METHODOLOGYOFBALANCINGECONOMICEFFICIENCYINDICES ANDFINANCIALSTABILITYRATIOSWITHININVESTMENTPROJECTING

© 2008 M.I. Rimer, A.A. Korolev, A.Y. Nikiforov*

Key words: methodology, investment project, economic efficiency, project's financial stability, cash flow statement, balance sheet, net income, depreciation, cash, reinvested owner's capital, reinvested depreciation.

Investigation covers a problem of economic efficiency and financial stability of investment projects as well as economic activity of a company. Authors demonstrate antagonistic character of both groups of indices (economic efficiency indices and financial stability ratios): higher economic efficiency leads to deterioration in financial reliability and higher financial risks. However taking into consideration unity of initial data which is in the basis of cash flow statement and balance sheet authors come up with an idea to balance economic efficiency and financial stability indices.

Composing effective economical systems one of the most important principals is to balance different parts of the unity. According to this principle the stable economical growth is possible under the circumstances of balancing different categories: demand and supply, consumption and saving, incomes and expenses.

Balancing can (and must) emerge on different levels of economy: macro economy, sectors and departments of economy. The most important balancing is at 'unit' level of economy — at a level of an enterprise.

An enterprise (a company) is a complex of different subsystems and activity spheres: industry, supplying, marketing, finance, investment, staff management. It is necessary to balance these subsystems. The work of supply service should be correlated to industry needs, industrial activity indices are perfectly fitted to the financial strategy, developing a financial plan you should take into account the peculiarities of staff motivation. Investment activity of a company must centralize industrial needs, marketing, financial flows, staff possibilities. 'Ideal enterprise' is a balanced system.

The issue on correlation of 'economical effectiveness' and 'financial reliability' is still the main point in the investment planning.

In due course all literature on planning, and in particular on intra-factory planning, has been penetrated by the idea of balancing subsystems. It was and remains the precondition of all workings out on optimisation of systems and indices[1] that is largely caused by new possibilities which are granted by automation and computerisation of planning and accounting[2].

The article is devoted to balancing the system indices of economical effectiveness and financial reliability, developing TEO investment project.[3]

The economical effectiveness of the investment project reflects the profit quantity got from the investment. It is shown with the system of the indices (the main of them are NPV, IRR and the period of repayment.

The financial reliability of the project characterizes the stability of the financial system which is based in the investment project to reach the indices of the economical effectiveness, the pay capacity, the liquidity, etc.

The indices of the economical effectiveness are counted from the financial investment budget (FIB), the indices of the financial reliability can be only counted from the budgeted balance sheet (BBS).

It is difficult to coincide the economical effectiveness and the financial reliability at the technical economical improvement of the investment project because both of these two indices groups have an antagonistic character. Increasing the economical effect of the project, the developer decreases its financial stability and vice verse.

The problem of balancing the indices of the economical effectiveness and the financial reliability has been discussed for a long time. The problem is supposed to be unsolved (because of the antagonism between the indices).[4]

That is possibly a reason why the problem of the effectiveness and stability indices has not mentioned in the methodic recommendation

