THE CHOICE FOR SOCIAL DISCOUNT RATE

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Abstract:
   Discounting is used to mean any process of revaluing a future event, service or product, to give a present equivalent value (present value).While there are many ways of determining a discount rate for private investment, when it comes to governments, things turn more complicated. Sometimes data is elusive or hard to interpret or there might be inconsistencies among sets of stated and imputed discount rates. Therefore politically derived discount rates are a cause for doubt and are unlikely to reflect future values appropriately.
   Theories proved that the decision of individuals in their political capacity as citizens are unlike those made in their economic capacity as consumers. Experiments found that individuals chose a lower discount rate as being appropriate for public than for personal decisions.
   Discounting helps in the process of investment analysis and other decisions between present and future. Those who analyze projects need to judge which ones are worthwhile so they need to compare the value of early costs with that of benefits and values of cash flows expected to be received at different points in time. Only when all cash flows have been discounted to equivalent values at the same point in time can discounted benefits be evaluated.
   Looking at some examples and at the Rosia Montana Project, a large scale and long term project, the paper evaluates some of the "choices for social discount rate" raises some questions and brings suggestions towards the steps that the governments (and particular Romanian) should do, to bring objectivity and transparency in investment decisions.

   Key words: Discount rate, risk, investment, social policy, decision

   JEL Classification: H43, G32

INTRODUCTION

   "Social Discount Rate is a measure used to help guide choices about the value of diverting funds to social projects. It is defined as the appropriate value of r to use in computing present discount value for social investments" (Gruber, Jonathan (2007). Determining this rate is not always easy and can be the subject of discrepancies in the true net benefit to certain projects, plans and policies. There are a number of qualitative differences between social and corporate discount rate and evaluation of projects associated with them. Of course, the governance of social project funding is different, because estimating the benefits of social projects requires making ethically subtle choices about the benefits to others.

   Discounting is used to mean any process of revaluing a future event, service or product to give a present equivalent value (present value). The process of discounting reflects the complexities of financial markets, of natural resource availability but also of human psychology, investment behavior and aversion towards risk.

   The effects of discounting are easily set out. Suppose that, for whatever reason, we as humans prefer to have something good now, rather than on the same date next year. But soon as the element of time will be present and a postponement will interfere, it will be necessary to quantify "how much" better it is to have it now.

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   Sagoff (1988) argues that the decision of individuals in their political capacity as citizens are unlike those made in their economic capacity as consumers. Experimentally, Pope and Perry (1989) found that individuals chose a lower discount rate as being appropriate for public than for personal decisions. When is no stated, how does a government's choice of discount rate may be discerned?

What social discount rate has been or will be adopted by a government is not always clear. It cannot be said that the citizens voted directly for a particular discount rate, since even the discount rate can be one of the reasons for electoral success.

While the discount rate (where it has been chosen) may be well known to government and academic economists, and accessible in public documents, it is rarely a matter of widespread public knowledge and discussion. This signifies more probably the mysterious nature of investment decision than a lack of public concern about resource allocation. On the other side, the interest rate is of course subject to frequent and open critical comment, and its effects on well-being are directly experienced by citizens through loan repayments and level of economic activity. But interest rate is an instrument of monetary policy, which may have only a loose association with the discount rate adopted by the government in relation to investment policy.

These difficulties make it debatable whether there is direct democratic legitimation for a government's discount rate. Nonetheless, it might be argued that a knowledgeable, rational and responsible government will chose the optimal set of policies for the well-being of its citizens, including policies of investment and resources allocation.

SOCIAL POLICY AND THE DISCOUNT RATE.

Since the rates of saving and of economic growth affect the balance between present and future consumption, policy choices affecting these variables may reveal a government's preferred discount rate. Walshe and Daffern (1990, p.26) suggest that the social discount rate "will be slightly in excess of the growth rate of the economy".

Scott (2007) judges the social discount rate to be both the minimum acceptable rate of return on low risk commercial projects and the rate at which the value of government revenue and expenditure is taken to decline over time. Scott argues that a rational government equalizes the marginal value of funds applied to each purpose: if "the percentage rate of fall in value of one purpose can be measured, this is the social discount rate for all funds." He chooses as an indicator the value of "base-level income" (the poverty level at which the government intervenes to increase household income).

