# THE ROLE OF INTERNAL ASSIGNMENT PRICES IN THE EVALUATION OF THE TRANSACTIONS BETWEEN PROFIT CENTERS

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**Abstract**

*The internal assignment price, also called transfer price, represents the value at which the transfers between profit centers within the same economic entity are assessed. These transfers are determined by the organizational and functional structure of the economic entity. The internal the internal exchanges between the responsibility (profit) centers of the entity must be evaluated at the assignment price. Moreover, the performances of these centers are influenced by the existence of internal assignments, and the explanation lies in the fact that what the "buying" center considers a cost will become an income for the "selling" center. Despite all these, the internal assignment price does not influence the general income of the economic entity, but only the analytical income of each responsibility center.*

*The problem of the internal assignment price was scientifically approached in 1920 by General Motors, followed by other companies in the USA (1930s, 1940s) and then by France, starting with 1950.*

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Decentralized organizations are characterized by the fact that the lower levels managers are granted the freedom of making decisions. In this context, transfer prices are used to coordinate the actions of the subunits, as well as to evaluate their performances.

*The transfer price* is the price charged by a subdivision in the organizational structure of an entity for a product or service provided to another subdivision. In principle, this price generates incomes for the subdivision that sells, and purchase costs for the subdivision that buys. The product or service that is the object of the transfer bears the name of intermediate product.[ 6]

***The internal assignment price fixing must meet the following conditions:*** [ 5]
- it must evaluate accurately the performances of the centers;
- it must ensure the convergence of the economic entity's interests with the objectives of the responsibility center;
- it must respect the autonomy of the responsibility centers;
- it must avoid conflicts between two responsibility centers.

In order to better understand the mechanism of the use of these internal assignment prices, we present a comparative calculation between two responsibility centers of a company, the data being systematized in table no. 1.

*Table no. 1 Calculation of internal assignments*

| No. | "A" responsibility center (seller) | Amounts | "B" responsibility center (buyer) | Amounts |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
| *I* | *Internal assignment price = 40 lei* | | | |
| 1. | Internal assignments (300 pieces*40 lei/piece) | 12.000 | Turnover (300 pieces*70 lei/piece) | 21.000 |
| 2. | External purchases | 7.000 | Internal purchases (300 pieces*40 lei/piece) | 12.000 |
| 3. | Other expenses | 3.000 | Other expenses | 2.500 |
| 4. | Analytical income | 2.000 | Analytical income | 6.500 |
| 5. | *Global income* (2.000 lei + 6.500 lei)    *8.500 lei* | | | |
| *II* | *Internal assignment price = 50 lei* | | | |
| 6. | Internal assignments (300 pieces*50 lei/piece) | 15.000 | Turnover (300 pieces*70 lei/piece) | 21.000 |
| 7. | External purchases | 7.000 | Internal purchases (300 pieces*50 lei/piece) | 15.000 |
| 8. | Other expenses | 3.000 | Other expenses | 2.500 |
| 9. | Analytical income | 5.000 | Analytical income | 3.500 |
| 10. | *Global income* (5.000 lei + 3.500 lei)    *8.500 lei* | | | |

As it results from the calculi presented in **table no. 1,** the global income of the company is identical in the two cases (8.500 lei), the analytical incomes of the responsibility centers, which actually reflect their partial performance, being the only ones that differ.

*The internal assignment price fixing methods are grouped into three categories* [4, 5, 8]*, respectively:*
1. ***cost-based methods;***
2. ***market price methods;***
3. ***methods based on negotiated prices.***

***1. Cost-based methods*** are generally used for transfers between the productive centers of the same economic entity when there are no other potential supply sources or when its manager chooses internal supply for strategic reasons.

According to the type of cost, these methods can be:

a.  **the real cost method** uses real costs to evaluate the transfers between the responsibility centers, although they do not allow:
- on one hand, a pertinent analysis of the performances of the responsibility centers;
- on the other hand, the real cost transmits the efficiency or inefficiency of the selling center to the one that receives the asset/service.

