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Визначення, класифікація та використання похідних фінансових інструментів

Стаття присвячена ідентифікації та удосконаленню класифікації похідних фінансових інструментів з метою обґрунтування порядку їх практичного використання. Здійснено аналіз наукових підходів до визначення та класифікації похідних фінансових інструментів, за результатами якого уточнено визначення похідних фінансових інструментів і виокремлено відмінності між похідними фінансовими інструментами і похідними цінними паперами. Доведено хибність окремих підходів до класифікації похідних фінансових інструментів. Розкрито можливості використання похідних фінансових інструментів в господарських операціях з метою уникнення фінансових ризиків. Ідентифіковано похідний фінансовий інструмент як терміновий контракт або вторинний цінний папір, відповідно до яких власник має право або отримує зобов'язання після закінчення певного періоду часу на заздалегідь обговорених умовах здійснювати певні операції з основним фінансовим інструментом. Похідні фінансові інструменти є вторинними фінансовими інструментами і включають в себе біржові та позабіржові контракти та похідні цінні папери.

Ключові слова: *похідні фінансові інструменти, похідні цінні папери, фінансові інструменти, ф'ючерси, опціони.*

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Определение, классификация и использование производных финансовых инструментов

Статья посвящена идентификации и совершенствованию классификации производных финансовых инструментов с целью обоснования порядка их практического использования. Осуществлен анализ научных подходов к определению и классификации производных финансовых инструментов. Уточнено определение производных финансовых инструментов и выделены различия между производными финансовыми инструментами и производными ценными бумагами. Доказано ошибочность отдельных подходов к классификации производных финансовых инструментов. Раскрыты возможности использования производных финансовых инструментов в хозяйственных операциях во избежание финансовых рисков. Идентифицировано производный финансовый инструмент как срочный контракт или вторичную ценную бумагу, согласно которым собственник вправе или получает обязательство по истечении определенного периода времени на заранее оговоренных условиях осуществлять определенные операции с основным финансовым инструментом. Производные финансовые инструменты являются вторичными финансовыми инструментами и включают в себя биржевые и внебиржевые контракты и производные ценные бумаги.

Ключевые слова: *производные финансовые инструменты, производные ценные бумаги, финансовые инструменты, фьючерсы, опционы.*

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Definition, Classification and Use of Derivative Financial Instruments

The article is devoted to the identification and improve of the classification of derivative financial instruments in order to support the order of their practical use. The analysis of scientific approaches to the definition and classification of derivative financial instruments is made, based on results of which the definition of derivative financial instruments is clarified and differences between derivative financial instruments and derivative securities are marked. It is proved the fallacy of certain approaches to the classification of derivative financial instruments. Disclosed the possibility of using derivative financial instruments in business transactions in order to avoid financial risks. Derivative financial instrument is identified as a fixed-term contract or a secondary security, according to which the owner is entitled to or receives an obligation after a certain period of time for a pre-agreed terms and conditions to carry out certain operations with the main financial instrument. Derivative financial instruments are secondary financial instruments and include exchange and off-exchange contracts and derivative securities.

Keywords: *derivative financial instruments, derivative securities, financial instruments, futures, options.*

Research urgency. In the normal course of business the entrepreneur may face different types of risks. Under the risk here understood the probability (threat) loss of part of its resources, revenue, additional costs resulting from the implementation of certain operations. The market agent exposed every minute some risk because of their dependence on market factors such as interest rates, exchange rates and prices of goods.

To avoid losses from foreign currency transactions, which expect a break in time of shipment and payment or of long-term bank loans and financial investments advisable to hedge risks using derivative financial instruments.

Hedging was made possible thanks to the development of the markets in which these risks are redistributed among the participants. At the international and national markets is carried out exchange and OTC trading of different assets and instruments. But the hedge, unfortunately, have not yet used firmly into the practice of Ukrainian businessmen, because of contradictions and absence of legal provision for regulating a relationships between the participants of exchange trade, imperfect methodological developments regarding the implementation of hedging, speculation and arbitrage.

Thus, the need for the development of derivative financial instruments caused a surge of research on these issues by economists. Research issues of risk management and hedging carried out quite intensively.