Unido 2008, Harou 2003 suggest that the appropriate discount rate can be found by studying governmental choices of individual public projects. A government should not select an investment whose social rate of return is less than the social discount rate (and whose NPV in therefore negative). The lowest social rate of return on projects accepted in the past therefore indicates the upper limit of the social discount rate and if investment is at optimal level, it should equal the social discount rate.

However, (Harou 2003) states that there are several problems that arise:
- The past social discount rate might have been different. If so, an alternative is to appraise the rate of return on projects currently being implemented, or passed as acceptable
- Governments choose projects to meet many objectives: social, environmental, macroeconomic and thus strategic values should be included in the rate of return

By analogy with the upper limit, the lower bound of the social discount rate should be the highest social rate of return found among projects which have been explicitly rejected by government. However, such projects may have been rejected because (1)their social rate of return was less than the social discount rate or because (2)the NPV of the project was less than that of alternative public sector projects.

There are several reasons why the social discount rate should be lower than the social rate of return on public investment.

A hypothetical selection made from the projects listed in Table 1 illustrates how this rule can make sense of otherwise difficult decisions. Suppose a government chooses project A and project C, but rejects project B and project D. Rule 1 says that the social discount rate is greater than the 4.7% IRR of rejected project B, but less than the 2.9% IRR of accepted project A: 2.9% > r > 4.7%.

On the other hand, using rule 2, a social discount rate less than about 2% makes the NPVs of both A and C higher than the NPVs of either B or D, and the choice is rational. Rule 2, allows a greater range of project selections to appear rational.

Table 1. Performance of four projects (NPV in Euro). Example.

	Project A	Project B	Project C	Project D
IRR	2.9%	4.7%	8.5%	3.6% & 38.2%
NPV 10%	-999 000	-738 000	-174 000	520 000
NPV 5%	-870 000	-93 000	814 000	301 000
NPV 3%	-67 000	861 000	2 142 000	-235 000
NPV 1%	8 972 000	5 812 000	8 803 000	-3 426 000

RISK IN PUBLIC INVESTMENT. QUANTIFYING RISK ADJUSTMENT.

The treatment of risk in public investment has been widely debated. Arrow and Lind (1996) indicate that risky projects in the public sector should be discounted at a riskless rate, reasoning that returns from a particular project may not be correlated with those of other public projects. Thus the only risk is specific risk, which is spread among so many taxpayers as it become insignificant.

On the other side Hirshleifer (1993) argues on the contrary, that discounting at the riskless rate of return ignores the opportunity cost of subsidizing risky private projects. Arrow and Lind consider that this leads simply to transfer of risk: the advantage of public investment is that it relives not only the private sector, but the whole economy of the cost of risk-bearing. If we compare the two positions we can conclude that the relationship between public and private risk-adjusted rates depends on whether risk can be eliminated by a change of economic organization (Sandmo 2005) and on whether public projects have a social insurance value (Grinols, 2001).

Capital asset pricing model (CAPM) is used to determine a theoretically appropriate required rate of return of an asset, if that asset is to be added to an already well-diversified portfolio, given that asset's non-diversifiable risk. The model takes into account the asset's sensitivity to non-diversifiable risk (also known as systematic risk or market risk), often represented by the quantity beta ( ) in the financial industry, as well as the expected return of the market and the expected return of a theoretical risk-free asset.(source: Wikipedia)

The Capital asset pricing model (CAPM) attempts to quantify the above discussed factors. A discount premium is determined for the risk of an individual investment, according to how its returns vary with those of a diversified market portfolio.

For example, a riskless investment might be acceptable if it earns 4% annually, but a risky one, only if it earns 10% annually. This could mean that either the IRR or the present value of risky investments is required to be 2.5 times that of a riskless investment.

