A Transformation Strategy for Financial Instruments according to the Requirements of International Standards

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Abstract

Background/Objectives: This research aims at improving the methodological framework, as well as calculation and procedural mechanism of measuring and recognizing derivative financial instruments by firms. Methods/Statistical analysis: The researchers used the following methods: abstract method; induction method; deduction method. Findings: Relevant challenges of transforming financial interests in accordance with the requirements of international standards, and transactions with derivative financial instruments in particular, have been discussed in this article. As a result of this research, the authors have presented key problems that arise in transformation of statements; original methodology of transforming financial instruments in accordance with the requirements of international financial reporting standards, and have developed detailed calculation tools to be applied in basic forms of financial statements of any firm, i.e. a statement of financial position and statement of total income. The authors have developed an overall fair and amortised cost measurement methodology for financial statements, and then provided a special measurement procedure for derivative financial instruments that includes measurement formulas for forward, future, option, swap contracts and warrants. Applications/Improvements: This methodology may be applied by organizations that transform their financial statements in accordance with the requirements of international financial reporting standards, including credit institutions, insurance companies, investment funds and town planning organizations that undergo listing procedure.

Keywords: Financial Instruments, Derivative Financial Instruments, International Financial Reporting Standards, Transformation of Financial Statements

1. Introduction

Under the conditions of rising globalization processes of the global financial system, growing internationalization of securities markets, transborder investment transactions and increasing competition of the largest global financial centers, the RF Government defined high-priority fields of activity of governmental bodies towards modernizing institutions and regulating financial market instruments up until 2020.

A market of derivative financial instruments or otherwise called derivatives, or derivatives market is a common designation of a segment of derivative securities in Russia and the most highly growing sector of the global financial market, arousing a special interest of interest, investment funds, profiteers, hedgers and other professional players of stock exchanges.

The relevance of subject of this research is related to the fact that all economically significant entities must transform their national statements in accordance with the international financial reporting standards (hereinafter - IFRS), and derivative financial instruments (hereinafter - DFI) take the largest share of financial assets and liabilities of a statement of financial position of a company.

The hypothesis of this research relies on the fact that application of the transformation methodology for financial instruments that has been developed by the authors will reduce essentially time and material expenditures by audit, measurement, analysis and consulting team members.

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1.1 Literature Review
Available official information about financial instruments [FASB4] and controversies in IAS 32, 39, IFRS 9. The subject of this research is not well elaborated in Russian and foreign literature. One should mark out the following researchers who studied measurement of financial interests: D. Brigadier2, Russell G. Golden3, L.D. Putra4 and others.

The problems of measurement, accounting and audit of fair value are represented to one extent or another in works of the following foreign researchers: Gerard M. Zack5, Alfred M. King6, Mark C. Scott7, Niels Kortleve8, Mary E. Barth9. Having studied views of modern researchers of financial instruments transformation, we believe it is important to make stand out the following authors who worked in the field, in particular who disclosed the nature of financial instruments, classification, hedging, impairment and accounting: Frank J. Fabozzi10, H.M. Markowitz11, Braam van den Berg12, E. Bunn13, W.C. Spaulding14, S. Parameswaran15 and others.

1.2 Literature Review (in Russian)
For the last decade, Russian researchers have also been dedicating their efforts to various methods of transforming and measuring derivative financial instruments; here, scientific contribution of the following authors should be mentioned: T.G. Sheshukova and S.V. Ponomareva16, А.Т. Choyzhalsanova17, М. Shtiller18.

2. Research Methods
Significant changes occurred in financial accounting practice in Russia and many countries due to introduction of international financial reporting standards. Derivative financial instruments are the most interesting for studying by accounting objects. Four standards deal with financial instruments globally: IAS 32 and IAS 39, IFRS 7 and IFRS 9.

International financial reporting standards, regulations that have been recently adopted in the Russian Federation constituted the theoretical basis of this research.

The following methods of scientific cognition of study materials were used to prove consistency of these new methodological aspects of transforming financial instruments: structural and logical, data synthesis, historical etc.