Literature review. The study of the theory of development of the concepts of risk and its quantitative assessment were doing of Ukrainian scientists: V.F. Besedin, I.A. Blank, O.D. Vasylyk, P.I. Verchenko, V.V. Vitlinsky, T.A. Vorkuta, M.J. Demyanenko, V.I. Mishchenko, V.P. Moskalenko, N.S. Ryazanova, I.V. Salo, P.T. Sabluk, V.M. Sutormina, A.L. Ustenko, V.M. Fedosov, A.K. Shumeyko, A.F. Shevchenko and foreign: I.T. Balabanov, V.A. Chernov, G.V. Chernova, S. Blittses, D. Lessard, Stephen A. Ross, Randolph W. Uvestfild, Bradford D. Jordan, R. Kolb.

Lighting of the hedge problems was reflected in the works of Ukrainian and foreign scientists: A.N. Sokhatsky, A.N. Špičák, G.A. Shevchenko, Bradford D. Giordano, V. Zebek, D. Keynes, P. Samuelson, J. Fisher.et al.

Derivatives have been investigated of legal scholars, such as A.V. Agapeeva, V.A. Belova, V.V. Volovik, A.V. Djery, E.V. Ivanova, V.J. Karaban, A.I. Onufrienko, D.A. Pentsova, D.M. Pritika, G. Reiner, V. Rotan, A.Y. Sinenko, I. Trub, G.M. Shevchenko, G.F. Shershenevich, A.S. Yavorskaya and others.

A large cohort of foreign and domestic scientists and practitioners as N. Kaldor, J. Keynes, Alfred Marshall, J.R. Hicks, M. Daniel, D. Darrell, S. Das, R. Kolb, R. MacDonald, M.A. Trombley, T. Francesca, J. Hulldeals a study of the problems of the exchange derivatives market. A significant contribution to the study of the domestic stock exchange market of derivatives made V.V. Goff, L.A. Primostka [9], N.A. Solodkiy [11], A.N. Sokhatsky and others.

But despite the impressive results obtained by the researchers named above, there were contradictions in the understanding of financial derivatives, their relationship with derivatives, derivative securities, financial instruments. It is necessary a more in-depth study of classification of derivative financial instruments and a comparison of their main characteristics.

The purpose of the research in this article is to improve the definition and classification of derivative financial instruments in order to improve of operations with them.

I. Derivative financial instruments: definition and classification.

G.I. Andreyeva [1] writes that quite often in the scientific literature derivative securities identified with derivative financial instruments, forward contracts and derivatives. According to her, derivative securities - are securities whose value depends on the value of the underlying asset, which have a high level of financial leverage and commitment which is carried out in the future. Thus, under the underlying asset should be understood in a broad sense, the subject of transactions between market participants, including not only physical assets, which are objects of civil rights, which can be transmitted through the market and owned by parties to the transaction, but also imaginary, are not referred to in essence and cannot be the property of parties to the transaction, such intangible benefits, price indices, interest rates, exchange rates, other indicators characterizing those or other phenomena, as well as the judgment of the parties.

Derivative securities are determined Y. Mytsa [7, p. 7] how those that are genetically traced back to the construction of a civil contract, and emerged in the countries of Anglo-American law. The transformation of certain types of contracts in derivative securities begins with the assumption of a turnover of formalized contracts as a commodity on US exchanges.

The research of positions of legal scholars on the legal nature of the derivative securities according Y. Mytsa [7, p. 8-9] reduce to two theories.

1. Contractual theory, the essence of which lies in the fact that the legal form of the economic structure of derivative financial instruments is a contract. This theory, in turn, is divided into two areas:

– Purely contractual theory;

– Relative contractual theory.

2. Securities theory. Proponents of this theory substantiate the view on the derivative financial instruments as a special type of securities.

Thus, he believes that securities derivatives are one of the legal forms of the existence of financial derivatives. Securities derivatives are defined as securities certifying the obligatory right of the owner to conclude within a certain period of the agreement on transfer of ownership of a particular property.

V.S. Zdrenik [5] believes that derivative financial instruments and securities derivatives are not the same, but he identifies derivative securities as actually securities.

At the same time in the literature meets the classification of financial instruments on the primary (cash, securities, current accounts payable and receivable) and secondary (derivatives). Sometimes scientists allocate third group – derivative financial instruments, but by the deeper their study, we come to understanding that this is – urgentexchange contracts (options, futures) and OTC derivative contracts (forwards, swaps), as well as derivative securities – stock warrants and option certificates), i.e. secondary financial instruments.

Based on the above mentioned arguments derivative financial instruments are secondary financial instruments and include exchange and OTC contracts and securities derivatives. To derivative securities belongs a stock warrants, options certificates and other similar derivative securities. Therefore under the derivative securities to be understood secondary securities, which certify the right of the owner to buy or sell specified therein primary securities.