* Mir I. Rimer, Ph.D. in economics, professor Samara State University of Economics; Andrey A. Korolev, post-graduate Samara State University of Economics; Alexey Y. Nikiforov, post-graduate Samara State University of Economics.
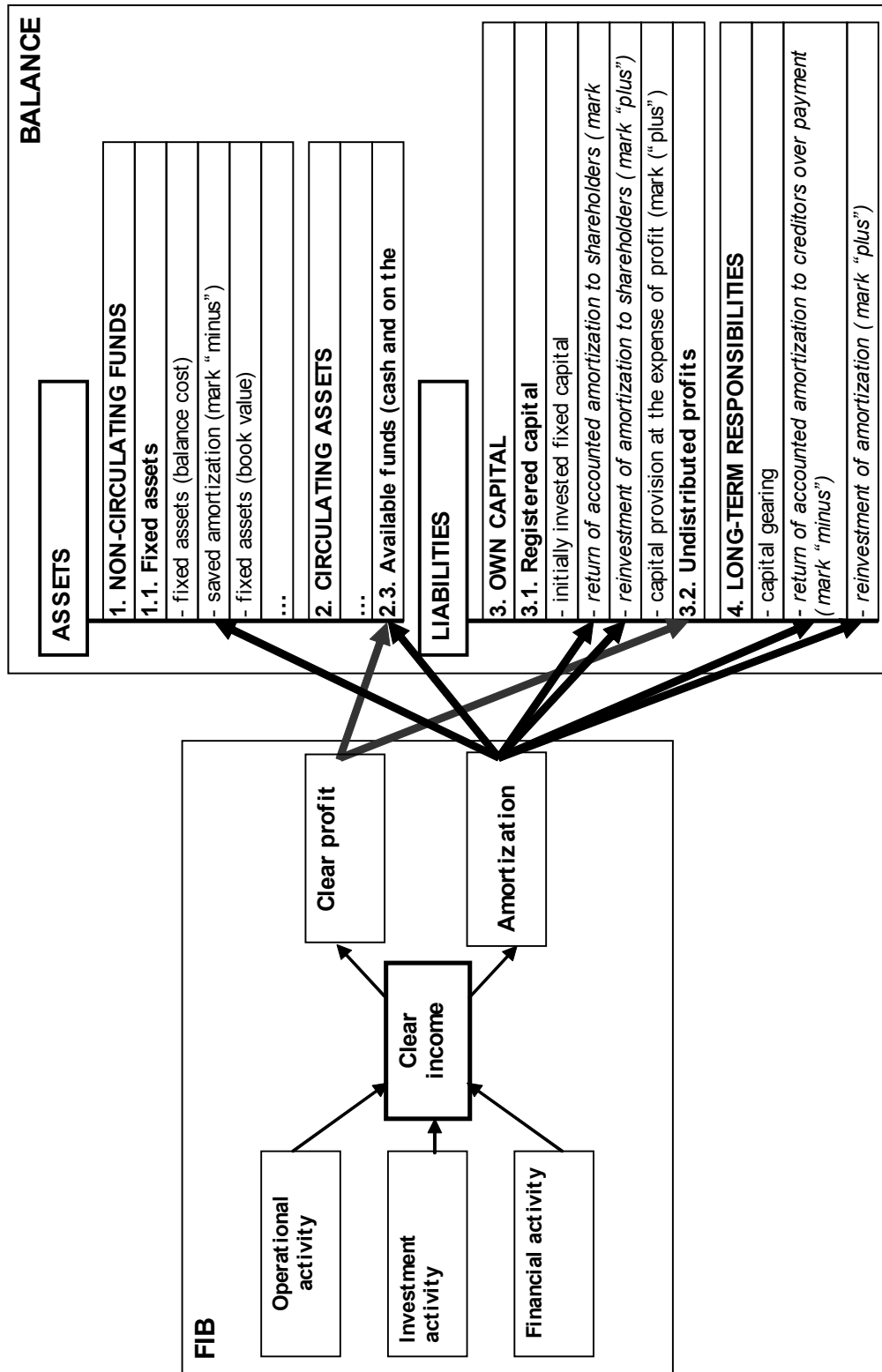
Fig. 1. **The reflection of the clear income in financial investing budget and balance**
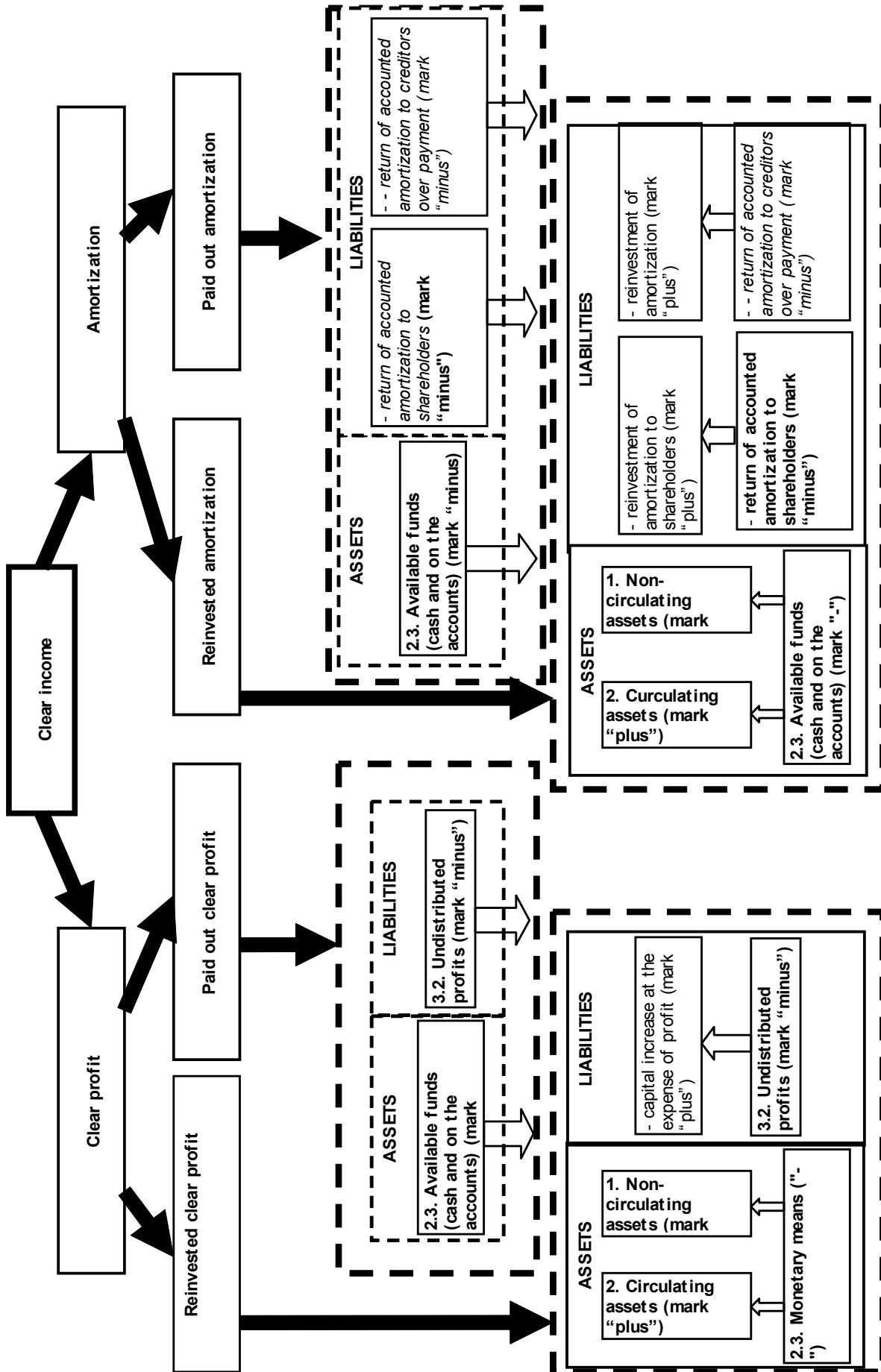
The content of the figure, read in its rotated orientation:

BALANCE

ASSETS

1. NON-CIRCULATING FUNDS

1.1. Fixed assets
- fixed assets (balance cost)
- saved amortization (mark "minus")
- fixed assets (book value)
...

2. CIRCULATING ASSETS
...

2.3. Available funds (cash and on the

LIABILITIES

3. OWN CAPITAL

3.1. Registered capital
- initially invested fixed capital
- *return of accounted amortization to shareholders (mark "plus")*
- *reinvestment of amortization to shareholders (mark "plus")*
- capital provision at the expense of profit (mark ("plus")

3.2. Undistributed profits

4. LONG-TERM RESPONSIBILITIES
- capital gearing
- *return of accounted amortization to creditors over payment (mark "minus")*
- *reinvestment of amortization (mark "plus")*

FIB

Operational activity

Investment activity

Financial activity

Clear income

Clear profit

Amortization

Fig. 2. The accounting peculiarities of consumed and reinvested parts of the clear income in the investment projects

about valuing the effectiveness of the investment projects.5

The wish to find the connection between FIB and BBS is reasonable. Both these documents are products of economical genius.

The financial investment budget forms a complex scene of the state and dynamics of the enterprise development in the light of three main types of activity: current (operational), financial, investing. FIB is based on balancing different indices: parameters of the production activity (for example, the structure of the prime cost) relate with the plans of the market expenses (in the form of the fixed volume of sales, stocks of finished products, bill receivable), investment solutions (for example, buying the objects of the capital funds, capital building) tie with financial policy (the formation of the capital structure).

The balance is an apogee of balancing the idea and the main peak of the economical thought. BBS perfectly reflects the connection between the resources of the capital formation and the directions of its usage. The main principles of the document have not changed for years.

The correlation of difficult articles of FIB and BBS has been mentioned in the works of many scientists. However, the unique methods, which allow to balance these two forms of reporting, is not suggested.