The authors that conducted this researched used the following methods:

1. Abstract method (in other words, the authors abstracted themselves from any material available and pertaining to the research subject).
2. Induction method (in other words, the authors summarized any auxiliary research findings).
3. Deduction method (according to the research hypothesis stated at the beginning of this research, the authors developed calculation and procedural aspects).

The methodology of transformation of financial instruments in general and measurement of derivative financial instruments in particular that has been offered by the authors relies on the following concepts: a business model, risk assessment, etc.

3. Results and Discussion
One should point out a conceivable problem in terminological foundation, typology and classification of financial instruments at the Russian market22. It is difficult to move to development of derivatives measurement procedures without the unified theoretical framework23. Available methods of measuring and recognizing derivative financial instruments have been adapted in accordance with international standards to be applied in management and accounting of an industrial company and functioning of economy in general.

Formulas have been set to determine the fair value of derivative financial instruments, derivatives portfolio and financial assets and liabilities, where the counterparty does not know the price at the active market.

Calculation tools have been prepared to calculate profit/loss from re-classification of financial assets. Formulas have been generated to calculate loss from impairment of financial assets recognized at their amortized and prime cost.

Calculation tools to convert any currencies into equivalent amounts, calculate foreign exchange interest payments and convert any currency into the basic currency at the moment of contract fulfillment have been offered.

Three phases of financial instruments recognition are specified in IFRS 921 Financial instruments (see Table 1).
The following methodology of generating financial instruments at fair (current) and amortised cost has been proposed within this research (see Table 3).

According to Table 3, generation of items, such as financial assets and financial liabilities in statements that are compiled in accordance with IFRSs at fair cost may comprise nine basic measures. Methodology of generating items financial assets and financial liabilities at amortised cost is described in detail in Table 4.

Let us discuss the definition of amortised cost, as it is given in IAS 32/39 part 4 Hedging Accounting and Disclosure. Amortised cost is the amount at which a financial asset or financial liability is measured at initial recognition minus principal repayments, plus or minus the cumulative amortisation using the effective interest method of any difference between that initial amount and the maturity amount, and minus any reduction (directly

Table 1. Financial instruments accounting phases

<table>
<thead>
<tr>
<th>Phase No</th>
<th>Phase</th>
</tr>
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<tbody>
<tr>
<td>Phase I</td>
<td>Classification and measurement</td>
</tr>
<tr>
<td>Phase II</td>
<td>Amortized cost and impairment of financial assets</td>
</tr>
<tr>
<td>Phase III</td>
<td>Hedge accounting</td>
</tr>
</tbody>
</table>

Proposals to solve problems associated with financial instruments recognition in statements that have been compiled in accordance with IFRSs in Russia have been presented (see Table 2).

With a solution provided to common problems, a lot of countries will be able to speed up the process greatly and make it less painful for switching numerous large companies and credit institutions to IFRSs, and make individual regions of the country attractive to investors.

Table 2. Original approach to solving common problems of transforming financial instruments in statements according to IFRSs

<table>
<thead>
<tr>
<th>Problem</th>
<th>Proposed solution for recognizing financial instruments</th>
<th>Authority that adopts a regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No statistical tools available for financial instruments to incorporate information into the RF balance of payments for commercial companies</td>
<td>1.1 Creating statistical tools for financial assets to be further incorporated into the RF balance of payments. 1.2. Creating statistical tools for financial liabilities to be further incorporated into the RF balance of payments.</td>
<td>Bank of Russia</td>
</tr>
<tr>
<td>2. Gaps in regional policy of development of accounting and audit at the level of a RF entity</td>
<td>2.1. Developing an accounting and audit development concept at the regional level</td>
<td>Legislative Assembly of the Perm Krai</td>
</tr>
<tr>
<td>3. No unified procedures to recognize financial instruments in transformation of statements in accordance with IFRSs available</td>
<td>3.1 Creating an adapted procedure to recognize financial instruments at fair cost. 3.2 Creating an adapted procedure to recognize financial instruments at fair cost. 3.3 Developing models to measure fair cost. 3.4 Developing a procedure to measure financial results subject to changes in financial instruments. 3.5 Formulas to regulate impairment of financial assets</td>
<td>RF Ministry of Finance</td>
</tr>
</tbody>
</table>