To determine of the semantic nature of the derivatives R. Gracheva [4] classifies financial and economic operations on the operation of the real (physical) market or spot that continue to two business days; and operations of the derivatives market –urgent contracts market. She believes that not all derivatives are financial, but only those that are based on the financial assets (currency, interest rate, securities). Also according to her, forward contracts do not belong to financial derivatives because they are based on the goods but not financial assets. However, they may be based on own securities, so that about the forward contracts do not belong to financial derivatives we can be partially disagree.

Based on the ideas outlined above under a derivative cannot be understood only financial derivative but commodity derivative, for example. Thus, the classification of derivatives on the basis of the underlying asset must be considered below.

In the definition of a financial derivative according to P(S)A 13 [8] are allowed a inaccuracy, in particular, that this tool does not require any initial investment. With this statement we must be not agree because in particular for the opening of the first position on the stock exchange it is necessary to pay an initial margin, and the purchaser of the option has to immediately pay the seller a premium for the option. So the definition of a financial derivative according to P(S)A is controversial.

Thus, as financial derivatives should be understood fixed-term contracts or secondary securities, according to which the holder has the right or takes the obligation after a certain time on a pre-agreed conditions to carry out certain operations with financial instruments which are underlying the contract.

In world practice, the most common is a grouping of derivatives by type of underlying asset on the financial and commodity. Financial derivatives according to some authors are divided into foreign exchange, equity, credit, interest, insurance, fiscal, weather, etc. [2].

V.S. Zdrenik [5] gives the classification of derivative financial instruments on the basis of the underlying asset on the stock, currency, commodity and credit. In this classification, there are two errors. The first – an admission of the commodity derivatives into financial instruments derivatives is controversial, so the concept of ‘derivatives’ cannot be identified only as a derivative financial instrument, their concept is really wider. If we follow a different logic, a commodity derivative should be named price derivative, because with its help the risks of changes of commodity prices are distributed. In this case sign of the classification must be corrected. The

second error – the derivative is not always based on underlying asset. Financial instruments are divided into financial assets, financial liabilities and equity instruments. Appropriate classification provided IFRS and National P(S)A 13 [8]. Thus, the base of financial derivatives may not always be a financial asset, for example, financial liability or equity securities too. On the economic base the derivative financial instruments are divided into based on the right of property and obligations of the parties.

Classification of financial derivatives on the functions and properties [6] on for cash flow hedges, fair value hedges and for the formation of additional economic benefits (the tool of speculation) makes sense only for accounting purposes of a particular subject, so how the same tool can be used by different subjects in different purposes.

According to the place of creation derivative financial instruments are classified on the exchange and OTC. The main types of derivative financial instruments are forwards, futures, options and swaps. Derivative financial instruments are classified as conditional (exchange and OTC options, as well as various types of insurance contracts) and unconditional (futures, forwards and swaps). By type of contract there is a division of derivative financial instruments on related to the delivery of the instrument, on related with periodic deliveries and exchange derivatives, calculated on the basis of the variation margin. By origin there are derivatives based on the separation of other instruments, based on the combination of tools and related.

The European Directive on Markets in Financial Instruments 2004/39 / EC – MiFiD gives the classification of financial instruments, which consists of 10 types of them [8]. Depending on the type of legal structure the derivatives are classified as forwards, futures and options. Forward contracts, swaps and depositary receipts Y. Mytsa [7, p. 15-16] does not consider to derivative securities. Warrants in his view should be divided into two types: 'stock warrant', which is an option to buy shares (bonds and other equity securities), and 'warrant' as collateral evidence. 'Equity Warrant' within the classification of derivative securities cannot be separately identified, because it is a kind of option.

Thus, with respect to the classification of derivative financial instruments and derivative securities in the literature there is no consensus. In order to eliminate of contradictions we have to compare the main characteristics of the specific derivative financial instruments (Table 1).

Table 1

Forwards, Futures and Options as Tools for Managing Foreign Exchange Risk: A Comparison

	Forwards	Options	Futures
Costs			
Initial margin /deposit	no	yes	yes
Variation margin	no	yes	no
Need for Speculators to assume the risks that hedgers seek to avoid	no	yes	yes
Forego favorable movements	yes	yes	no
Barter problem	yes	no	no
Benefits			
Liquid market	no	yes	yes
Can hedge any currency	yes. Counter party may be difficult to find	no	no
Legal obligation	yes	yes	no

Source: Table developed by Akansha Jain.

