1. The “Golden Age” of economic evaluation

In retrospect, the 1970s and the 1980s can be viewed as “the golden age” of economic evaluation. At the very end of the 1960s and the beginning of the 1970s, almost in parallel, Oecd and Unido published two landmark manuals (Oecd, 1972; Dasgupta, Sen, Marglin 1972); these manuals opened up new operational approaches to economic evaluation of policy, of programs and of projects. Roughly in the same period, these manuals became the basis for widely distributed books on the subject (Little and Mirrlees, 1974; Squire and van der Tak, 1975); these books were a major tool in disseminating the approach. More significantly, the World Bank, the International Monetary Fund (IMF) and the other major international financial institutions incorporated the manuals’ approach into their operational procedures and practices. They also carried out experimental research to test the feasibility of a full adoption of the manuals proposed methodology and procedures. The testing concerned specially the area of economic evaluation of income distribution implications of policy, program, and project choice. Indeed, the “shadow prices” derivation techniques stemming from the approach had became, in the meantime, standard fare in economic evaluation operational practices, in both developed and developing countries as well as in both planned and market economies. The methodology, the techniques and the procedures are generally known as the “social cost benefit analysis” (SCBA) approach.

The manuals’ main contribution was not theoretical, as they relied in large part upon well-established theoretical results from the “new welfare economics” as well as from public finance theory. The innovation was methodological and procedural: to
develop a comparatively simple and highly transparent approach to compute economic and social opportunity cost (viz. the opportunity cost to a country or to a society) of a project or of other social actions (policies, programs, new legislation etc.) that could be defined in terms of the logical structure of a project. The basics of the SCBA approach are: i) reference to the international markets to estimate opportunity costs and ii) derivation of “national parameters” and “variable weights” from an often implicit objective function so as to capture normative policy objectives and constraints as well as relative scarcities. In spite of its theoretical and methodological aspects and of certain heavily loaded assumptions at the root of the approach, SCBA’s main advantage was that it produced a set of procedures easy to teach and to apply, at least in their most important aspects. Several Governments developed specific guidelines for economic evaluation of their own policies, programs and projects on the basis of Oecd and Unido manuals; likewise, all major international financing agencies tailored the manuals’ methodology to their specific needs and requirements. A large procedural literature flourished all over the world. The basic approach has not changed since the 1970s-1980s, as shown also by some of the most recent publications on SCBA (Belli, Anderson, Barnum, Dixon, Tan, 2001; Presidenza del Consiglio dei Ministri, 2001; Posner, 2000; Weiss, 1998). More significant than this methodological literature is the academic and professional debate on economic evaluation which has colored most of the 1970s and of the early 1980s.

It revolved around the following main issues:

- The relative advantages and disadvantages of the SCBA as compared with another approach being manualized at that time (“the effects method”) and widely used in France and in French speaking countries as well as the possibility of combining both approaches (Balassa, 1977a and b; Chervel 1995).

- The “numeraire” (or unit of economic account) to be used in economy analysis and, consequently, the procedures to derive international market-based “shadow prices”. The debate resulted from the fact that Oecd and Unido manuals proposed as a “numeraire”, respectively, domestic consumption and uncommitted foreign exchange in the hands of the government.

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1 The most important concern the “implied assumption” that the country and/or the society should aim at opening up to the world market and eventually to economic integration. The corollary is that its economic structure should eventually be in line with what purported by the world economy.
• The estimation of the social welfare function (or the objective function of the policy maker) to estimate “national parameters” and “variable weights” (especially to take account of distribution issues).

• The information requirements and the degree of decentralized decision making to make the application of the methodology both credible and feasible, so as not to downgrade the approach to a mere procedure.

• The risks and the uncertainty and the ways to capture them in the analysis because policies, programs and projects display their costs and benefits over very long time span and often involve irreversible decisions with implications for future generations.

These issues notwithstanding, it was generally agreed that the implementation of the SCBA approach would, in the medium and long run, help to improve resource allocation and promote better governance. This last point was specially argued because SCBA promised to provide systematic and transparent documentation to decision making, thus encouraging accountability, enhancing participation and democratic debate on controversial public issues and setting the frame for good governance.

The outcome of the academic debate can be broadly summarized as follows:

• The SCBA and the “effects methods” are theoretically compatible and normally give the same answers to the questions of acceptance and/or rejection of a policy, of a program and of project.

• Any economic “numeraire” can be used, provided the methodology and the procedures are applied consistently. In practice, the Oecd-World Bank “numeraire” (uncommitted foreign exchange in the hands of the government) has been adopted more frequently than the Unido “numeraire” (private consumption), because it provides a more transparent link between micro-economic project evaluation and macro-economic decisions in the areas of public finance and investment, as well as foreign trade and exchange.

• The issues concerning the information requirements were never fully resolved. On the one hand, SCBA may be interpreted as requiring such a vast and detailed amount of information to be not applicable in practice. On the other hand, generally accepted operational “shortcuts” do make its implementation feasible, but may endanger its credibility as an economic tool.
Neither were the issues of centralized-versus-decentralized decision making ever resolved in a satisfactory manner. On the one hand, to be feasible and at least partly credible, SCBA and pertinent decision making should be at the lowest possible level – viz, the level nearest to those preparing and implementing the policy, the program or the project as well to the stakeholders (those with a legitimate claim on the policy, the program or the project or, in any case, affected by them). On the other hand, the need for a consistent derivation of “national parameters” and “shadow prices” entailed the creation of “Central offices for project evaluation” (Cope) as proposed in the Oecd and Unido manual themselves; thus involving a form of creeping centralization of decision-making\(^2\) that became progressively at odds with the economists’ consensus.

Suitable methodologies were developed to assess risk (e.g. Pouliquen, 1970, Hazell and Scandizzo, 1974, 1975), to take account of intergenerational implications\(^3\) and to incorporate social standards for poverty and social vulnerability (Scandizzo and Knudsen, 1980, 1996); related techniques and procedures were derived and applied, albeit experimentally rather than a standard tool of analysis (e.g. Kula, 1988, Yaffey, 1997). However, until quite recently, no methodology had been developed to factor in uncertainty independently of subjective attitudes of the decision makers toward risks.

Even more important that the academic and professional debate was the widespread application of SCBA for program and project analysis, and occasionally for policy analysis as well, in the 1970s and the 1980s. Normally major shortcuts were applied in the methodology to derive “parameters” and “shadow prices”. “Variable weights”, however, were utilized only occasionally for the economic analysis of income distribution issues. For nearly seven years, the World Bank carried out an experimentation of full application of SCBA (including the distributional aspects and the application of “variable weights”), but this was discontinued in the latter part of the 1980s.