Table 3. Methodology of generating items financial assets and financial liabilities at fair cost in accordance with international standards

<table>
<thead>
<tr>
<th>No</th>
<th>Measures to generate fair cost of a financial instrument</th>
<th>Calculation tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>A) Fair cost of a transferred financial instrument.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B) Fair cost of a received financial instrument.</td>
</tr>
<tr>
<td>1</td>
<td>Grounds for changing transactions involving financial instruments at fair cost</td>
<td>A) Calculating fair cost of debt instruments with coupon payments.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B) Calculating fair cost of debt instruments with interest payments.</td>
</tr>
<tr>
<td>2</td>
<td>Measuring financial instruments at fair cost</td>
<td>A) Calculating fair cost of debt instruments with coupon payments.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B) Calculating fair cost of debt instruments with interest payments.</td>
</tr>
</tbody>
</table>
A Transformation Strategy for Financial Instruments according to the Requirements of International Standards

3 Models of measuring financial instruments at fair (current) cost

A) A model of discounted cash flow, which relies primarily on the use of data observed at the market, and secondarily on the use of data that are not observed at the market;
B) A model of discounted cash flows adjusted for (credit, liquidity) risks;
C) A model that utilizes contractual discounted cash flows and market yield of return;
D) A model that utilizes probabilistic cash flows and risk-free rate of return.

4 Categories of models of measuring fair value

A) Market-driven approach.
B) Income approach.
C) Cost approach.

5 Generating positive and negative cost of a financial instrument

A) Calculating positive fair cost of a financial instrument
B) Calculating negative fair cost of a financial instrument

6 Impairment of financial instruments recognized at their fair cost

A) Creating a provision for impairment of a financial instrument
B) Income generated from reduced impairment of a financial asset.
C) Recognizing loss of impairment of a financial asset.

7 Hedging a financial instrument that was measured at fair cost (optional)

A) Calculating expenditures for hedging a financial instrument.
B) Income/ expenditures for hedging financial instruments.

8 Calculating final financial result of sales/redemption of instruments measured at their fair cost

A) Calculating profit/loss of transactions involving equity financial instruments.
B) Calculating profit/loss of transactions involving debt financial instruments.
C) Calculating profit/loss of sales of a financial asset.
D) Calculating profit/loss of settlement of a financial liability.

9 Incorporating financial instruments into financial statements of a company at fair cost of such financial instruments

A) A financial asset in a statement of financial position of a company.
B) Financial liabilities in a statement of financial position of a company.
C) Income / expenditures in a statement of total income of a company.

Table 4. Methodology of generating items financial assets and financial liabilities at amortized cost in accordance with international standards

<table>
<thead>
<tr>
<th>No.</th>
<th>Measures to generate fair cost of a financial instrument</th>
<th>Calculation tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Initial recognition of a financial instrument</td>
<td>A) Recognizing a financial asset at amortized cost. B) Recognizing a financial liability at amortized cost.</td>
</tr>
<tr>
<td>2</td>
<td>Recognizing financial instruments at their amortized cost</td>
<td>A) Calculating amortized cost of debt financial instruments, including expected future coupon payments. B) Calculating amortized cost of debt financial instruments, including expected future interest payments.</td>
</tr>
</tbody>
</table>
Recognizing accumulated amortization
Calculating accumulated amortization, applying an effective interest method.

Impairment of a financial instrument that was measured at its amortized value
A) Creating a provision for impairment of a financial instrument.
B) Income generated from reduced impairment of a financial asset.
C) Recognizing loss of impairment of a financial asset.
D) Creating a measurement provision.

Hedging a financial instrument that was measured at amortized cost (optional)
A) Calculating expenditures for hedging a financial instrument.
B) Income/ expenditures for hedging financial instruments.