The aim of the article is to study the problem of balancing the indices of the economical effectiveness and financial stability applying to the investment project, to show the possibility of these ideas' realization applying to current financial production activity of an enterprise, and also to show methodological implication of balancing FIB and the balance, which are easily realized in the inward management balance sheet of an enterprise.

The investment project is an ideal model for studying the problems of balancing. This article is based on the main documents of the TEO project —budget and balance. The methodological foundation of balancing the indices is in the system of cash funds flows. These flows are united in different groups and it depends on the management points of economy and finance. In the classical form they are grouped into inflows and outflows in the circulation funds reports, into assets and liabilities in the balance.

As the informational base for forming these flows is common, so the indices of the economical effectiveness and the financial stability must be balanced.

Developing an approach to the problem it is necessary to understand the conceptual difference between FIB and BBS. FIB shows the incoming, spending, balance of funds for every step of an accounting period. And BBS shows the financial state of an enterprise on the reported date.

Forming these two reported documents the main issue is the unity of the information source (cash flows of an enterprise). All financial economical processes (from buying raw materials to getting money resources for sold production including tax payment) are reflected in FIB and BBS.

The correlation of FIB and BBS articles does not make any difficulties.

The gain of the constant assets is the gain of balancing cost of constant assets in the balance.

The rated circulating assets and NDC from buying values are shown in the balance.

The gain of the additional capital is related to own capital in FIB.

The gain of the long-term debt in the balance is related to 'Obtain a credit', 'Cancel a credit' in the FIB part 'Cash flows of the financial activity'.

The quantity of short-term responsibilities in the balance compares with the budget values of making the necessity in the circulating capital.

The main problem is to distinguish 'clear profit' and 'free cash flow'.

It is known that both of these indices are in BBS, but in FIB there is only one - free cash flow. According to accounting, the clear profit, registered in the balance, is the value of the final line in budgeted balance sheet about profits and losses.

The meaning of 'Clear cash funds' of the balance is the value of the final line in FIB 'Balance of three flows'.

Such a coordination of FIB and BBS indices is not under the question. But there is still a question: how do 'clear profit' and 'free cash flow' correlate to each other at every step of accounting?

The variant of solving the problem is given in Table 1,2.

Table 1

FinancialinvestingbudgetofprojectN

Funds flow according to operational activity						
Inflows	0	0	7 883 834	11 268 269	11 268 269	11 268 269
Including profit from perfomance	0	0	7 883 834	11 268 269	11 268 269	11 268 269
Outflows	-452 470	-59 475	-7 264 287	-10 124 942	-10 121 811	-10 074 345
Including operational spendings	0	0	-6 953 095	-9 662 807	-9 662 807	-9 662 807
Credit % including profit taxes	0	0	-135 000	-135 000	-135 000	-81 000
taxes	-11 792	-59 475	-176 192	-327 136	-324 004	-330 538
Out of performed spendings	-440 678	0	0	0	0	0
Balance of operational activity	**-452 470**	**-59 475**	**619 547**	**1 143 327**	**1 146 458**	**1 193 924**
Including amortization	0	0	364 619	384 322	384 322	384 322
Funds flow according to investment activity						
Inflows	0	0	0	0	0	0
Including additional assets performance	0	0	0	0	0	0
Outflows	-1 344 322	-3 577 712	-1 378 275	-565 197	0	0
Including spendings on buying constant assets	-1 072 034	-3 262 712	-394 068	0	0	0
Requirement addition of circulating capital	-272 288	-315 000	-984 207	-565 197	0	0
Balance of investment activity	**-1 344 322**	**-3 577 712**	**-1 378 275**	**-565 197**	**0**	**0**
Funds flow according to financial activity						
Inflows	1 796 792	3 637 186	1 266 021	0	0	0
Including own capital	1 796 792	1 637 186	766 021	0	0	0
loans	0	2 000 000	500 000	0	0	0
Outflows	0	0	0	0	-1 000 000	-1 500 000
Including repayment of a debt	0	0	0	0	-1 000 000	-1 500 000
Balance of financial activity	**1 796 792**	**3 637 186**	**1 266 021**	**0**	**-1 000 000**	**-1 500 000**
Balance of three flows	**0**	**0**	**507 294**	**578 129**	**146 458**	**-306 076**
Reconstruction of funds flow	0	0	507 294	1 085 423	1 231 881	925 805

The data of the tables allow us to think that both financial documents are formed correctly: the balance is drawn up, the line 'free cash flow' in the balance is in accordance with the line 'Reconstruction cash flow' in FIB.