Knowledge of features of the types of derivatives helps us in the right choice them for use in order to improve business efficiency and ensure its security.

II. Kinds of transactions in financial derivatives.

As we know, the operations with derivatives are divided into simple (purchase-sale, resale) and specific (hedging, speculation and arbitrage).Applications of futures for the purpose of speculation, hedging and arbitrage are shown on Figure 1.

Future contract serve as attractive medium of speculation as they offer high leverage. Reward potential is high if speculators take high level of exposures that too by paying only small amount of margin but level of risk is also very high. Buying future contract shows bullish

viewpoint whereas selling futures denotes bearish viewpoint on price of underlying asset. Hedging is process of mitigating possible risk which may arise due to unfavorable movement of price of underlying asset. Hedging can be done by selling futures and hence it helps in eliminating risk of macro variables (GDP, growth of the country, interest rates, overall state of economy). It is effective tool as it provides coverage with unpredicted upside or downside movement of underlying asset. Arbitrage is a process of purchasing certain asset and being short in its future at the time when market price is less than futures price and vice versa.

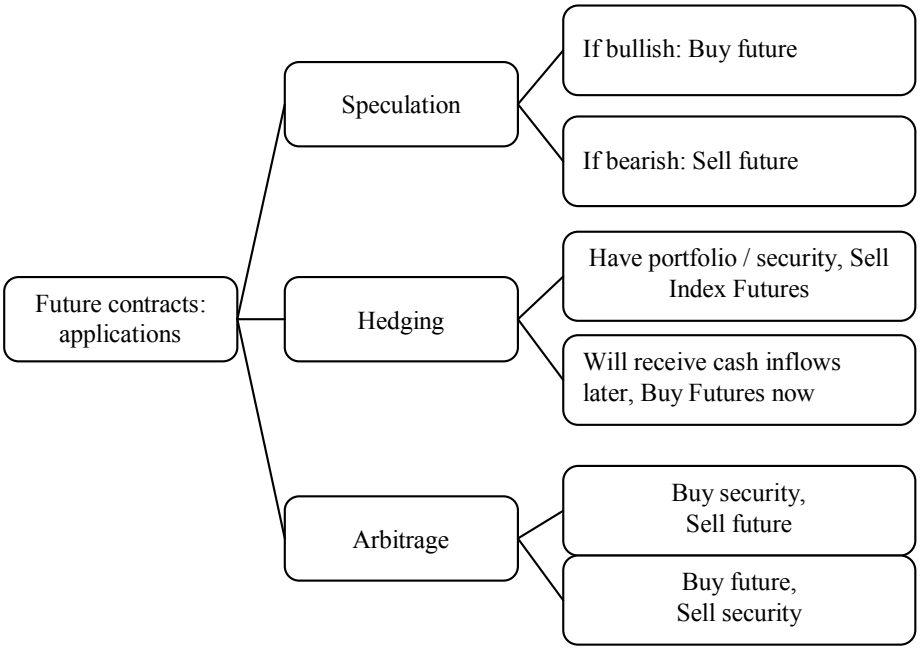

Figure 1. **Future Contract and its applications**

Source: Figure developed by Akansha Jain.

The following derivatives use in Forex transactions:

1) currency pairs (EUR / USD, USD / JPY, GBP / USD, AUD / USD, USD / CHF, USD / CAD, etc.);

2) Metals (XAUUSD / XAUEUR, XAGUSD / XAGEUR, ALUMINIUM, COPPER, PLATINUM, ZINC, NICKEL and others);

3) indices (S & P, Dow Jones, NASDAQ, UK100, Nikkei and others);

4) products (tools available CFD on commodity exchanges such as oil (Brent crude and WTI), cocoa, sugar, coffee, soybeans, corn, cotton, wheat, and others.);

5) bonds (CFD courses some bonds);

6) shares (using CFDs (CFD)).

CFD (Contract For Difference) – contract for difference. It is a derivative that is an agreement between two parties to a transaction to transfer to each other the difference between the prices of the asset at the time of opening and closing.

In India, pairing of currency is allowed with United States dollar, Euro, British pound and Japanese Yen and Table 2 describes the allowable limits of such currency pairs.