Calculating final financial result of sales / settlement of instruments measured at amortized cost
A) Calculating profit/loss of transactions involving equity financial instruments.
B) Calculating profit/loss of transactions involving debt financial instruments.
C) Calculating profit/loss of sales of a financial asset.
D) Calculating profit/loss of settlement of a financial liability.

Incorporating financial instruments into financial statements of a company at amortized cost of such financial instruments
A) A financial asset in a statement of financial position of a company.
B) Financial liabilities in a statement of financial position of a company.
C) Income / expenditures in a statement of total income of a company.

<table>
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<tr>
<th>No</th>
<th>Formula</th>
<th>Legend</th>
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</table>
| 1.1 | Formula to recognize a forward contract at fair cost | FCFC = ((Cri/(1+r)^i+ (Cru/(1+r)^u) – ((Cli/(1+r)^i+(Clu/(1+r)^u),
where FCFC is fair cost of a forward contract;
Cri is cost of requirements;
Cl is cost of liabilities;
r is discounting rate; and
i, u are years. |
| 1.2 | Formula to recognize forward price of an asset | Fpa= CMPfc * Ca,
where Fpa is forward price of an asset;
CMPfc is current market price of forward contracts; and
Ca is a corresponding asset. |
| 1.3 | Formula to recognize a deliverable forward contract | Ap-s ba = Pba (dfc) – Pba (dpp),
where Ap-s ba is agreement of purchase and sale of a basic asset;
Pba (dfc) is price of a basic asset that is determined by a forward contract; and
Pba (dpp) is price of a basic asset at the date of performance (a deliverable forward contract). |
| 1.4 | Formula to recognize a non-deliverable forward contract | Ap-s ba = Pba (dfc) - Pba (dpnd),
where Ap-s ba is agreement of purchase and sale of a basic asset;
Pba (dfc) is price of a basic asset that is determined by a forward contract; and
Pba (dpnd) is price of a basic asset at the date of performance (a non-deliverable forward contract). |
| 1.5 | Formula to calculate a forward foreign transaction rate for accounting and predicting forward foreign exchange profit/losses | FFETR = SMR ± FP,
where is FFETR forward foreign exchange transaction rate;
SMR is spot market rate; and
FP is forward point: + price surplus, - price discount. |
1.6 **Formula to calculate spread for determining liquidity and advisability of any contributions to a currency asset**

\[ S = SMR - FR, \]
where \( S \) is spread; \( SMR \) is spot market rate; and \( FR \) is forward rate.

**Formulas to recognize future contracts**

2.1 **Formula to recognize a future contract**

\[ Ap-s\ ba = Pba (dfc) – Pba (dp), \]
where: \( Ap-s\ ba \) is agreement of purchase and sale of a basic asset; \( Pba \) (dfc) is price of a basic asset that is determined by a future contract; and \( Pba \) (dp) is price of a basic asset at the date of performance (a non-deliverable future contract).

2.2 **Formula to calculate variation margin at the end of a trade session, where a future or option contract was concluded**

\[ VM = CMPba (ets) – Pba (dc), \]
where: \( VM \) is variation margin; \( CMPba \) (ets) is current market price (value) of a basic asset (at the end of a trade session); and \( Pba \) (dc) is price (value) of a basic asset (determined by a contract).

2.3 **Formula to calculate variation margin at the end of the next trade session, where corresponding future and option contract will be concluded**

\[ VM = CMPba (cc) - pCMPba (cc), \]
where: \( VM \) is variation margin; \( CMPba \) (cc) is current market price (value) of a basic asset (corresponding contract); and \( pCMPba \) (cc) is previous current market price (previous current value) of a basic asset (corresponding contract).

2.4 **Formula to calculate variation margin at the end of a trade session, where a future or option contract was terminated**

\[ VM = CMP(cc) - Pt (cc), \]
where: \( VM \) is variation margin; \( CMP(cc) \) is current market price (of a corresponding contract); and \( Pt \) (cc) is price that is determined at termination, termination price (of a corresponding contract).