2. The sunset of economic analysis of policy, programs, projects and governance.

Indeed, at the end of the 1980s-beginning of the 1990s, the sunset began: the “golden age” of economic evaluation of policies, programs and projects seemed to be vanishing. The determinants were manifold: a) a broad change in priorities after the

\(^2\) This occurred also in many developed countries, e.g. France and Italy: see Wallisser (1990), Pennisi and Peterlini (1987)

\(^3\) For a survey of these methodologies, see Pennisi (1999), and Pennisi e Scandizzo (2003).
debt crisis of the 1980s (Pennisi e Scanni, 1991) with increasing attention to large transfers of capital flows rather than to economic molding of policies, programs and projects; c) a Washington consensus (Williamson, 1994, Basu, 2003) which appeared to de-emphasize micro-economic analysis of the type applied in SCBA; d) the growing perception that some of the unresolved methodological issues of SCBA would adversely impinge on its effectiveness to deal with decentralized decision making, income distribution, poverty, social exclusion and other key governance issues; b) the change of the overall socio-political context – from a setting where risks could be perceived as the dominant decision factors to a setting where, also due to international terrorism, unanticipated changes and pervasive uncertainty were the key-element (Sandler, 2004).

A gradual demise ensued of the academic and professional journals devoted specifically or entirely to economic analysis of programs and projects. The academic literature dealt increasingly less with economic evaluation of policy programs and projects. In parallel, program and project evaluation became a central area of interest of sociologists, political scientists, organizational specialists. As a result, the earlier economic dominance of the subject was replaced by a growing literature of sociological, political and organizational evaluation and the creation and dissemination of many comparatively newly created journals in these areas. Whilst no new major manuals or guidelines were issued by the international financial institutions, the European Commission published its comprehensive handbook (European Commission, 1999). Geared mostly to sociological, political and organizational evaluation, this work is quite “light” or “weak” on economic evaluation. In short, the European Commission handbook and its many updates can be interpreted as an indication that economics has lost grounds to other disciplines in the area of policy, programs and project analysis. The handbook gives very limited emphasis to economic analysis in general and to cost benefit analysis specifically; it has no reference to SCBA. The proposed standard approach is based on non-economic instruments such as “the logical framework”, the “swot” technique and “multicriteria analysis” – all of them, derived from organizational disciplines, and paying very limited attention to social costs in terms of society’s economic resources and, thus, to expected economic returns to the society.

In short, if the economic evaluation of policy, programs, projects and governance has merits in the beginning of the 21st century, as the authors of this paper

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4 Especially “Project Appraisal”. This journal has been for several years the most important periodical devoted to SCBA; in practice, it was closed in the second half of the 1990s and then incorporated in a journal dealing mostly with environmental issues. A similarly very useful publication by the French Government – “Bulletin du programme de rationalization des choix budgétaires” – was discontinued in the late 1980s; twice a year, the “Bulletin” published internal economic evaluation studies carried out by the French civil service on SCBA or “effects method”.

5 The most recent one was officially presented in Milan in March 2004 at the scientific meeting of Italian Evaluation Society.

6 It is required only for costlier project; within this context, priority is given to financial more than economic analysis.
believe, there is need for a new start. For such a new start to be credible and productive, it has to make progress on the issues left unresolved in the 1970s and 1980s, namely those of the information requirements (and the ensuing dilemma between feasibility and credibility), of decentralized decision-making and of uncertainty. Uncertainty seems to be specially relevant in an age when, due to international economic integration and the new technical and economy paradigms of information and communication technology, National Governments witness the reduction of effectiveness and incidence of their traditional economic policy levers such as monetary, budgetary and income and prices policies (De Filippi and Pennisi, 2003).

As it happens in any discipline, the new start is to be based on revisiting the theory and its recent evolution.

3. A fresh start of economic evaluation of policy, programs, projects and governance. A theoretical premise and an illustration.

The problem of value in economics has traditionally confronted two interconnected issues: (i) how to estimate the value of an economic object (the “evaluation” issue), and (ii) how to analyze the process of the formation of value (the “value creation” issue). The two problems are related in many ways. First, evaluating something is the necessary point of departure for any analysis of its value creation function or potential. Second, value reflects willingness-to-pay; in turn, this is justified by the creation of utility or value for the subject who intends to be the potential acquirer. Third, the sources of value lie both in the desire to use a good or a service or to hold it for other reasons (“non use values”), including the expectation that its value may increase. Fourth, rights and responsibilities in a modern society are regulated by contracts; these almost invariably imply that their object has a value contingent upon the successful completion of the contract. This hinges upon the creation of value for consumers, producers or other agents.

These different issues have received various attention in economic theory and practice, but only recently some of their fundamental principles have been clarified. Of these, two main theoretical advances stand out, and concern, respectively, the role of rights, often called “entitlements” in the literature, and the importance of non-use values. On the question of rights, mostly brought up by the neo-institutional economics (e.g. R. Coase, H. Simon, E.O. Williamson), it has become increasingly clear that the creation of value and the very object of exchange are not goods and services per se, but a variety of rights, or “entitlements”; they can include, but do not necessarily end with, “use rights” concerning goods and services. The means
whereby rights are exchanged and become the basis for “value creation” depend on successfully negotiating and implementing contracts, which are, by their very nature, incomplete and contingent on the states of the world in an essentially uncertain environment. Most rights exchanged in the markets via contracts concern “non use rights”, that is rights to hold, to dispose, to alienate, to access, to exclude and to control, without necessarily consuming or utilizing the goods in question to increase one’s hedonic satisfaction or as an instrument to produce more complex goods.

An illustration of these ideas is the economic evaluation of natural resources. Determining the economic value of natural resources of the society – often called “the social value”- under alternative institutional arrangements can be decomposed into two different problems - the “specification” and the “evaluation” problem.