For exemplification, let us analyze the data presented in **Table no. 2.**

*Table no. 2 The calculation of internal assignments at real cost*

| No. | "A" responsibility center (seller) | Value | "B" responsibility center (buyer) | Value |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
| *I* | *Variant 1* | | | |
| 1. | The production value estimated at a real cost equal to the standard cost (500 pieces*40 lei/piece) | 20.000 | Internal purchases at a real cost increased by a 3% margin(500 pieces*41.20 lei /piece) | 20.600 |
| 2. | Variable expenses (25 lei/ piece) | 12.500 | Purchase cost of the component added to the product received via assignment (500 pieces*5 lei/piece) | 2.500 |
| 3. | Fixed expenses | 7.500 | Assembly expenses (500 pieces*1.5 lei/ piece) | 750 |
| 4. | The assignment price is a real cost increase by a 3% margin (40 lei*1,03 ) | 41,20 | Real return cost (500 pieces* 47.70 lei/ piece) | 23.850 |
| 5. | Internal assignments (500 pieces*41.20 lei/piece) | 20.600 | Turnover (500 pieces* 53 lei/piece) | 26.500 |
| 6. | Analytical income | 600 | Analytical income | *2.650* |
| 7. | *Global income   (600 lei + 2.650 lei)        3.250 lei* | | | |
| *II* | *Variant 2* | | | |
| 8. | The value of the production, estimated at a return cost that did not comply with the production constraints (500 pieces *43 lei/piece) | 21.500 | Internal purchases at the new return cost (44.29 lei + 5 lei + 1.5 lei = 50.79 lei/piece) | 25.395 |
| 9. | The assignment price is a return cost increased by a 3% margin (43 lei*1.03 ) | 44,29 | Turnover (500 pieces* 53 lei/piece) | 26.500 |
| 10. | Internal assignments (500 pieces*44.29 lei/piece) | 22.145 | | |
| 11. | Analytical income | 645 | Analytical income | 1.105 |
| 12. | *Global income   (645 lei + 1.105 lei)        1.750 lei* | | | |

As it results from the calculi presented in Table no. 2, the selection of an assignment price equal to the real cost does not offer the upstream responsibility center any efficiency, since it can recover its inefficiency on the downstream centers, respectively:

- in the first calculation variant, the global income is of  3.250 lei, namely: [53 lei/piece – (40 lei + 5 lei + 1.5 lei)]*500 pieces;
- in the second calculation variant, the global income is of  1.750 lei, namely: [53 lei/piece –  (43 lei + 5 lei + 1.5 lei)]*500 pieces;
- the global income of the company is smaller by 1.500 lei (3.250 lei – 1.750 lei ) in the second variant, as compared to the expected income, because:
  - ➢ the "A" responsibility center is inefficient by 3 lei /piece (43 lei – 40 lei), which determines a loss of  1.500 lei, which is the loss established at the level of the company based on the global income. Despite all these, the analytical income of this center is 45 lei bigger than the expected income (645 lei – 600 lei). This is due to the calculation modality of the margin and to the higher value of the real cost (43 lei instead of 40 lei) used for the second variant (3 lei*3%*500 pieces=45 lei).
  - ➢ the "B" responsibility center, although it complied with its production obligations, registered a 1.545 lei (2.650 lei – 1.105 lei) smaller analytical income, fact that corresponds to the transfer of a 1.500 lei inefficiency of the "A" responsibility center and to a 45 lei margin increase for the same center.

**b. the standard cost method**  eliminates the disadvantages of the real cost method, since :
- standard costs have a constant level for a specific time period;
- standard costs enable a localization of the performances depending on the responsibility centers that participate to internal transfers, and, in this way:
  - ➢ the selling responsibility center can be monitored depending on the deviations registered between the standard and the real data, from a quantitative, as well as from a qualitative perspective;
  - ➢ the buying responsibility center will only be responsible for the quantities purchased from the selling responsibility center.

For exemplification, we will analyze the data presented in Table no. 3.

*Table no. 3 Calculation of internal assignments at a standard cost*

| No. | "A" responsibility center (seller) | Value | "B" responsibility center (buyer) | Value |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
| I | *Variant 1 –"B" center purchases only 1.400 pieces* | | | |
| 1. | Normal production quantity | 2.000 | Internal purchases at a standard cost increased by a 5% margin (1.400 pieces*147 lei /piece) | 205.800 |
| 2. | Variable expenses (1.400 pieces100 lei/piece) | 140.000 | Purchase cost of the component, added to the product received via assignment | 14.000 |

| | | | | |
|---|---|---|---|---|
| | | | (1.400 pieces*10 lei/piece) | |
| 3. | Fixed budget expenses (2.000 pieces*40 lei/piece) | 80.000 | Assembly expenses (1.400 pieces*2 lei/ piece) | 2.800 |
| 4. | The assignment price is a standard unitary cost (100 lei+40 lei) increate by a 5% margin (140 lei*1,05 ) | 147 | Real return cost (1.400 pieces* 159 lei/ piece) | 222.600 |
| 5. | Internal assignments (1.400 pieces*147 lei/piece) | 205.800 | Turnover (1.400 pieces* 190 lei/ piece) | 266.000 |
| 6. | Analytical income | -14.200 | Analytical income | *43.400* |
| 7. | Real return cost (147 lei + 14.200 lei/1.400 pieces) | 157,1429 | | |
| 8. | *Global income  (-14.200 lei + 43.400 lei)        29.200 lei* | | | |
| *II* | *Variant 2 –"B" center purchases only 2.200 pieces* | | | |
| 9. | Variable expenses (2.200 pieces*100 lei/piece) | 220.000 | Internal purchases at the new return cost (159 lei/piece*2.200 pieces) | 349.800 |
| 10. | Fixed expenses related to normal production (2.000 buc.*40 lei/piece) | 80.000 | Turnover (2.200 pieces* 190 lei/piece) | 418.000 |
| 11. | Internal assignments (2.200 pieces*147 lei/piece) | 323.400 | | |
| 12. | Analytical income | 23.400 | Analytical income | 68.200 |
| 13. | Real return cost  (147 lei - 23.400 lei/2.200 pieces) | 136.3636 | | |
| 14. | *Global income (23.400 lei + 68.200 lei)        91.600 lei* | | | |