**Formulas to recognize option contracts**

3.1 **Formula to determine intrinsic value of a call option**

\[ IVco = CPa (sp) - SP (oc), \]
where \( IVco \) is intrinsic value of a call option; \( CPa \) (sp) is current price of an asset at the market (spot price); and \( SP \) (oc) is striking price (of an option contract).

3.2 **Formula to calculate intrinsic value of a put option**

\[ IVpo = SP (oc) - CPa (sp), \]
where \( IVpo \) is intrinsic value of a put option; \( SP \) (oc) is striking price (of an option contract); and \( CPa \) (sp) is current price of an asset at the market (spot price).

3.3 **Formula to calculate time value of a stock option**

\[ TVso = Pso – Iv, \]
where \( TVso \) is time value of a stock option; \( Pso \) is premium of a stock option; and \( Iv \) is intrinsic value.

3.4 **Formula to determine a non-deliverable option contract**

\[ Ap-s\ ba = Pba (dop) - Pba (dpnd), \]
where \( Ap-s\ ba \) is agreement of purchase and sale of a basic asset; \( Pba \) (dop) is price of a basic asset that is determined by an option contract; and \( Pba \) (dpnd) is price of a basic asset at the date of performance (a non-deliverable option contract).

3.5 **Formula to calculate actuarial gains / losses of pension option payment**

\[ A g/l = Ppl - Apl ± A, \]
where \( A g/l \) is actuarial gains/losses (of pension option payment); \( Ppl \) is planned pension liability; \( Apl \) is actual pension liability; and \( A \) is adjustments for the difference between actuarial assumptions and actual results.

**Formulas to recognize warrants**
4.1 Formula to calculate fair cost of warrants

| FCW = VSds - (VSdp + CW), where FCW is fair cost of warrant, VSds is value of stocks at the date of settlement, VSdp is value of stocks at the date of purchase, and CW is cost of purchase of a warrant. |

Formulas to recognize swap contracts

<table>
<thead>
<tr>
<th>No</th>
<th>Formula</th>
<th>Legend</th>
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<tbody>
<tr>
<td>5.1</td>
<td>Formula to calculate forward points to determine decrease/increase in spot points</td>
<td>Fp = O – Sr, where Fp is forward points (or spot points), O is outright (date of performance, end date of a transaction); and Sr is spot rate (value date).</td>
</tr>
<tr>
<td>5.2</td>
<td>Adapted formula to calculate upright</td>
<td>O = Sr ± Fp, where O is outright, Sr is spot rate (value date, transaction date), and Fp is forward points.</td>
</tr>
<tr>
<td>5.3</td>
<td>Adapted procedure to calculate short swap</td>
<td>SS = (Sr± Fp) – Sr, where SS is short swap; Sr is spot rate; and Fp is forward points.</td>
</tr>
<tr>
<td>5.4</td>
<td>Formulas to calculate exchangeable cash flow payments between counterparties that concluded a commodity swap contract</td>
<td>GCSCx = FP – MP, where GCSCx is gain (income) according to a commodity swap contract to the favor of the counterparty x, FP is fixed price, and MP is market price. GCSCy = MP - FP, where GCSCy is gain (income) according to a commodity swap contract to the favor of the counterparty y, MP is market price, and FP is fixed price.</td>
</tr>
<tr>
<td>5.6</td>
<td>Formulas to calculate payments for counterparties X and Y, who concluded a vanilla swap contract at a certain interest rate</td>
<td>Payment of the counterparty X to the favor of the counterparty Y = Principal * Fixed Interest Rate, where Fixed Interest Rate is interest that is defined by an agreement for the party X. Payment of the counterparty Y to the favor of the counterparty X = Principal * Floating Interest Rate, where Floating Interest Rate usually is Libor Rate amount (for the day/ week/month/year) and interest that is defined by an agreement for the party Y.</td>
</tr>
<tr>
<td>5.7</td>
<td>Converting currencies into equivalent amounts for a vanilla currency swap contract</td>
<td>If ( i&gt;j ) ] Principal of i-currency * Exchange Rate A [ i&lt;j ] ] Principal of i-currency / Exchange Rate A</td>
</tr>
</tbody>
</table>
5.8 Calculating foreign exchange interest payments for a vanilla currency swap contract