The core of the “specification” problem can be recognized in the elusive nature of many costs and benefits attaining to natural resource management. In general, this implies that against a small set (usually one or two) of clearly identifiable consequences of the assignment of “rights”, many relevant effects may not be given full consideration. These effects mostly concern the environment and its externalities; sometimes directly impact also on the possibility of identifying and using private willingness-to-pay for the resource as a private or a public good. “Contingent evaluation”, based on a combination of interviews and statistical techniques, has gained in recent times (NOAA, 1993; Hannemann, 1994, Nuti, 2001) widespread acceptance. Many other ingenuous methods to quantify the effects and evaluate the benefits of different arrangements have also been used: e.g., mathematical programming has been effectively used to quantify the net benefits from different land tenure contracts (Kutcher and Scandizzo, 1980); methods based on the willingness-to-pay exhibited through the travel costs sustained by visitors have also been successfully applied to estimate the value of amenities for consumers. The issue is, of course, not limited to natural resources management; similar or even identical considerations can be made for human resources management in the broadest sense (from health to education and training, Nuti 1998, Pennisi 1991) as well as for the vast area of cultural goods, antiquities and even performing arts7.

The “evaluation” problem depends, at least to a certain extent, on “specification”: whatever method is used, it is likely not to account for many important external effects. This will generate the risk of incurring what statisticians call the error of excluding from the analysis variables that should have been included. In part, however, “evaluation” of a specific contract for natural resource management is arduous because of the vagueness of the alternative use of the resource should the

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7 The application of economic analysis to culture and cultural goods is still in its early stages and poses profound problems of theory and practice. For a sample of the theoretical developments on this issue see Scandizzo (1993) and Mossetto (2003). Some applications are discussed in Pennisi e Scandizzo (2003).
contract not be implemented. Confronting the alternatives, in other words, presents
difficulties unknown to the usual contractual practice. In fact, in the absence of
private property, natural resources, evolve according to mechanisms that are largely
unknown. Leaving them to themselves without intervening with a formal assignment
of “rights” and responsibilities is, thus, no guarantee that no change will occur and
the situation “ex ante” will be preserved. Not only evolution and change cannot be
prevented or guided without assigning explicit “property rights” to specific subjects,
but also irreversible changes tend to occur as a consequence of the mere passing of
time.

Whether we conduct the analysis within or not within a formal framework,
natural resources tend to follow an evolution process, where both user groups and
Mother Nature can be considered as the agents actively at work. On the other hand,
keeping resources under public management may not be necessarily effective, unless
by law or by fact a public subject is given a specific mission for conservation or
provision of services to society.

It is perhaps because of these difficulties, that some of the most startling
advances in valuing “rights” have been achieved in trying to appraise the economic
value of natural resources. In particular, it has been in this area that the first notion of
valuing opportunities as options or contingent “rights” has been proposed. In a
pioneering paper, Arrow and Fisher (1974), identified a “risk premium” i.e. a
premium that people would be willing to pay, if charged, to make sure that the
environmental amenities remain available and are not jeopardized by current use or
irreversible changes; they identified the “premium” by contrasting preservation and
development, and building on results by Fisher, Krutilla and Cicchetti (1972) and
dynamic optimization results obtained by Arrow (1968), and Arrow and Kurz (1970).
The theory of financial and economic options was not well established in the early
1970s, when these concepts were first developed. At that time, the interpretation
given of the “extra value” in the presence of irreversible changes, was both less
precise and potentially more comprehensive of the “option value” as named in the
modern sense of the word. In particular, the literature identified a further concept, the
so called “quasi-option value”. This was seen as a notion applying to public goods:
namely, it was meant as the benefit to the individual in addition to the conventional
“risk premium” that producers require in order to sell their products under
uncertainty. Both present and perspective rational users, in fact, are willing to pay a
premium to remove the uncertainty on the future availability of a public good,
because its future existence may be jeopardized by present uses or practices.
According to Arrow and Fisher (1974, p.313): “…Where there is uncertainty…the
option value will be positive for risk adverse individuals. This extra benefit from
the public good is in fact equivalent to a premium for risk bearing. Examples of such
goods might be the preservation of certain valuable natural phenomena or pollution
abatement.” And, along similar lines, Henry (1974, p.92): “option value is nothing but a risk premium in favour of irreplaceable assets”. According to Cicchetti et al. (1974, p.83) the option value is: “Something akin to a risk premium arising from a combination of the individual’s uncertainty about his future demand for a site and uncertainty about his future availability. It can be defined like…”the willingness to pay for keeping the resource (forest) undeveloped, in excess of the private value… generated by the resource in its present condition”.

In the traditional theory of expected utility, the “risk premium” is the plain consequence of risk aversion. This means that agents have a preference for choices that, coeteris paribus, require a lower degree of risk taking on their part. For example, risk averse agents may prefer a prospect with a certain payoff to an uncertain prospect, even though the average payoff of the latter is greater than the certain payoff of the former. In this illustration, the “risk premium” is the difference between these two payoffs - the willingness to forego a larger, but uncertain gain for a smaller, but certain one. By contrast, in the case of natural resources, agents do not have to be risk averse to be willing to pay a “risk premium”. They will be inclined to pay such a premium, in fact, not because of their personal attitude towards uncertain prospects, but as a consequence of the fact that any action or failure to act on the natural resource management may induce irreversible changes on the resource itself.

The asymmetry introduced by the prospect of irreversible changes and the “arrow of time” imply that in presence of irreversibility one should give a higher weight to the error of developing the resource in excess of its optimal rate. If a project entailing a more intensive exploitation of a public resource is being considered, one should be more conservative in adopting such a project than in the case of a private investment; development and intensive usage may subtract the resource to public availability in a way that may be difficult or impossible to reverse. The “arrow of time” makes higher values of the payoff less worthy than lower values, if they are associated with higher commitment of resources that cannot be completely recovered. Waiting before taking any decision that may entail irreversible results has an information value: the passing of time, provides information, decreases the degree of uncertainty and consequently allows decisions to be taken on a more informed basis. The “quasi option value” of the resource, thus, consists in the potential gain that can be secured once information is more complete and a critical threshold of uncertainty has been overcome.

In addition to the “option” (the “risk premium”) and the “quasi option value” (the information value from the “arrow of time”), natural resources are characterized by a plurality of user and non-user values. These include the products of the resource, the services arising from the provision of amenities and another form of non risk related option value - the potential use of the resource from any individual, his
relatives, or his descendants. Interview based studies have also uncovered willingness-to-pay on the part of consumers and taxpayers for the “existence value” of natural resources. This “value” appears to be associated with conservationist objectives expressed as the desire to maintain the environment sufficiently similar to its historical “heritage” and diversified in terms of landscapes, biomass and cultural goods.