Table 2

Currency pairs limits Position allowed in India

USD-INR	Total open positions in all contracts shall not exceed 6 % of the total open interest or USD 10 million, whichever is greater
EUR-INR	Total open positions in all contracts shall not exceed 6 % of the total open interest or 5 million, whichever is greater.
GBP-INR	Total open positions in all contracts shall not exceed 6 % of the total open interest or 5 million pounds, whichever is greater.
JPY-INR	Total open positions in all contracts shall not exceed 6 % of the total open interest or 200 million yen, whichever is greater.

Source: http://www.nseindia.com/products/content/derivatives/curr_der/position_limits.htm

Table 3 describes the three situations in which person who had taken option as hedging tool can make money or lose money.

Table 3

Options: In terms of money involved

	Call option	Put option
In the money	Market price is more than exercise price	Market price is less than exercise price
At the money	Market price is equal to exercise price	Market price is equal to exercise price
Out of money	Market price is less than exercise price	Market price is more than exercise price

Source: Table developed by Akansha Jain.

Option Strategies are described in the Table 4.

Conclusions. As the derivative financial instrument is to be understood fixed-term contract or a secondary security, according to which the holder has the right or takes the obligation after a certain period of time on a pre-agreed conditions to carry out certain operations on contract with the underlying financial instrument.

Derivative financial instruments are secondary financial instruments and include exchange and OTC contracts and derivative securities. As derivative securities should understand the secondary securities, which certify the right of the owner to buy or sell specified therein primary securities.

Enrollment of commodity derivatives into financial instruments is controversial, so the concept of 'derivatives' cannot be identified only as a derivative financial instrument, this concept is really wider. If we follow a different logic, a commodity derivative should be named price derivative, because with its help of the risks of changes of commodity prices are distributed.

Not always in the base of derivative is the underlying asset. Financial instruments are divided into financial assets, financial liabilities and equity instruments. Thus, at the base of financial derivatives can also be a financial liability or equity securities.

The operations with derivatives are divided into simple (purchase-sale, resale) and specific (hedging, speculation and arbitrage). We have shown how can be use of financial derivatives to avoid financial risks. The paper describes such strategies of using financial derivatives: Long Call, Synthetic Short Call, Long Put, Short Put, Bull call spread, Bull Put Spread, Bear Put Spread, Bear Call Spread, Long straddle, Short straddle, Long strangle, Short strangle.

4 Список використаних джерел

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Table 4

Option Strategies

Type of Strategy	Explanation	Maximum attainable profit	Maximum Profit Achieved	Profit	Max Loss	Max Loss Occurs	Loss	Breakeven Point
1	2	3	4	5	6	7	8	9
Long Call	It is most basic strategy where trader purchase call option considering that the price of security covered will increase above strike price before expiry date of option. The call option purchaser is able to gain leverage as calls that are priced less moves up fast in terms of percentage for each and every rise in covered stock. But there life is limited. if there is no movement above the strike price before due date, it will lead to expiry of call option.	No limit	When Price of Underlying > = Strike Price of Long Call + Premium Paid	Price of Underlying - Strike Price of Long Call - Premium Paid	Premium Paid + Commissions Paid	When Price of Underlying < = Strike Price of Long Call	----	Strike Price of Long Call + Premium Paid
Synthetic Short Call	Strategy entered in which short stock position is accompanied with short put of same series	Premium Received - Commissions Paid	When Price of Underlying < = Strike Price of Short Put	------	Unlimited	When Price of Underlying > Sale Price of Underlying + Premium Received	Price of Underlying - Sale Price of Underlying + Premium Received + Commissions Paid.	Sale Price of Underlying + Premium Received
Long Put	Strategy in which buyer purchases put options thinking that price of covered security will fall below strike price before the date of expiry.	Unlimited	When price of underlying=0	Strike Price of Long Put - Premium Paid	Premium Paid + Commissions Paid	When Price of Underlying > = Strike Price of Long Put.		Strike Price of Long Put - Premium Paid
Short Put	Referred to as put write, write put, naked put or uncovered put write.	Limited to the premium received for selling the put option.			Unlimited in a falling market.			Strike Price - premium value of put options sold.
Bull call spread	Strategy which considers buying of call options at particular strike price accompanied with selling of equal number of calls of similar asset at date of expiry but definitely at higher strike price. It is based on bullish expectation of underlying price of stock.	Strike Price of Short Call - Strike Price of Long Call - Net Premium Paid - Commissions Paid	When Price of Underlying > = Strike Price of Short -Call		Net Premium Paid + Commissions Paid			Strike Price of Long Call + Net Premium Paid