| Interest Payment Amount of X to Y in j-currency = Principal Amount in j-currency * Fixed Interest for j-currency |
| Interest Payment Amount of Y to X in i-currency = Principal Amount in i-currency * Fixed Interest for i-currency |

5.9 Converting j-currency into the principal of i-currency (primary contractual currency) at the date of performance of a vanilla swap contract

- If \( i > j \)
  - Interest Payment Amount in j-currency / Foreign Exchange Rate for Period T2

- If \( i < j \)
  - Interest Payment Amount in j-currency * Foreign Exchange Rate for Period T2

### Table 6. Calculation tools to measure financial instruments

<table>
<thead>
<tr>
<th>No</th>
<th>Formula</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Formula to calculate impairment loss for loans and receivables or investments held to maturity that are recognized at their amortised cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[ IL_{dffiA} = BVfa - \sum_{i=1}^{n} \frac{F_i - BVfa}{(1 + r_s)^i} ]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>where ( IL_{dffiA} ) is loss of impairment of assets of a derivative financial instrument that are recognized at their amortised cost; ( BVfa ) is book value of a financial asset; ( F_i ) is cash flow for i-years; ( CL_i ) is future losses for credits for i-years, which have not yet been sustained; ( r_s ) is effective interest rate that has been calculated at initial recognition of a financial asset; and ( i ) is year.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Formula to calculate loss of impairment of financial assets that are recognized at their prime cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[ LIdfiPC = BVf - \sum_{t=1}^{n} \frac{F_t}{(1 + r_t)^t} ]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>where ( LIdfiPC ) is loss of impairment of assets of a derivative financial instrument that are recognized at their prime cost; ( BVfa ) is book value of a financial asset; ( F_t ) is cash flow for i-years; ( r_t ) is interest rate that is calculated according to current market rate of return of a similar asset; and ( t ) is year.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Formula to calculate accumulated loss that was previously recognized as net assets / capital, derivative financial assets available for sale</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[ AL_{faR} = (EPfa - (RP + A) - CFCfa - LIdfiPR) ]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>where ( AL_{faR} ) is accumulated loss that was previously recognized as net assets / capital, assets of derivative financial instruments available for sale; ( EPfa ) is expenditures for purchase of derivative financial assets; ( RP ) is previously received principal payments; ( A ) is amortisation; ( CFC ) is current fair cost of derivative financial assets; and ( LIdfiPR ) is loss of impairment of such assets of derivative financial instruments that was previously recognized as proficit / deficit.</td>
<td></td>
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</tbody>
</table>
A calculation methodology for the amortized cost was developed by the Central Bank of the Russian Federation for credit organizations, while there is not any calculation procedure available for commercial organizations.

A procedure for recognizing and measuring derivative financial instruments to be applied by industrial companies is presented in Table 5; this procedure comprises calculation tools to recognize forward, future, option and swap contracts, and warrants.

This procedure of recognizing and measuring derivative financial instruments will allow industrial companies not only to measure the study category with high quality and accuracy, but also to improve transparency of statements, leading to a significant improvement of company's investment climate, while attracting potential investors, and it will also eliminate over-theorising of the subject matter of a doctorate thesis. These guidelines for recognizing and measuring derivatives aim at enhancing the overall performance of an industrial company and also imply a social benefit from approbation of calculation tools, i.e. finance and accounting teams will be able to observe clearly exemplary formulas of recognizing and measuring forward, future and option contracts and warrants; therefore, productive labor environment will be improved greatly. Upon effective measurement and