4. Economic evaluation of “rights” and/or “entitlements”

According to Coase (1988), the existence of the firm is the attempt to re-organize contracts of exchange in alternative to the market, by economizing on transaction costs. The value of the firm, thus derives from a peculiar configuration of “rights”. This depends on its “dedicated hierarchical nature”, and the assignment of different “rights” to its various stakeholders (Ackerman and Alstott, 1999), with ownership and control embedded into residual “rights” of shareholders. Because all economic activities can be interpreted as “enterprises”, i.e. as business ventures of a sort, the Coasian approach and the further developments of the neo-institutional school entailed a quiet revolution in the problem of assignment of value. The concept of the enterprise as a knot of contracts and of the parties involved as stakeholders, in particular, has forced economists to squarely face the issue of the plurality and heterogeneity of the subjects that create the values to be estimated. In the Schools of Law and in the legal profession a “new theory of corporations” is now emerging (Stout, 2004). Legal experts traditionally distinguish corporations from unincorporated business forms by focusing on such corporate characteristics as limited shareholder liability, centralized management, perpetual life, and freely transferred shares. The “new theory” adds a fifth, often-overlooked, characteristic of corporations: their capacity to lock in equity investors’ initial capital contributions by making it far more difficult for those investors to subsequently withdraw assets from the firm. Like a tar pit, a corporation is much easier for equity investors to get into, than to get out of. The “capital lock in” by a plurality of concerned parties is the basis for the “contingent wealth” of the firm. For each concerned party, the “evaluation” issue and the “value creation” issue depicted in the previous paragraph are inevitably related to the “options” opened up and/ or foregone through the “capital lock in”. “Evaluation” and “value creation” differ from party to party depending on each party’s “capital lock in”, specific objectives and constraints.

Valuing enterprises from the point of view of a plurality of concerned parties is, thus, a new point of reference also in the theoretical literature on economic evaluation, even though the methodologies available are still somewhat unclear. It is common, for example, in banking practice, to evaluate the rights of creditors in terms of the absolute and relative seniority of their claims. It may be far more problematic,
however, to evaluate the claims of the bank vis-a-vis its debtors over a sufficiently long period of time. Similarly, while the balance sheet of a firm is generally used to evaluate competing claims against and in favor of a company, this evaluation rarely takes into account cash flow prospects and risks.

A crucial point about the plurality of parties – the stakeholder in an enterprise is the contingent nature of the contracts binding them to one another, as in the “new legal theory” outlined above; the value of these contracts is, as a result, a stock of “contingent wealth”. In the evaluation of firms and of programs and projects, it has always been recognized that the discounted cash flow (DCF) expressed value as a stock of wealth; its evaluation, however, was always considered as an alternative to the net worth measures based on balance sheets and accounting values. As such, somewhat paradoxically, DCF methods, including SCBA, ended up concentrating on flows of incomes and consumption as the sole sources of wealth. This has caused a neglect of both assets and liabilities not readily expressible as the present values of future cash flows and, more seriously, of many intangible elements of the enterprise worth, including goodwill and risk.

The tendency to neglect the stock component of value has not been confined to capital budgeting and other types of micro-economic evaluations. Even national economic accounts and aggregate statistics have evolved in the same direction. Government accounts traditionally do not include stock values except for national debt; macroeconomic statistics are all based and geared to the measurement of income flows, such as GNP.

Focusing on competing claims of different parties, as well as on the claims’ linkage to individual and specific “capital lock in”, has not only the effect to suggest that enterprise evaluation should be approached from the point of view of several agents, but also that its basis should be wealth, not solely or primarily income.

But what kind of wealth? In this paper, we focus on only two main principles of such a construction: (i) the value of “rights” within a context of good governance and, (ii) the role of “rights” as opportunities that constitute “contingent wealth”.

5. Governance and “rights”

In particular, GNP, a statistic originally devised to measure how well a country is doing with respect to the economic cycle, has increasingly and misleadingly been used to estimate overall economic performance in terms of national welfare and efficiency. As Dasgupta (2000) persuasively notes, GNP is an unreliable indicator of well-being because it does not take into account depreciation and excludes various forms of long term wealth that do not show up in current consumption. The wealth created by economic policies, such as human and social capital, on the other hand, even though it finds little place in GNP statistics, is becoming increasingly important in international comparisons and performance evaluations.
Assigning values to “rights” poses a general problem which has troubled more than one generation of economists and evaluators. Although “rights” have values, these values are related, on the one hand, to an underlying set of tangible or intangible assets and, on the other hand, to the institutional arrangement that regulates the holding and the exercises of rights and responsibilities. In more general terms, they are related to the overall legal and, indeed, constitutional system as well as on the implicit constraints on economic agents’ behavior (North, 1990, Posner 2003). In other words, in all activities, a system of explicit and, more often, implicit rules establishes the balance of power among the holders of rights that the activity generates - the stakeholders. To a lesser extent, these institutional rules also affect the balance between the two key characteristics of stakeholders’ claims: liquidity and control and, thus, the “evaluation” and the “value creation” of the “capital lock in”. A system of “rights” displays its maximum value when its institutional environment is characterized by a good set of rules (i.e. by good governance), that is, when these eliminate or, at least, reduce “agency costs” and “transaction costs”. “Agency costs” arise from the difference of interests between “principal” and “agent”, while “transaction costs” derive from the need to finance search and information costs and to control “opportunistic” behavior. This, in turn, originates from taking the opportunity to indulge in hidden information or hidden action to improve one’s position in the implementation of a contract. Consideration of “rights” and their institutional context points to a set of costs and “shadow prices” that have traditionally been neglected in economic evaluation: those relating to “agency costs”, and to the related costs of monitoring activities and incentives.

In the theory of law and economics, the problem of the external and internal rules of an organized activity in the private domain has predominantly been addressed at the level of the relationship between shareholder and manager (or shareholder and creditor, in financial terms). Many more stakeholders (e.g. consumers, workers, politicians) can be specified in any practical problem of economic evaluation. Whatever the nature and the typology of the stakeholders values emerge from the interactions between holders of explicit and implicit “rights” and the policy, the programs, the projects and the governance,. This issue is the indirect result of the emergence of an institutional form of dualism, inherent in the relationship between “principal” and “agent”. The fiduciary nature of this relationship, the presence of a conflict of interests and the failure to provide the same information to both parties causes a deviation from the boundaries of efficiency, which manifests itself as a rise in agency costs. Rational attempts to reduce these costs may take two forms: monitoring or the introduction of incentives (via “commitment mechanisms”).
Two basic premises underlie the process of monitoring. First, usage and benefit “rights” tend to become separated. Contracts make separate provisions for them in order to allow resource use to be determined by a different set of agents, than those collecting the benefits. This separation starts by granting the bulk of “usage rights” to one class of agents (e.g. sharecroppers, tenants, lease holders, consumers) while benefits are shared, but corporate evolution has carried the process to its extreme conclusion (Coleman, 1990)\(^9\). Second, the holders of “usage rights” tend to create an independent constituency or interest group which opposes other right holders. This opposition is levied against any power of control given by a fiduciary relationship with the owners of the resource base involved (for instance, via side contracts, special privileges, customary rules, representation of “right holders”). This notion does not only apply to the formal management structure. It also describes those figures who have acquired a portion of the powers of control through forms of negotiation other than shareholding. In the case of public investment projects, for example, these figures include prospective parties in informal agreements between various stakeholders (government bureaucrats, workers, industrialists and interest groups).