The correlation of every year 'clear profit' and 'free cash flow' indices is considered. For this purpose the indices are given in Table 3 for each year. (see lines 1,3 table3). In the second line the amortization value is given.

The logics of accounting and economical analysis tells that the value of the 'clear cash funds' index at the period is a sum of the clear profit, got at that period, and the amortization, accounted at the same period. There are no other resources of the own capital formation in the enterprise. So the normative value of the 'free cash flow' index must constitute the quantity, equal to the sum of the clear profit and the amortization (see line 3 table 3). However, according to the data of Table 3, the factual quantity of the 'free cash flow' differs from the normative quantity (see line 4 table 3). The quantity of difference is counted in Line 5 Table 3.what is the reason of the difference?

The analysis of FIB gives the answer to the question.

At the zero and the first step the enterprise incurs the loss because of paying obligatory taxes, absorbing a loss by future spending, etc. At this period the project does not generate the clear profit, the amortization is not accrued. From the second period the project brings a profit. A part of this profit can be

Table 2

Budget balance sheet of project N

1. ASSETS						
Constant assets:						
Cost balance	1 072 034	4 334 746	4 728 814	4 728 814	4 728 814	4 728 814
amortization	0	0	364 619	748 941	1 133 263	1 517 585
Book value	1 072 034	4 334 746	4 364 195	3 979 873	3 595 551	3 211 229
Unfinished capital investments	0	0	0	0	0	0
Constant assets totals	1 072 034	4 334 746	4 364 195	3 979 873	3 595 551	3 211 229
Circulating assets:						
Material stores	0	0	395 145	564 492	564 492	564 492
Unfinished goods	0	0	47 361	66 247	66 247	66 247
Finished goods	0	0	101 635	139 543	139 543	139 543
Accounts due from customers	0	0	129 207	184 674	184 674	184 674
Paid VAT	272 288	587 288	1 209 011	1 625 827	1 625 827	1 625 827
Future costs				0	0	0
Free funds	0	0	507 294	1 085 423	1 231 881	925 805
Total	272 288	587 288	2 389 653	3 666 207	3 812 665	3 506 589
Assets total	1 344 322	4 922 034	6 753 848	7 646 080	7 408 216	6 717 818
2. LIABILITIES						
Own capital:						
Ownership capital	1 796 792	3 433 979	4 200 000	4 200 000	4 200 000	4 200 000
Aimed financing and entries	0	0	0	0	0	0
Undistributed profits (+) / losses (-)	-452 470	-511 945	-257 016	501 988	1 264 124	2 073 726
Own funds totals	1 344 322	2 922 034	3 942 984	4 701 988	5 464 124	6 273 726
Long-term liabilities (credits)	0	2 000 000	2 500 000	2 500 000	1 500 000	0
Short-term liabilities:						
Credits debts	0	0	310 864	444 092	444 092	444 092
Budget debts	0	0	0	0	0	0
Staff debts	0	0	0	0	0	0
Shot-term liabilities total	0	0	310 864	444 092	444 092	444 092
Liabilities total	1 344 322	4 922 034	6 753 848	7 646 080	7 408 216	6 717 818
Balance	0	0	0	0	0	0

used for investing. The quantity of the differences at Steps 2, 3 is that part of the clear profit generated by the project (amortization + net gains).

The generated gain is reinvested to cancel the debt. (see line 5 table 3 steps 4,5).

Taking into account the said before, it is stated the practicability of entering the term "reinvented own capital". This quantity allows to tie the two basic financial documents and also to specify the funds balancing in the system the investment projects. This quantity is complex: it includes the reinvested clear profit and the reinvested amortization.

How should these indices be discounted correctly? To fulfill the task, some additional lines are better to include.

The accounted amortization reflects two times in the balance fund (drawing 1): with minus in the article 'saved amortization', and with plus in the article 'cash flows'. Provided the balance transformation (suggested by the au-

thor), in the passive, the accounted amortization reflects 4 times (drawing 1). It helps to balance the cash flows in the limits of FIB and the balance.

