ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 6 | Issue: 3 | March 2020 || Journal DOI: 10.36713/epra2013 || SJIF Impact Factor: 5.614||ISI Value

ACCOUNTING INFLATION IN THE DEVELOPMENT AND IMPLEMENTATION OF INVESTMENT PROJECTS FOR CONSTRUCTION AND PRODUCTION OF BUILDING MATERIALS

Savely Gennadievich Pak[1]
[1.]PhD, Associated professor of department "Economics and Real Estate Management" at Tashkent Institute of Architecture and Civil Engineering,
Tashkent, Uzbekistan.

Abdumomin Abdusamatovich Musaev[2]
[2.]Senior lecturer of department "Buildings and structures" at Tashkent Institute of Architecture and Civil Engineering,
Tashkent, Uzbekistan.

Diyorjon Gayratjon ugli Nigmatjonov [3]
[3].Student of 3 course at Tashkent Institute of Architecture and Civil Engineering,
Tashkent, Uzbekistan.

ABSTRACT

This article discusses the factors that need to take into account structural heterogeneity and uneven inflation when evaluating the effectiveness of investment projects for construction and production of building materials, which will allow you to get more reasonable indicators in the course of making investment decisions.

KEYWORDS: ***investment project, inflation, structural heterogeneity of inflation, aggregate inflationary cash flow, internal currency inflation, nominal income rate, real income rate, real prices.***

INTRODUCTION

The construction industry and the construction materials manufacturing industry in Uzbekistan are given a special place as the locomotive of the economy.

The key resource for the growth of volumes of construction and installation works (hereinafter referred to as construction and installation works) is the reduction in cost due to the use in construction of modern building structures with increased assembly, materials and products with lower energy consumption in production, with improved characteristics. Total SMR, about 80% are new construction, reconstruction and technical re-equipment of enterprises.

The main risks of investment are a huge variety of construction projects with significant differences in the volume of capital investments, the timing of the implementation of investment projects (hereinafter, IP).

The reduction in the estimated cost at the construction stage directly depends on objective control over the formation of the price of construction products. The market value of the resources inherent in the estimate can be objective only with periodic updates of valuable building materials and structures, which seems so far unrealistic. Therefore, actual costs can only be calculated in the course of direct construction.

At the stage of direct construction, it is possible to ensure a reduction in the share of overhead costs by reducing the time by improving the organizational structures of construction management. The effect obtained by reducing the construction time is summarized with the achieved result from the optimization of the estimated cost of construction, which determines the overall economic effect of the implementation of ISP.

An important factor to reduce the risk of IP implementation is also inflation indicators, which should be predicted for the entire project implementation period (by years) [1]. Inflation significantly affects not only the magnitude of the effectiveness of individual entrepreneurs, but also leads to a reassessment of the financial results of the project. And as a result, inflation can lead to a change in the terms of financial feasibility of the project: planned stocks and debts, necessary borrowed funds, volumes of actual production and sales. An investment project is considered sustainable if, with all the options for its implementation, it is efficient and financially feasible, and the elimination of possible negative effects of inflationary

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 6 | Issue: 3 | March 2020 || Journal DOI: 10.36713/epra2013 || SJIF Impact Factor: 5.614||ISI Value

deviations is built into the organizational and economic mechanism of implementation.

MATERIALS AND METHODS

This effect is especially significant for entrepreneurs requiring a significant share of borrowed funds using several currencies, the need for which is associated with foreign supplies of material resources for construction or technological equipment. In addition, the use of real interest rates and cash flow calculations at constant prices do not allow for structural inflation to be taken into account, i.e., a situation in which prices for products and costs (prices for materials) rise at different rates. For example, variable costs and fixed overheads will increase at a rate of 6% per year, and depreciation charges will not be affected by inflation. Or the company could have long-term employment contracts that would force it to raise wages in accordance with the consumer price index, and raw materials could be purchased under a fixed-price contract.

Therefore, in assessing the effectiveness of PI inflation should be considered using:

- the general index of internal inflation, determined taking into account a systematically adjusted working forecast of inflation dynamics;
- forecasts of the exchange rate of the national currency in a multicurrency project in conjunction with the general inflation index;
- forecasts of excess inflation over growth in foreign exchange rates;
- forecasts of the heterogeneity of changes in selling prices for products and resources in the domestic and foreign markets (including energy resources, construction, installation, equipment, raw materials, certain types of material resources) at each time interval, the growth rate of which is always different;
- forecasts of the level of wages of workers;
- forecasts of total fixed and administrative costs;
- forecast growth or reduction in the value of fixed assets for each category of assets used in the project [4];
- forecast of tax rates, duties, refinancing rates of the Central Bank and other financial standards of state regulation [2].

It is known that not a single index of consumer or wholesale prices, nor a deflator of GDP is an accurate measure of rising prices for resources, both at the stage of development of IP, and at the stage of construction and operation. Therefore, the transition in calculations to hard currency or generally to natural indicators does not eliminate the need to take into account the impact of inflation. In financial and economic calculations related to investment activities, inflation is estimated and taken into account in the following cases:

1) when adjusting the accumulated value of cash;

2) in the formation of the interest rate, taking into account inflation used to build up and discount;

3) in the formation of the level of income from investments, taking into account the rate of inflation.

