

Years	Options with positive valuation		Options with negative valuation	
	Nominal value of options purchased in organised trading	Nominal value of options purchased in unorganised trading	Nominal value of options purchased in organised trading	Nominal value of options purchased in unorganised trading
2007	510.9	7234.3	515.3	3356.2
2008	884.7	13494.5	1905.4	9851.6
2009	256.8	8196.5	598.5	3717.8

Figure 4: Nominal value of option contracts in enterprise portfolios (in PLN millions) (Główny Urząd Statystyczny, 2010)



In 2008 the nominal value of option contracts concluded by residents (specified as instruments of a negative valuation) increased three times in relation to the year 2007, however their share in total transactions decreased from 86% to 70.6%. In 2009 the nominal value of option contracts declines, yet the non-residents share increased to 92.4% (Główny Urząd Statystyczny, 2010).

As of February 2009, due to mood improvement at global markets and re-appreciation of the Polish currency, the option problem was limited. It is also possible to observe that in the first half of 2010 the problem of excessive exposition of enterprises to market risk through FX options was decreased. However, the problem of losses incurred by Polish enterprises due to option contracts was still excessive (table 3). Enterprises which incurred losses due to this composed of renown Polish entities from variable disciplines, such as i.e.: Zakłady Magnezytowe Ropczyce SA, Zakłady Azotowe SA, Odlewnie Polskie SA, Erbud, Ciech, Sanwil Holding SA, PKM Duda SA, Indykpol SA, Zakłady Mięsne Salus SA, Elwo SA, Zelmer SA, LENA Lighting SA, Wielton SA, Apator SA.

Outcomes in option contract operations which in 2007 was positive, in the years 2007-2009 transformed into a deficit exceeding the total value of balance sums. This is connected

with payment of obligations due to contracts concluded and safeguarding transactions in foreign trade. So high financial encumbrances had to impact the lowering of the financial outcome in the overall business activity.

Tabel 3: Aggregated outcome on option contract transactions (in PLN millions) (Główny Urząd Statystyczny, 2010)

Years	Options total	Asymmetrical contracts of FX options
2007	1720.6	1558.5
2008	- 6976.2	- 18222.1
2009	- 93526	- 69756.8

Based on surveys carried out by Central Statistical Office it stems that enterprises concluding option strategies undertook rational actions, whereas they were not capable - similarly to all people suffering due to financial crisis - to anticipate the events' outcomes. Moreover, it pointed to the fact that they were not well informed about principles of qualifying them to the group of professional investors and about rights entitled to them. They were also (even through rarely) warned about consequences of concluding an option contract, and additional obligations in relation to contract purchase costs. In case of investments in FX options, it happened rather rarely that they received a description of requirements regarding maintenance and supplementation of a collateral, or satisfaction of other obligations. Only in some cases they were acquainted with the risk connected with the said contracts, the financial leverage mechanism was explained as well as its impact on the risk of forfeiting the investment (Ancyparowicz, 2010). In general, employees representing the bank (or an investment company) failed to present to entrepreneurs a scenario of option's value modification depending on the variation of the foreign exchange, informing about the risk connected with volatility of exchange rates. Moreover, banks failed to provide clients with up-to-date information about the option valuation which could delay the reaction of enterprises in case of sudden changes on the FX market (part of banks declared, however, to be delivering such information at the client's request). The entrepreneur specified also the fact that the nature of transactions concluded (in particular by phone) was unclear for them and decisions made stemmed from a trust devoted to banks and build based on a long-term cooperation between them.

To sum up, it can be said that banks should not propose clients with complex instruments which they might not understand and could not use them knowingly. Whereas, enterprises should deepen their knowledge about such instruments and take care for increasing own competences in risk management and should avoid speculations.

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