From the point of view of monitoring, a low level of governance in enterprises implies that stakeholders rights have lower values, because conflicts of interest are likely to hamper implementation of the plans on which ultimately hinges the creation of value on the enterprise part. Thus, explicit or implicit monitoring costs can be used to estimate these losses of value. In addition, monitoring is costly and has a tendency to generate resistance and elusion from the parties monitored. As an alternative, but not an incompatible instrument, incentives are also used in setting up contracts and organizations. Incentives serve to realign the behavior of “principals” and “agents” toward a common goal. They are based on the idea that the structure of the contract can be designed to generate commitment from the parties involved and thus reduce conflicts of interest and related monitoring costs. Unlike commodities, whose value may be thought of ultimately to depend on exchange, rights are sensitive to the institutional design of the enterprise and to its regulatory environment. They are more valuable if they are assigned within the structure of a good and effective governance, based on incentives and commitment.

6. Opportunities and “contingent wealth”

The focus on “rights” and institutions has progressively re-oriented the economics of value and, consequently, of evaluation in a further important sense: it has suggested an imaginative and totally novel approach to the question of uncertainty and risk. From an institutional point of view, the concept of uncertainty is directly

\(^9\) “… All corporate bodies “split the atom” of whatever resources are vested in them, taking the usage rights and leaving to members or owners the rights to benefits from that use. “ (Coleman, 1990, p.457).
related to the incomplete nature of contracts in a stochastic context. Any contract, in fact, in front of the multiplicity of possible states of nature, faces two separate problems. On the one hand, it has to include clauses that establish contingent conditions, i.e. conditions that hold in some states of the world and not in others. On the other hand, it cannot include a clause for any possible contingency. Uncertainty thus derives from the fact that, from the point of view of any observer, contract implementation may be jeopardized by circumstances. Risks, on the other hand, are the consequences of the possible values that the rights of a party involved in the contract may assume as a consequence of different circumstances. For circumstances that are not explicitly addressed by contract clauses, in particular, we can identify a class of risks that are typically associated to residual rights and ownership. This characterization has the consequence of reinterpreting uncertainty as a form of public good, with non-rival and non-excludable characteristics. Risks and opportunities, on the other hand, are created by embedding uncertainty in contracts among individualized parties, thus privatizing it through the contractually organized exchange of rights. Contracts are thus a way through which private and public parties take positions to exploit the opportunities, at the cost of corresponding risks, offered by uncertainty.

Uncertainty can thus be interpreted, in the spirit of Coase theorem, as an externality that can be eliminated through the creation of “contingent markets”. These provide, through different contractual structures, the means by which the externality is internalized, via the assignment of property rights, to individual parties. The incentive for doing so is given by the so called upside, i.e., by opportunities that can only be created under uncertainty.

At this point we arrive at one of the key concepts, at the core of some of the most interesting developments of the theories of welfare, political economy and justice. What is an opportunity and how can we measure it in an economic context? To answer this question, firstly we notice that a basic economic concept is “opportunity cost”: it captures the idea that resource values depend on their alternative, possible uses. In this context, “opportunity” simply means that a given resource is the object of competition from alternative uses and any particular selection of one of these, necessarily foregoes the other possibilities. Even though the concept implies that the value of a given resource depends on the alternatives foregone, and, among these, on the next best one, it does suggest a more daring thought: the source of value is not to be found in the actual productivity of a resource, or in the utility of a good or service, but rather consists of a more abstract property of potential gains or losses.

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10 This applies to any contractual relationship, even marriage contracts, as eloquently depicted already in Shakespeare’s times (Gorbaneff, 2004).
Along these lines, a further use of the word opportunity is found in the theory of contracts, where “opportunistic behavior” is characterized as the exploitation on the part of selfish agents of the “opportunities” permitted by incomplete contracts. In this case, “opportunity” indicates that an action becomes suddenly profitable for one of the parties during the implementation of the contract, either because of its incomplete nature, or because of insufficient monitoring or incentives. Exploiting the “opportunities” offered by circumstances is thus seen as the capacity of “agents” to be flexible in response to the changing conditions of the environment, in a context of uncertainty.

We can also find the abstract notion of “opportunity” as positive potential in the theory of optimal decision making. A “choice set”, in fact, is nothing but a collection of alternative “opportunities” for action: the larger the set, the more numerous are the opportunities and the better off, coeteris paribus, the condition of the rational decision maker. Related to the widening of the opportunity (the choice) set, is the benefit accruing to consumers from the introduction of “new” goods, or from quality improvements. In both cases, in fact, consumers’ utility (and producers’ profit) may be substantially enhanced by the provision of “opportunities” to consume or produce not available earlier.

Where the concept of “opportunity” has assumed its most innovative meaning, however, has been the field of welfare theory, mostly for the contribution of Amartya Sen (see, for example Sen 2000, 2002). According to Sen, “opportunities” are the objective counterpart of the subjective concept of capabilities. Capability may be conceived as an “opportunity” that individuals create, given that they possess a form of raw capacity, by developing such a form with education or exercise. In other words, raw capacity gives “the opportunity” to develop the capability, which, in turn, gives the opportunity to develop an excellent action that can realize the true potential of a person. Again according to Sen, a condition of “substantial freedom” depends on the fact that existing “opportunities”, which include not only income, but also social status, access to education and credit as well as to a number of public goods, do not deny the capabilities of a person. Social exclusion can thus be the result of denying individual capabilities either because of insufficient opportunities (lack of positive freedom), or by actively denying basic rights (lack of negative freedom) (Pennisi 1995).