IE, which provides for the construction (renovation, reconstruction) of buildings and structures, equipping with new technological equipment (with the partial use of obsolete) and subsequent production of goods - inflation indices for these groups can vary significantly both in size and in terms of their change over time. These conditions lead to the need to introduce an aggregate price index, which allows to take into account various inflation in the group of homogeneous goods, products, services, for which the representation of the price index through turnover is used in the form of:

$$I_p = p_1q_1 / p_0q_1$$

In the numerator of the formula is the actual turnover of the reporting period in the prices of the reporting period, in the denominator is the conditional turnover of the reporting period, but in the prices of the base period. The difference between the numerator and the denominator shows the effect of price changes. The positive difference characterizes the effect of inflation.

In the practice of investment analysis, the effect of inflation is taken into account in two ways: by adjusting the future outflows and cash inflows for the inflation index, or using an appropriate discount factor.

In the calculations related to the adjustment of cash flows taking into account inflation, it is customary to use two indicators: the nominal and real interest rates associated with the Fisher formula

$$r_{nom} \approx r_{real} + inf, \qquad (1)$$

where r_{nom} is the nominal discount rate; r_{real} - real discount rate; inf - the aggregate inflation rate for the allocated group of resources, in fractions of a unit or in%.

In general, the aggregate inflation rate is heterogeneous in structure (different for each price group of resources and prices for products sold), therefore, it is characterized by different dynamics of the revenue and expenditure parts of the project. Therefore, the use of real interest rates and the calculation of cash flow at constant prices do not allow accounting for structural inflation at different time intervals. For example, non-metallic building materials, cement and energy resources will increase at a rate of 6% per year, and prices for reinforced concrete structures and finishing materials - 8% per year, fixed overhead costs –4% per year, and accumulated depreciation charges are insufficient for simple reproduction. Or the company could have long-term employment contracts that would force it to raise wages in accordance with the consumer price index, and raw materials could be purchased at fixed prices with indexing by period. Naturally, in such conditions, it is necessary to calculate cash flow in aggregate prices for each group of resources, which is a rather complicated and laborious probabilistic process, and is subject to the influence of subjective factors that are difficult to predict.

Ultimately, the choice of the calculation formula (at constant or current prices) and the forecast of future development scenarios is carried out by the analyst taking into account the specific investment conditions and the characteristics of each individual entrepreneur. Regarding the choice of the type of cash flow - nominal and real, the following should be noted. The present value of real cash flow for each period, calculated for a certain group of

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 6 | Issue: 3 | March 2020 || Journal DOI: 10.36713/epra2013 || SJIF Impact Factor: 5.614||ISI Value

resources will be determined by discounting them at the r_{real} rate:

$$NPV=\sum_{t=0}^{n}\sum_{k=1}^{m} RCF_{kt} / (1 + r_{real,к})^t \quad (2)$$

where t is the estimated time period for the aggregated group of resources, conventionally adopted with the same inflation rate; RCF_{kt} - real cash flow calculated for the k-th group of resources in the period t; r_{real}, k– real discount rate for the k-th resource group.

It is easy to see that on each aggregated valuation interval at inflation level inf_c, the net cash flow of the individual entrepreneur for the k-th period will increase by inf_c times, then the NPV discounted at the nominal interest rate for the period for this group of resources will not change:

$$NCF_t = \sum_{k=1}^{m} RCF_{kt} (1 + inf_к)^t \quad (3)$$

$$NPV=\sum_{t=0}^{n}\sum_{k=1}^{m} RCF_{kt}(1 + inf_к)^t / (1 + r_{real,к})^t (1 + inf_к)^t = \sum_{t=0}^{n}\sum_{k=1}^{m} NCF_{kt} / (1 + r_{real,к})^t \quad (4)$$

where NCF_{kt} is the expected aggregated cash flow for the period t.

Thus, to reflect inflation, you can use one of two calculation options:

• discount nominal cash flow for each aggregated group of resources at a nominal interest rate;

• discount real cash flow for each aggregated group of resources at a real interest rate.

Which of these two options more accurately reflects the results of the IP depends on the specifics of the project itself.

In order to systematize, structural inflation is classified into types [1]: the impact on the price indicators of resources; impact on funding needs; impact on the need for working capital.

The first type of influence of inflation practically does not depend on its value, but only on the values of the indicators of heterogeneity and on the internal inflation of foreign currency.

The 2nd type of influence depends on the dynamics of the unevenness of inflation over time. The least favorable for the project is the situation in which at the beginning of the IP there is high inflation, when loans are taken at a high percentage, and then it falls. In order to avoid unjustifiably high interest payments during the implementation of interest rate risks during the conclusion of credit agreements, it is recommended to provide for a review of the discount rate and adjustment depending on inflation (rollover loan). However, this approach is not common in local practice, where banks use the Central Bank refinancing rate as the base rate for rollover, which does not always reflect the change in inflation.