If we analyze the calculi performed in **Table no. 3**, we observe that the use of the standard cost for setting the internal assignment price influences the performance of the supply responsibility center, as well as the global income of the organization, as follows:

- if the quantities of products assigned internally are smaller (1.400 pieces) when compared to the budget of the supply center (2.000 pieces), the fixed budget expenses, of 80.000 lei, are not entirely absorbed, thus resulting a difference of 24.00 lei [80.000 lei – (1.400 pieces*40 lei/piece)] which will modify the budgeted income of 14.000 lei (294.000 lei – 280.000 lei), transforming it into a loss of 14.200 lei;
- if the quantities of products assigned internally are bigger (2.200 pieces) when compared to the budget of the supply center (2.000 pieces), the fixed budget expenses, of 80.000, are entirely absorbed, the result being a bigger profit than the estimated one, of 23.400 lei;
- the global income of the company will also be modified, the deviation from the budget quantities being determined as follows: (190 lei/piece – 100 lei/piece)*(600 pieces + 200 pieces) = 72.000 lei.

*The advantages* of the standard or budgeted cost method are the following:
- it eliminates cost variation following the variation of the volume of activity;
- the inefficiency is no longer transferred from one responsibility center to the other.

*The disadvantages* of this method are related to the fact that:
- the buying responsibility center can decide to stock up from somewhere else if the responsibility centers of the organization are not compelled to collaborate;
- the performance of the selling responsibility center depends on the extant relation between the quantity of goods/services purchased by the buying responsibility center and its budgeted production level. Consequently, a quantity of goods/services assigned internally, bigger than the budgeted one, will not cover the fixed expenses of the selling responsibility center.

Some specialists proposed a solution in order to avoid these inconveniencies: the internal assignment price must be equal to the standard variable cost when the quantities of internally assigned goods are bigger than the budgeted ones.

    **c. the marginal cost method** is considered by some authors [1, 3] the only method that can be used in the absence of an external market, because "the only assignment price capable of avoiding internal conflict is the marginal cost". Nevertheless, we must not forget the limitations of the division of expenses into variable and fixed ones, which also influences the marginal cost that makes use of it. Thus, for the short term, if the production capacities do exist, and the fixed expenses remain unchanged, the marginal cost is equal to the unitary variable cost. For the long term, if the production capacities increase and the fixed expenses also increase, the marginal cost will also comprise some of the fixed expenses. Moreover, if an external market exists, there will be more difficulties in the economic modelling of PCI, such as the type of competition, accessibility, etc.[5]

When the internal assignment price is bigger than the current market price, the buying responsibility center, if it is also a profit center (tries to maximize the income without reaching the optimum price), will decide to buy from the market. Consequently, in order to avoid this type of behaviour of the buying responsibility center, with unfavourable consequences on the performances of the organization, its manager will choose to use the marginal cost as starting point for the evaluation of the internal assignment price.

Thus, it results that the internal assignment price must be established based on a pertinent cost which takes into account the resources used in order to provide services, since it depends on the concrete strategy of each organization in particular [ 2].

    **d. the method of the total cost plus a profit margin** can be used when the goods/services that a responsibility center needs are not available on the market. In order to motivate the selling responsibility center to make internal transfers, the internal assignment price must be established based on the total cost plus a profit margin. The inconveniences of this method appear during the evaluation of the performances of the responsibility centers, because we cannot compare the profit of the selling center with that of the buying one.

    **e. the method of the opportunity cost** underlies the optimum decision concerning the internal assignment price, since an ideal transfer price would lead to an increase in the performances of the responsibility centers and of the organization as a whole. Despite all these, it is, nevertheless, difficult to calculate, in practice, the

opportunity cost, which, from a structural perspective, is comprised of two elements, namely:

➢ *the explicit cost* which comprises the total expenses generated by a series of payments made by an organization for the purposes of obtaining the factories necessary for the execution of a production cycle;

➢ *the implicit cost* comprises expenses that are not generated by cash payments, such as the remuneration of the owner's work, of the land provided by the owner, and not by persons outside the company.