After selling the production the amortization spending should be compensated to the funds owners. In this case the accounted amortization of the capital funds (formed at the expense of the own capital) singling out the receipts must be back to shareholders: the line 'return of the accounted amortization to shareholders (with "-")' reflects the decreasing of own capital because of the returning its part. Shareholders can spend their cash funds in 2 ways (drawing 2). They can reinvent the amortization in the object of enterprising activity. Or they can bring out the funds and direct them to the other spheres. Here the accounted amortization leaves the enterprise balance.

There is also a variant where the financing resource is borrowed funds. In such a situation the amortization is one of the sources to cancel

Table 3

Digressionoffundsrealbalancefromregulationvalue

1	Clear profit for a period	-452 470	-59 475	254 928	759 005	762 136	809 602
2	Accounted amortization for a period	0	0	364 619	384 322	384 322	384 322
3	Regulatory value of funds for a period (p?. 1+ 2)	-452 470	-59 475	619 547	1 143 327	1 146 458	1 193 924
4	Real value of funds for a period (from FIB)	0	0	507 294	578 129	146 458	-306 076
5	Significance of differences — reinvested own capital (?. 3 - p. 4)	-452 470	-59 475	112 253	565 197	1 000 000	1 500 000

a credit, and the accounted per cents are the rent payment. Here the amortization reflects the balanced line 'the return the amortization to cancel a credit' (with 'minus'). (drawing 1)

If the schedule of a credit allows to cancel it at the end of the period, the accounted amortization reflects simultaneously in the line 'the reinvestment of the amortization' (with 'plus'). If the schedule has monthly payments, these funds leave the balance of the organization for the balance of the credit office (drawings 1, 2).

So the accounted amortization never increases the balance result of the project. When it is left the own capital of the enterprise, the invested funds of shareholders are returned, decreasing the total result of the balance.

In comparison with the amortization the clear profit as an additional cost increases the result of the balance. Here the clear profit reflects in the second department in the line 'account and available funds'; being in the passive — in the third department, the line 'the undivided profit' (drawing 1). Reinvesting this profit the distribution of the undivided profit takes place, and its transformation into the own capital (drawing 2, the line 'increasing the capital at the expanse of the profit' ('plus')). At the same time 'account and available funds' are directed to the investments (drawing 2). "Not spending" is also the investment of the funds.

Distributing the undistributed clear profit and aiming it for the consumption it happens that it is brought out from both the lines (actives/passives). However, the real decrease of the total result of the balance does not take place, because the profit is an additional cost. Taking away from the project the amortization and the clear profit 2 variants could be. The first one, when the enterprise invests the free cash flows in the other project. The real bringing out the funds does not take place. The second one, taking away the amortization and the clear profit happens through the payments to the shareholders. That is the variant of real bringing out the funds.

The lines in italics (drawing 1) are very important for balancing and providing the mechanism of the correlation of the two forms: FIB and the balance. It, in its turn, opens the way for making new effective approaches to technico-economical reasons of the investment projects. There would not be any more difficulties with the procedure of transferring the budgeted balance sheet indices to the indices of the financial investment budget.

The balancing system of the economical effectiveness and the financial reliability indices can be successfully spread not only on the process of the investment projects, but also on the level of the management accounting at the enterprises. The success is provided with the modern multimedia base of this system. This system can become an effective tool to define the influence of different technico-technological, organizational economical and financial solutions and factors on the concept of the key indices of the economical effectiveness of an enterprise activity and its financial stability.

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[1] *Kaplan R.S. Norton D.P.* Balancing system of indices. From strategy to activity. Moscow, 2004. Shchiborshch K.B. Budgeting industry enterprise activity in Russia. Moscow, 2004.

[2] *Karabutova L.N.* Formation of test indices in management account system.//Repoeter of Samara State University of Economics. Samara, 2007. ¹ 2(28).

[3] *Rimer M.U., Kassatov A.D., Matienko N.N.* Economical value of investments. St. Retersburg, 2007. P. 67, 263, 280-281, 289, 262-363.

[4] *Vilenskij P.L., Livshits V.N., Smolyak S.A.* Value of investment projects effectiveness: Theory and Practice. — Study Materials. Moscow, 2002. P. 367-368.

[5] Methodological recommendations on value of investment projects effectiveness// Ministry Of Economics the Russian Federation, Ministry of Finance the Russian Federation, State Committee of building, architecture, housing policy; the leaders of the writing team: V.V. Kossov, V.N. Livshits, A.G. Shahknazarov. Moscow, 2000.