Table 4: Continuation

1	2	3	4	5	6	7	8	9
Bull Put Spread	It is strategy which considers buying of put options at particular strike price accompanied with selling of equal number of put option but definitely at higher strike price. It is based on bullish expectation of underlying price of stock. This strategy is fruitful when price of covered security remains more than strike price and leads to expiry of short option worthlessly and helps trader secure premium	Net Premium Received - Commissions Paid	When Price of Underlying > = Strike Price of Short Put		Strike Price of Short Put - Strike Price of Long Put Net Premium Received + Commissions Paid	When Price of Underlying < = Strike Price of Long Put		Strike Price of Short Put - Net Premium Received
Bear Put Spread	Bear Put Spread is strategy in which put options are purchases at particular strike price accompanied by selling of equal number of puts at lower strike price. This type of strategy is fruitful when there is expectation of fall in price of underlying asset.	High strike - low strike - net premium paid				Net premium paid		Long put strike - net debit paid
Bear Call Spread	This type of strategy is attained by selling call options at particular strike price and also buying equal number of calls at higher strike price. This type of strategy is fruitful when there is expectation of fall in price of underlying asset.	Net Premium Received - Commissions Paid	When Price of Underlying < = Strike Price of Short Call		Strike Price of Long Call - Strike Price of Short Call - Net Premium Received + Commissions Paid	When Price of Underlying > = Strike Price of Long Call		Strike Price of Short Call + Net Premium Received
Long straddle	This strategy of options considers buying a long call along with long put of similar asset, date of expiry and strike price. The current market price will always be near to strike price. This strategy enchases future volatility and upside and downside movement brings profit for position holder.	Unlimited			Premiums paid			This strategy breaks even if, at expiration, the stock price is either above or below the strike price by the amount of premium paid. At either of those levels, one option's intrinsic value will equal the premium paid for both options while the other option will be expiring worthless. 1)Upside breakeven = strike + premiums received 2) Downside breakeven = strike - premiums received

Table 4: Continuation

1	2	3	4	5	6	7	8	9
Short straddle	This strategy of options considers buying short position in call along with long put of similar asset, date of expiry and strike price. The maximum profit is the amount of premium collected by writing the options	Net Premium Received - Commissions Paid	When Price of Underlying = Strike Price of Call Put		Unlimited	When Price of Underlying > Strike Price of Short Call + Net Premium Received OR Price of Underlying < Strike Price of Short Put - Net Premium Received	Price of Underlying - Strike Price of Short Call - Net Premium Received OR Strike Price of Short Put - Price of Underlying - Net Premium Received + Commissions Paid	There are 2 break-even points for the short straddle position. 1)Upper Breakeven Point = Strike Price of Short Call + Net Premium Received 2) Lower Breakeven Point = Strike Price of Short Put - Net Premium Received
Long strangle	It is neutral strategy of purchasing put which is out of money and also call which is out of money little bit of stock under consideration and date of expiry. This strategy results in unlimited profits in case of high volatility of stock and risk is also limited	Unlimited	When Price of Underlying > Strike Price of Long Call + Net Premium Paid OR Price of Underlying < Strike Price of Long Put - Net Premium Paid	Price of Underlying - Strike Price of Long Call - Net Premium Paid OR Strike Price of Long Put - Price of Underlying - Net Premium Paid	Net Premium Paid + Commissions Paid	When Price of Underlying is in between Strike Price of Long Call and Strike Price of Long Put.		There are 2 break-even points for the long strangle position 1)Upper Breakeven Point = Strike Price of Long Call + Net Premium Paid 2)Lower Breakeven Point = Strike Price of Long Put - Net Premium Paid
Short strangle	It is neutral strategy of selling put which is out of money and also call which is out of money little bit of stock under consideration and date of expiry. It is appropriate only when there is limited volatility expected in near future of stock under consideration.	Net Premium Received - Commissions Paid	When Price of Underlying is in between the Strike Price of the Short Call and the Strike Price of the Short Put		Unlimited	When Price of Underlying > Strike Price of Short Call + Net Premium Received OR Price of Underlying < Strike Price of Short Put - Net Premium Received	Price of Underlying - Strike Price of Short Call - Net Premium Received OR Strike Price of Short Put - Price of Underlying - Net Premium Received + Commissions Paid	There are 2 break-even points for the short strangle position. 1)Upper Breakeven Point = Strike Price of Short Call + Net Premium Received 2)Lower Breakeven Point = Strike Price of Short Put - Net Premium Received

Source: Table developed by Akanksha Jain.

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