Sen’s analysis suggests that the concept of opportunity not only relates to potential action or possible choices, but has a direct bearing on the question of “rights” under uncertainty. An “opportunity”, in fact, is the faculty to take advantage of a situation, i.e. of a combination of circumstances that may occur in a particular state of the world. It does require at least one subject entitled, by virtue of an explicit or implicit contract, to exploit the potential advantage by taking some action. In other words, an
“opportunity” is a “contingent right” and, to the extent that it is valuable because it can be exchanged, it is a form of contingent wealth.

On reflection, the pervasiveness of uncertainty in our world is such that all wealth may be considered contingent, in the sense that it gives rise to “opportunities” to gain, which are dependent on the particular state of the world that happens to prevail. This concept, in fact, is well captured in the “theory of real options”, which is the most rigorous proposal to date to give formal and quantitative body to the concept of “opportunity” as a contingent right. In financial markets, “an option” is the right, but not the obligation, to buy (in the case of a “call” option) or to sell (in the case of a “put” option), an underlying asset at an established price. Despite its simplicity, this definition, which identifies a specific set of financial instruments, is so general that it can be extended to define any form of contingent wealth. Any “right” on an underlying asset, in fact, be it the ownership of physical capital, or the know-how of a particular technology, or any capacity for an action that may result in an individual gain, can be interpreted as an “option”, in the sense that it gives the “opportunity” to the holder to decide whether it is in his interest to implement the action which he is entitled to, given the circumstances that happen to prevail.

7. Some Operational implications- General features

The most recent evolution of economic thinking has brought about a revision of the concept of value, which appears far reaching in both its theoretical and practical implications. From the point of view of the theory, value appears to be a feature that is directly related to institutions and assignment of “rights” in an organized society. From the practical and, thus, operational point of view, therefore, both the estimate and the creation of value cannot be properly understood, unless sufficient attention is paid to the contractual nature of the act of exchange and the institutional substance of markets, enterprises and organizations.

While it is a momentous realization that “rights” are the key feature of a modern economy, this is not enough to characterize the new theory and practice of evaluation. A second, not less important point is that “opportunities” and, hence, “uncertainty” are also crucial to understand the problem whereby economic and financial values emerge from human activity. The concept of “contingent wealth” and the associated concept of “real options” are the main products of this thinking. They promise to be powerful instruments to revise our evaluation practice and to bring a deeper understanding of descriptive and normative decision making under uncertainty.

Firstly, the discussion in the previous paragraphs entails a new economic definition of the concept of policies, programs, projects and, hence, governance. Secondly, it is an instrument to attempt to solve the issues left unresolved in the
1980s. Thirdly, it requires a path to make this definition operational. Fourthly, it needs an experimentation to test both its feasibility and its credibility.

In a recently published book (Pennisi and Scandizzo, 2003), we provide a new definition of policies, programs and projects. We start with the definition of what is a project because traditionally the definition of what is a policy could be rather elusive and, consequently, hard to set into well defined boundaries; programs are normally seen as interconnected projects within a comprehensive set of goals and objectives. Also, and more significantly, SCBA has been initially developed for project economic planning and evaluation; only later it was applied also to policies and programs (Pennisi, 1999). In short, from the 1930s to the 1970s, projects and project planning have been generally linked to physical capital formation; to a large extent, also policies and programs have been broadly related mainly to physical capital formation as well. The 1970s project planning and evaluation “revolution”, as well as the handbooks and manuals recalled in para.1 above, brought about a new concept of what is a project: in SCBA, a project is viewed as an economic policy instrument which may or may not entail physical capital formation. Because it is an economy policy instrument, it has to be evaluated on the basis of a set of social objectives and constraints (viz. a social welfare function of the objective function of the policy maker) with the ramifications summarized in para.1.

The discussion in paras. 3-6, however, yields a newer definition of what is a project: a project is seen as “an economic policy opportunity” which may create or destroy other “opportunities” for various groups of the society all legitimately involved in, or concerned with, the project – the stakeholders. This definition is broader than the previous ones – both of those, where projects were seen linked to physical capital formation, and of those where projects were considered as economic policy instruments. Also, the new definition suggests a better link than the previous ones between projects and policies, programs and governance. If a project is “an economic policy opportunity”, policies, programs and governance have even stronger characteristics of “economic policy opportunities” creating and destroying opportunities for various parts of society.

For the reasons explained in para.6, financial markets theory and practice deal extensively with the evaluation of “opportunities” and of “opportunistic behavior”, mostly through “options” theory and practices. In the book (2003) we borrow heavily from financial markets theory and practices as well as from the new frontier of law and economics (paras 3-6) to begin to build a tool kit for policies, programs and project evaluation. Hopefully, this tool kit would be especially apt for policies, programs and project evaluation in an age of uncertainty; the beginning of the 21st century is named the age of uncertainty because uncertainty arises not only from the need to make long-term projections but also from the new and, to a large extent, yet
unexplored paradigms of the net economy and of many yet unknown ramifications of international economic integration on economic policies, programs, projects and governance (De Filippi and Pennisi, 2003).

Within this context, policy, programs and project planning and evaluation require a great deal of serendipity (Merton and Barber, 2003) – viz. possible policy, programs and project combinations are discovered even when we are searching in different directions or towards different objectives. On its account, serendipity focuses on “opportunities” and on the value of “rights” and “entitlements” in an uncertain context more than the normal procedural sequel of “the project cycle” and of other tools, especially those not economic in nature, normally applied in project evaluation also because, as depicted in para. 2 above; they are central to the European Commission guidelines (European Commission, 1999). “The project cycle” and the non-economic tools mentioned above do underlie a “quasi-mechanical” view of the development of a policy, of a program and of a project; this view is not consistent with serendipity – indeed it is nearly opposite to serendipity which emphasizes conjecturing “opportunities” and seizing them as they come and mature and, consequently, cannot be easily constrained within a rigid procedural path such as that of the “project cycle” as outlined in many current handbooks.

We are, nonetheless, only at the beginning of a promising new path which will require further research and experimentation, and a great deal of serendipity.

8. Operational implications- A few specific points

A key implication of the new approach to policy, program and project evaluation outlined in this paper is the central role of stakeholder analysis and, hence, of decentralized decision making. For many years, stakeholder analysis has been a key feature of non-economic approaches to evaluation, especially in the organizational and sociological disciplines (Bezzi, 2003, Stame 1998). Attempts have been made to draw a converging path towards sociological and economic evaluation by placing emphasis on the centrality of the stakeholders as well as on the role of evaluation in communication, both vertically and horizontally, among concerned parties (e.g. Picciotto, 1999). These attempts, however, have rested mostly, if not solely, on qualitative considerations and have not brought about a new economic methodology for project evaluation.