Suppose a forest project, giving single revenue after 50 years, is riskless and that the riskless discount rate is 4%. For each 1000 Euro invested, the investment is acceptable if revenue exceeds 7106 Euros (NPV>0). If this is systematically risky, and if risk premium is interpreted as a risk charge, it is acceptable only if revenue exceeds: 7106 Euro X 2.5 = 17.767 Euro.

But this, however, represents an IRR of only 5.9%, not 10%. To achieve an IRR of 10%, the required revenue would be 117.391 Euro. That represents an increase on riskless revenue by a factor not of 2.5 but of 16.5.

CAPM has also been subject to criticism but remains most widely discussed and applied tool for adjusting discount rates for risk.

ROSIA MONTANA PROJECT.

We presented some of the ways and principles that governments should follow while assessing the impact of an investment. A very big challenge for the present or future Romanian government is or will be the Rosia Montana Project. Due to the large scale of the project as well as

the impact of it, we consider that a transparent and thorough analysis should be carried out and not only the results of the analysis should be presented to the large public, but also the methods used to reach to these results.

As an example we provide here some of the data that is showed on the website of "Rosia Montana" Gold Corporation. It is stated there that "The business plan of the mining project provides for total benefits of approximately 4 billion dollars for the Romanian economy". We also find out that 1.8 billion USD will go directly to the State budget. These funds include the dividends obtained by the Romanian State, which holds 20% of the RMGC's assets, royalties paid by the Corporation, as well as other taxes and duties paid directly to the local, regional and national State budget. The remaining 2.2 billion USD will be spent in Romania for human resources, construction, electricity, materials, transportation, reagents, spare parts and others. These amounts are a direct investment in the Romanian economy and will reach the workforce, entrepreneurs and Romanian companies which will provide products and services for the company, during the construction and operation phases.

The money looks good, but has the government correctly evaluated the project? Which is the value of the discount rate used?

SHORT CONCLUSIONS AND SUGGESTIONS.

Before any discount rate is adopted, the assumptions about government decision making should be that is knowledgeable, rational and responsible.

But governments are not always completely knowledgeable about all pertinent data on each project they choose or reject, therefore employing economists to undertake cost-benefit analysis should be a step toward correct evaluation. The absurd situation may arise when a government employs economists to supply analysis, such as an objective discount rate for evaluation projects, and economists indirectly ask the government about the previous choice of projects.

To achieve re-election, or avoid overthrow, a government must please the present population. This means either satisfying its desire for early consumption, or persuading it that sacrifices for the sake of the future should override short-term interests. It will usual be a material consideration in making decisions which are politically awkward, that future generations are not among politicians' views.

A government may of course be purely disinterested and act for the long-term good of present citizens and on behalf of future generations, without regard to its own popularity. Still, even such a conscientious government would have a plausible justification for offering a programme which appeals to the present electorate. Because if it does not, another party would be elected to power, with an even shorter time perspective. The party offering a plausible short-term programme of benefits is favored over the one with long-term views.

Governments are expected to weight the interests of their own citizens more than those of citizens of other countries. What is clear at this point is that politics and ethics do not align.

While there are many ways of determining a discount rate for private investment, when it comes to governments things turn more complicated. Sometimes data is elusive or hard to interpret or there might be inconsistencies among sets of stated and imputed discount rates. Therefore politically derived discount rates are a cause for doubt and are unlikely to reflect future values appropriately.

An example in the direction of governments to bring objectivity in investment decisions and thus deriving objectivity in discount rate chosen comes from the following US agencies. The two most prominent U.S. government agencies involved in benefit-cost analysis are the Congressional Budget Office (CBO) and the Office of Management and Budget (OMB). CBO's mandate is to provide the US Congress with: Objective, nonpartisan, and timely analyses to aid in economic and budgetary decisions on the wide array of programs covered by the federal budget and the information and estimates required for the Congressional budget process. The CBO makes in this way recommendations of a rate depending on the project. CBO assists the House and Senate

Budget Committees, and the Congress more generally, by preparing reports and analyses. In accordance with the CBO's mandate to provide objective and impartial analysis, CBO's reports contain no policy recommendations. (Quoted from CBO website, CBO's Role and Work).

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