In this context, in order to establish the cost level for the long term, we must take into account the explicit costs, as well as the implicit ones related to those factors that could, eventually, be used, in a more advantageous manner, for other purposes. Consequently, the calculation relation of the internal assignment optimum price will be:

***Internal assignment optimum price = Unitary cost per product + Margin lost due to the fact that the sale was not made outside the economic entity***

The determination of the internal assignment price based on this calculation relation has a series of *difficulties* related to:

- the interdependencies existing between various goods that are subject to internal transfers;
- the existence of a relation between the volume of the sold assets and price, especially when the market is imperfect, increase the degree of difficulty in assessing the opportunity cost;
- the production capacity, respectively:
  - ➢ if the internal transfer of goods/services is made to the detriment of the sale of these goods/services on the market, then we are dealing with an opportunity cost;
  - ➢ if the maximum production capacity is not reached or if no sales can be made outside the organization, the opportunity cost is zero.

*2. The methods based on the market prices* are used when there is a market for the goods subject to the transfer, and the market price can be used to establish the internal assignment price.

*These methods rely on the following types of prices*:

a. **the market price**, used as internal assignment price will bring the "selling" responsibility center an efficiency equal to the one obtained on the market and it will boost its activity. The decision of producing or of buying from a supplier will also be analyzed based on the market price;

b. **the long term market price (or the price estimated for the long term**) is used in multiannual deals for the delivery/purchase of internal transactions. This agreement must also stipulate the indexation modality of the prices. This solution is also necessary when the selling responsibility center must make investments in order to meet the needs of the buying responsibility center;

c. **the market price minus a fee** is used when the internal transfer occurs between a production responsibility center and one that trades. The internal transfer is evaluated at a final market price (that of the buyer), minus a fee which covers the sales costs of the goods demanded by the buying responsibility center.

**3. The methods based on negotiated prices** [8]or **on conventional or contractual prices** [7] strive to overcome the limitations of the two categories mentioned above, promoting a better collaboration between the managers of the centers involved in the transfers of goods. When negotiating, they must take into account a minimum cost, as well as a maximum market price, so that the negotiated price will lead to the best decision for the company as a whole, as well as for the responsibility centers involved in the negotiation.

The negotiation of the internal assignment prices is a method applied within a limited area, usually when the other two mentions, cited above, cannot be used. It has the following *advantages*:

- it ensures the congruence of the objectives at all the organizational levels;
- it settles the conflicts of interests that exist within the organization;
- the promotion of autonomy in decision-making;
- it has a significant impact on the motivation of the managers of the centers.

To exemplify the aspects discussed above, let us analyze the data presented in table no. 4, when the internal assignment price is equal to the market price.

*Table no. 4 Calculation of internal assignments at the market price*

| No. | "A" responsibility center (seller) | Value | "B" responsibility center (buyer) | Value |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
| 1. | Turnover (900 pieces* 45 lei/piece) | 40.500 | Internal purchases at the market price (2.600 pieces*45 lei /piece) | 117.000 |
| 2. | Total production expenses (3.500 pieces*28 lei/piece) | 98.000 | Own expenses | 13.000 |
| 3. | Internal assignments (2.600 pieces*45 lei/piece) | 117.000 | Turnover (2.600 pieces* 58 lei/piece) | 150.800 |
| 4. | Analytical income | 59.500 | Analytical income | *20.800* |
| 5. | *Global income (59.500 lei + 20.800 lei)        80.300 lei* | | | |
| 6. | *Company turnover (40.500 lei + 150.800 lei)        191.300 lei* | | | |
| 7. | *Total production expenses (98.000 lei + 13.000 lei)        111.000 lei* | | | |

From the calculations in table no. 4, we may observe that the use of the market price for establishing the internal assignment price influences the performances of the responsibility centers, as well as the global income of the organization, as follows:

- for the "A" responsibility center (seller), it does not matter if it sell or internally transfers the goods, because both operations will be made at the market price and, consequently, the analytical income is the same;
- both responsibility centers have accurately assessed analytical incomes;
- the "B" responsibility center (buyer) is entitled to ask for a discount with regard to the market price, given the fact that, via the internal transfer, the selling responsibility centers reduces its sales costs;
- the global income of the organization remains constant, regardless of the modification of the relation between the sold or internally transferred quantities of the "A" responsibility center (seller).

The transfer-pricing problem is context- bound and the search for correct transfer policies depend on the specificities of the context within which the internal transaction takes place and requires a multidisciplinary approach. Formulating adequate transfer pricing policies depends on many contextual variables, some financial and quantitative, other strategic, qualitative, managerial and behavioural.

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