The 3rd type of influence of inflation depends both on its heterogeneity and on the level. With respect to this type of influence, all PIs are divided into two categories depending on the projected ratios of receivables and payables (hereinafter, DZ, KZ). The effectiveness of projects of the 1st category decreases with increasing inflation, and the 2nd increases.

In addition to the presented classification, the effect of inflation on IP is also divided depending on the timing of implementation [2, 3]. The short-term effect of inflation on the efficiency of individual entrepreneurs is manifested through its effect on working capital, mainly on remote sensing - due to a delay in payment for goods sold, and short-circuit - due to a delay in payment by this company for the supplied raw materials. Every enterprise has such debts, while the prevailing role for the newly created is played by DZ. For these enterprises, the delay in repayment of payments for goods sold may be quite noticeable in the context of inflation. With the same mechanism of influence, the effect of the delay itself will be the opposite, which affects the performance indicators of IP. Therefore, performance indicators should take into account the effect of inflation on the value of both RS and KZ [4].

The impact of inflation on the performance indicators of IP in the medium term is reflected through aggregated subsidies taking into account the attraction and repayment of loans. The main difficulty in assessing the impact of inflation on enterprise payments on loans is to take into account the conditions for repaying borrowed funds. Due to the variety of these conditions, there is no unambiguous conclusion on the effect of inflation on the integral effect of individual incomes associated with the return of borrowed funds.

The influence of inflation in the long-term aspect depends both on the degree of structural heterogeneity and on the rate of internal currency inflation of investment costs in the construction phase (reconstruction or new construction of buildings and structures, installation of technological equipment), and at the stage of operation of investment facilities - on the inflation rate for commodity - material reserves and depreciation of fixed assets. These indicators will affect gross income (revenue from product sales).

RESULTS

Amortization charges for each period are determined from the initial (replacement) cost, which does not allow structural inflation to be sufficiently taken into account, therefore, the tax base increases faster with inflation than the rate of income growth. Rates on various tax and mandatory payments also change at their own pace.

As you can see, none of the identified types of inflation can cover the whole variety of structural relationships of inflation with the real efficiency of individual entrepreneurs. Therefore, in the practice of investment design, it is proposed to supplement the

ISSN (Online): 2455-3662
EPRA International Journal of Multidisciplinary Research (IJMR) - Peer Reviewed Journal
Volume: 6 | Issue: 3 | March 2020 || Journal DOI: 10.36713/epra2013 || SJIF Impact Factor: 5.614||ISI Value

performance assessment by considering various forecast scenarios (pessimistic and optimistic), believing that this influence may be heterogeneous i.e. different in dynamics of real cash inflows and outflows. To measure the degree of heterogeneity and price non-uniformity, the coefficients of heterogeneity and non-uniformity are used, which can be more or less than a unit from period to period, depending on the price dynamics of a certain resource over time.

The fact is that the depreciation of these parts of the project as a result of inflation has a diametrically opposite effect on the performance indicators of individual entrepreneurs. That is, impairment of inflows negatively affects indicators, and impairment of outflows - positively.

The NPV indicator of IP with aggregated inflationary subsidiaries does not seem to be absolutely objective when making investment decisions. We will only point out the strengths and weaknesses of this indicator.

Table 1. Strengths and weaknesses of NPV

NPV Strengths	NPV weaknesses
Gives a probabilistic assessment of the increase in the market value of the enterprise in case of acceptance and implementation of IP	It does not allow to determine the exact rate of income from the project
The indicator is additive, which allows you to summarize the NPV of various projects by aggregating values in the analysis of the investment portfolio optimality	Depends on the accuracy of the forecast cash flows.
May not account for management rewards for incremental business value	Not suitable for spatio-temporal comparisons

CONCLUSION

Assess the effectiveness of the IP, it is necessary to calculate all the main indicators: profitability index (PI), internal rate of return (IRR), followed by comparison with the cost of capital, criterion (MIRR), the discounted payback period of the project with a minimum period (DPP = min), average weighted rate of return (ARR) and a comparison with the profitability of the advanced capital

In the course of calculating these coefficients, certain contradictions often arise between individual investment options, which necessitate the selection of the best option, depending on the specifics of each individual entrepreneur, taking into account certain priorities.

IP options should take into account official forecast information on inflation, as well as expert estimates that take into account price indices for a “basket” of resources of structurally heterogeneous composition and a constant time interval at each step.

REFERENCES

1. *Birman, G., Schmidt S. Economic analysis of investment projects. M .: “Banks and Exchanges”, “UNITI”, 2010*
2. *Form, I.A. Fundamentals of investment management. Kiev: Nika-Center, Elga, 2011*
3. *Volkov A. S. Investment projects: from modeling to implementation. M .: Top, 2006*
4. *Krushwitz, L. Financing and investment. Non-classical foundations of the theory of finance. - SPb .: Publishing house "Peter", 2013*
5. *Nepomniachtchi, E. G. Investment design. Taganrog: Publishing house of TRTU, 2013.*