<table>
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<th>Formula</th>
<th>Description</th>
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<tbody>
<tr>
<td>4</td>
<td>Formula to recognize profit / loss of re-classification of an asset of a derivative financial instrument into the category that is measured at fair cost. $\text{RFAfc} = \text{BVfa} - \text{FC}$, where $\text{RFAfc}$ is profit / loss of re-classification of an asset of a derivative financial instrument into the category of assets that are measured at their fair cost, $\text{BVfa}$ is previous book value of a derivative financial instrument, and $\text{FC}$ is current fair cost of a derivative financial instrument.</td>
</tr>
<tr>
<td>5</td>
<td>Formula to calculate profit / loss of an asset of a derivative financial instrument, when fair value of such instrument cannot be reliably determined. $\text{P/Lfa} = \text{ACfa} - \text{RA}$, where $\text{P/Lfa}$ is profit or loss of an asset of a derivative financial instrument, with no reliable measurement of fair value of such instrument available, $\text{ACfa}$ is amortised cost of a financial asset, and $\text{RA}$ is redemption amount.</td>
</tr>
<tr>
<td>6</td>
<td>Formula to determine final fair cost of a derivative financial instrument, provided there is an active market and published corrections. $\text{FCMdfi} = \text{PMdfi} (A) \pm (\text{CRdfi} (A) - \text{CRMdfi})$, where $\text{FCMdfi}$ is fair value of measured derivative financial instrument; $\text{PMdfi} (A)$ is price of measured derivative financial instrument at the selected market that is more favorable to the organization; $\text{CRdfi} (A)$ is credit risk of derivative financial instruments that are quoted at the selected market that is more favorable to the organization; and $\text{CRMdfi}$ is credit risk of measured derivative financial instrument.</td>
</tr>
<tr>
<td>7</td>
<td>Formula to determine fair cost of a derivative financial instruments portfolio. $\text{FCPdfi} = \sum_{K_{fi}=1} DFI \times P$, where $\text{FCPdfi}$ is fair cost of a portfolio of derivative financial instruments; $\text{DFI}$ is derivative financial instrument in a portfolio, and the sum of such financial instruments must equal to the portfolio taken to be 1 ($K_{fi} = 1$); and $P$ is price of an instrument item in a portfolio.</td>
</tr>
<tr>
<td>8</td>
<td>Formula to determine fair cost of a derivative financial asset or derivative financial liability, when the counterparty does not know the price of such asset or liability at the active market that is favorable to the counterparty, but does know price quotations of component elements. $\text{FCdfi(e)} = \sum_{K_{e}=1} E \times P$, where $\text{FCdfi(e)}$ is fair cost of a derivative financial instrument that is calculated according to its component elements; $E$ is component element of a derivative financial instrument, when the counterparty knows the price of such component at the active market that is favorable to the counterparty, and the sum of component elements must equal to the measured financial instrument taken to be 1 ($K_{e} = 1$); and $P$ is price of a component element of the measured derivative financial instrument.</td>
</tr>
</tbody>
</table>
recognition of derivatives, financial flow circulation of a company in its business processes that are associated with derivative financial instruments management will be productive, affecting positively economic activity of the industrial company, region and the whole country. Calculation tools to measure derivative financial instruments will be presented in a table (see Table 6).

4. Conclusion

Having studied and analyzed research regulations, monographs of Russian and foreign researchers, the authors have developed the applied aspects of studying derivative financial instruments, which provided the basis for the procedure of recognizing and measuring derivatives in a statement of financial position of economic entities, namely:

- formulas to recognize forward contracts and foreign exchange contracts;
- formulas to recognize future contracts in statements of industrial companies;
- formulas to recognize option contracts;
- formulas to recognize fair cost of warrants;
- formulas to recognize swap contracts;
- adapted calculation mechanisms have been developed to calculate fair value of derivative financial instruments, when there is an active market and published corrections available, by determining fair cost of the derivative financial instruments portfolio, and adapted formula to recognize fair cost of a derivate financial instrument in a statement of a company's financial position according to component elements of such derivate financial instrument, when quotations of the object at the active market are not known.

5. References