The promising stepping stone of the new approach is that stakeholder analysis is not intended to explore only the stakeholder viewpoint and/or preference ranking (as generally done in organizational and sociological analysis) of the proposed policy or project. Rather, it aims to identify a corporate structure of the project where assets

11 Such as the “logical frame”, the “swot analysis”, the “multicriteria analysis”.
and liabilities of its stakeholders’ are the opportunities created by the project (the “options”, including the “liability options”) as a form of “contingent wealth. Methodologically, this calls for a strengthened financial analysis\textsuperscript{12}; not only in the sense that more attention is paid to the financial benefits and costs accruing to the different stakeholders, but also, and more cogently, because option theory provides an integrating framework to appraise “contingent wealth” of the subjects involved. The fact that the project creates and destroys “options” for different parties, in fact, provides a way to account for benefits and costs based on the gains and losses accruing to the subjects involved, in a way that is reminiscent of project accounting with distribution weights in SCBA. In this context, even a straight public infrastructure project, such as a bridge or a highway, can be entirely evaluated through the opportunities that it creates (or destroys) for a class stakeholders whose entitlements are directly or indirectly affected by the project.

For a strengthened financial analysis is to be intended, however, an analysis more complex than that normally carried out within the project evaluation practice of the main international financial institutions and of the principal Oecd countries (Oecd, 1998). At present, the standard practice is to elaborate budget models for the economic operations of the concerned parties (firms, households, individuals) and to estimated whether, under the policy, the program or the program, the stakeholders are likely to obtain a reasonable financial return as compared with alternative deployment of resources in the financial market. If the estimated social return (viz. to the society) is much higher than the estimated financial returns to certain stakeholders, the analysis investigate ways and means for “social” (viz. local and or central Government) intervention to bridge the gap. Alternatively, if the estimated “private” financial return is much higher than the estimated “social return”, the analysis focuses on ways and means so that the “social” parties (viz. local or central tax authorities) can recoup part of gap (through user’s charges, rates or general taxation) and deploy it for other merit good or worthy purposes. An effective example of a recent application of this practice to human resources in the European Union 15 member countries (as they were until the 2004 “enlargement”) is in de la Fuente and Ciccone (2003).

An “options”-based analysis expands significantly on this financial analysis practices because is entails building quantitative and qualitative scenarios, including “counterfactual scenarios” (North, 1990), to assess “value creation”, on the basis of explicit and implied contracts and related “capital lock in” (Stout, 2004), and through the change of rights and opportunities for a set of interested parties. This entails the

\textsuperscript{12} As students of SCBA well know, financial analysis, at current market prices, is the first traditional step to evaluate costs and benefits from the viewpoint of all the parties expected to participate, in order to ascertain whether, under the current price and incentive system, their behavior is likely to be such the policy, program and project overall objectives will be attained.
evaluation of possible alternative or complementary courses of action, such as delaying decision and action with a view of acquiring more and better information, building-in the possibility of expansion of its scope - or conversely of its reduction-, as well as promoting dynamic “value creation”.

Useful insights can be drawn by comparing the financial evaluation carried out in de la Fuente and Ciccone (2003) referred to above with that conducted, almost in the same months, to examine the feasibility of transition from analogical television to digital video broadcasting- terrestrial (DVB-T) in Italy (Pennisi, Scandizzo 2004). For the DVB-T program, the economic analysis was based on contingent evaluation techniques (to estimate consumer’s surplus) on the assumption of comparatively low uptake curve of the new technology. As economic analysis provided a clear-cut indication of high return (a 26% economic internal rate of return), option theory is applied to financial analysis with a view of assessing if the main concerned parties (primarily the industrial filière) would deploy the needed private investment and sustain the operational cost both during the transition and at the steady state stage of the new DVB-T technology. Although the financial internal rate of return, as computed following standard practices, was a satisfactory 12%, the construction of alternative (as well as complementary) scenarios and the option analysis showed that financial returns are extremely reactive to the assumptions concerning interactive fee-paying services; these services are in competition with those provided by the web and depend to a large extent on a reorganization of public administration and, even more significantly, of drastic chance of public administration operational procedures and practices. The analysis showed that the “deferment option” (under several of the scenarios investigated) appears preferable to the immediate implementation of the DVB-T program.

While financial analysis will tend to become more complex, it will also be more informative and will feed more easily into the economic analysis, especially into the shadow pricing process, often a rather difficult aspect of project analysis. Furthermore, the consideration of dynamic uncertainty and option values, which can be handled by very efficient software, will accentuate the simulative aspects of project evaluation, thereby providing a better appraisal of its strengths and weaknesses and, more significantly, useful information for the improvement of project design. The increased complexity of the risk and option analysis, finally, may be compensated by simpler cash flow models of the stakeholders’ budgets. Their details become in fact less important, as the focus of the analysis shifts from the determination of the cash flows to the options that the projects generate for the stakeholders.
The new emphasis on the evaluation from the point of view of a plurality of stakeholders raises a number of methodological problems, which call for full exploration in a research agenda:

- The stage of the project formulation and implementation process at which to carry out an analysis, which will tend to be more elaborate and costlier than standard practices in terms of information and related resources requirements.

- The drawing of the “boundaries” to identify the stakeholders and to select the key subset which calls for a full “option based” financial analysis.

- A rigorous and, at the same time, sufficiently simple, approach to the construction of counterfactual scenarios.

- The progress the new approach promises to make in terms of the issues outlined in para. 1 above – namely the consideration of uncertainty as distinct from subjective risk, and the dichotomy between “credibility” and “feasibility” as well as between “centralized” and “decentralized decision making”.

A few tentative and preliminary answers can be ventured. Firstly, the phases of the project process where the new methodology appears particularly relevant are the stages of project design, feasibility analysis, mid-term and ex post evaluation. The real option methodology, in fact, provides a new role for economists and social scientists in the early stages of the project process, and tend to completely redefine the objectives of project design. Rather than an ex ante optimization with respect to a series of policy goals, in a context of technical choice and engineering, the project is now conceived more as a living organism; thus, the role of serendipity in the process. Within this context, also in terms of governance, the best qualities of a project are the capacity to react to unforeseen events and adapt to the external environment, and these depend on the degree of flexibility “built in” by both project design and subsequent adjustments. For this reason, the new methodology tends to emphasize the importance of the early stages of the project process, and to increase the weight of the project as a policy tool, thus providing a better link between policies, programs and projects. This implies that, on the one hand, overall programs become more important than “stand alone” projects, and, on the other, that designing, financing and implementing projects by phases (rather than through a single monolithic investment) will become a more accepted operational strategy. This is especially relevant to programs and projects entailing new technologies and/or new institutional
arrangements with a web of incomplete, and often merely implicit, contracts among the stakeholders.

The analysis of different scenarios and project alternatives, which tend to be relatively neglected by present evaluation practices, appear also relevant at the “feasibility study” stage, where an “option based” analysis may help studying the full range of possible policy, program and project choices, and their implications on future projects, thus increasing the degree of program coordination. Option based analysis may also help to focus on the relevant project alternatives and possible scenarios so that detailed preparation (and later appraisal) can be started on those that prima facie do not appear to call for deferment and are promising also in terms of flexibility and/or possible later expansion or contraction. At both the “mid-term” and the “ex-post evaluation stage”, the “option based” analysis may bring useful insights on ways and means to improve the return on the investment at the full operational stage as well on the overall application of the methodology and on its possible refinement (including potential room for operational shortcuts).

Secondly, other disciplines from the vast field of the social science (e.g. sociology, Palumbo 2001) may help define the “boundaries” and the “selection criteria” for the identification of the stakeholders to be considered and the relative weight of each of the concerned parties whose “value creation” and “contingent wealth” are to be assessed. Identifying the stakeholders will imply an unprecedented emphasis on the institutional and contractual aspects of the project as a structure of empowerment and as a tool of social change. Contributions of specialists from all social science disciplines will thus become ever more important. Contrary to the present practices originated by these disciplines, however, the analysis should: (i) consider a full range of relevant scenarios (including “counterfactual ones” in the case of evaluation of project results), (ii) account for the opportunity costs of real resource use and, (iii) attempt to quantify project goals and results in terms of “value creation” and “contingent wealth”.

Thirdly, the new approach solves, to a large extent, the issues related to the consideration of uncertainty and the need for a decentralized approach but it does increase, considerably, the information requirements as compared with the standard practice. Thus, in further research and experimentation, it is essential to develop operational shortcuts that do not impinge negatively on the dichotomy between “credibility” and “feasibility” of SCBA.

13 A long road is yet to be walked to develop procedures for counterfactual scenarios. In this area, policy, program and project economists have much to learn not only from other disciplines, but mostly from the new breed of economic historians and neo-institutional economists (Williamson, 2000)
Fourthly, a comment of the social welfare or objective function is in order. In the standard practice, the set of objectives and the identification of constraints are normally derived, from often vague if not outright ambiguous Government documents or from the arbitrary reading of the policies by the evaluator. It can be enriched, and made less subjective, by the consideration of the “options”, for the main concerned parties. The picture drawn from the sum total of the “options” may help formulate a better economic judgment on the policy, on the program, on the project and on governance at large. In a larger and longer perspective, this implies that SCBA “shadow prices” and “national parameters”, in fact, should be derived from policy, program and project objectives in terms of the “options” (including “liability options”) they open up and/or foreclose to the stakeholders.

9. Concluding comments

Evaluation is a central point of rational behavior. As a consequence, the problem of value, in all its different aspects, has been the traditional focus of economic thinking. In this context, SCBA can be seen as a belated attempt to apply a prescribed set of evaluation tools to public decision making, in an effort to extend the power of positive economics to the normative field. At the same time, SCBA is also a secondary effect of the increasing interest in government and governance, first through the complex machinery of planning and the illusion of social engineering, and then gradually through the more realistic developments of management methodologies, decentralized decision techniques and incentive contracting. Finally, SCBA derives also from a deeper demand for rationality. As Amartya Sen (2000) aptly puts it, SCBA responds to the basic need of not wanting only to know whether something is right, but also why it is right.

In this paper, we have argued that some of the traditional foundations of the concept of value in economics have been recently subverted by a quiet revolution\(^\text{14}\). This revolution concerns the nature and the composition of the market, which is increasingly seen as a milieu of contracts and rights, rather than a place busy with exchanging material goods and services. It concerns also the structure of value, with non-use values gaining increasing attention in determining opportunity costs and willingness to pay benefits. It concerns opportunities and risks, seen as a form of non-use values generated by the attempt of interested parties to gain from the pervasive uncertainty affecting the environment and the contractual arrangements necessary to obtain economic action.

\(^{14}\) This revolution is similar and partly derives from the “quiet revolution” described by Demsetz (1997) on the theory of the firm.
In this context of evolution and quiet, but radical subversion of the traditional approach, a new methodology, based on the theory of real options, has been developing in the business field, mainly to incorporate “management flexibility” in corporate procedures on capital budgeting. Only slowly and with many difficulties, the idea is being accepted that these techniques may be of assistance in re-thinking cost-benefit analysis and re-launching economic evaluation in public decision making\textsuperscript{15}. At the same time, the problem on hand does not lie only in the updating of the traditional cost-benefit methodologies, nor, on the other hand, a simple extension of the, by now well known, techniques of real option pricing, is sufficient to give a new impulse to the economic evaluation of policies and projects. Rather, updating, revising, and refurbishing traditional cost benefit analysis in the light of the new developments should go hand in hand with the integration of welfare economics with real option theory, a task that appears both elusive and formidable. Nevertheless, however profound and difficult, we believe that the objective of research in this field should be to reformulate the theory of economic evaluation, by incorporating the lessons of neo-institutional economics, and real option theory, a task that demands a great commitment on the part of researchers, but also educated interest and support from policy makers and institutions.

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\textsuperscript{15} To our knowledge, the only research program on these issues with a broad international reach has been pursued at the World Bank, first through an experimental project (2000-2003) and then through a major project in collaboration with the University of Rome, “Tor Vergata”. This project, which has a three year time horizon and is now at the end of its first year, includes an agenda for theoretical development, as well as a number of case studies. A recent effort in this direction has been started by a number of Italian institutions under the coordination of the National Public Administration Institute (Scuola Superiore della Pubblica Amministrazione, Sspa), but is carried out in coordination with, and with financial support from the Ministries of the Economy, Communication and Health. It entails the experimentation of the approach on a number of infrastructure projects in the areas mostly of transport and antiquity conservation as well on the policy-program of converting the Italian television system from analogical to DVB-T.


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