Strategic Management and Cost-Benefit Analysis of Major Sport Events

The Use of Sensitivity Analyses Shown for the Case of the Soccer World Cup 2006 in Germany

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Abstract: Major sport events—in particular so-called mega-events like a Soccer World Cup—are big public projects with a high degree of externalities. Their production requires as well private as public inputs, affects a variety of interest groups and exercises a considerable effect on economic wealth. The predominantly political decision whether or not to bid for and to host a sport mega-event should therefore be based on a thorough *ex ante* analysis of possible repercussions of the project. A classical approach to such complex decision situations is cost-benefit analysis. But the planning process does not end there, once the event is awarded to the hosting country. Strategic management then becomes vital for organizers to control risks and to enhance production and allocation efficiency. Here, the modeling and the results of cost-benefit analysis again provide useful information for management purposes. The paper shows how cost-benefit analysis can help identify strategic variables and discusses the use of sensitivity analyses as a quantitative tool for strategic management of sport mega-events. This is illustrated for the case of the Soccer World Cup 2006 in Germany. On the one hand, the results suggest a consistent integration of (socio-)economic evaluation approaches to major sport events and management methodology. On the other hand, they reveal the externality problem and thereby show the need of additional coordination mechanisms for efficiency reasons.

Zusammenfassung: Sportgroßveranstaltungen – insbes. sog. Mega-Events wie Fußball-Weltmeisterschaften – sind große öffentliche Projekte mit einem hohen Grad an Externalitäten. Ihre Produktion erfordert sowohl private als auch öffentliche Inputs, betrifft eine Vielzahl von Interessengruppen und übt einen beachtlichen Einfluss auf die ökonomische Wohlfahrt aus. Die hauptsächlich politische Entscheidung, sich um ein sportliches Mega-Event zu bewerben oder nicht, sollte daher auf einer gründlichen ex ante Analyse möglicher Rückwirkungen des Projekts beruhen. Ein klassischer Ansatz zu solchen komplexen Entscheidungssituationen ist die Kosten-Nutzen-Analyse. Allerdings endet der Planungsprozess nicht an dieser Stelle, wenn die Veranstaltung einmal dem Gastgeberland zugesprochen wurde. Das strategische Management erhält dann eine wesentliche Bedeutung für die Organisatoren, um die Risiken zu steuern und um die Produktions- sowie Allokationseffizienz zu erhöhen. Hier liefert die Art und Weise der Modellierung und die Ergebnisse der Kosten-Nutzen-Analyse wiederum nützliche Informationen für Managementzwecke. Das Arbeitspapier zeigt, wie die Kosten-Nutzen-Analyse helfen kann, strategische Variablen zu identifizieren und diskutiert die Verwendung von Sensitivitätsanalysen als quantitatives Werkzeug des strategischen Managements eines sportlichen Mega-Events. Dies wird am Beispiel der Fußball-Weltmeisterschaft 2006 in Deutschland gezeigt. Zum einen suggerieren die Ergebnisse eine konsistente Integration von Ansätzen zur (sozio-)ökonomischen Evaluierung von Sportgroßveranstaltungen und Managementmethoden. Zum anderen decken sie das Externalitätenproblem auf und zeigen damit die Bedarf an zusätzlichen Koordinationsmechanismen aus Effizienzgründen.

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CONTENTS

1 Introduction

In the era of substantially rising prices for TV rights and extensive corporate sponsoring activities, major sport events have become big business for organizers, sport associations, media, and divers sport and non-sport industries (see e.g. Preuß 1999; Dobson, Holliday, and Gratton 1997; Andreff and Nys 1994). But yet, they are neither a matter of exclusively private sector production, nor are they pure private goods (Heinemann 1995). Staging a major sport event requires as well private as public inputs, affects a variety of individuals or interest groups and exercises a considerable effect on—at least local or regional—economic wealth (see e.g. the articles in Jeanrenaud 1999; Rahmann *et al* 1998; Heinemann 1995; Ritchie 1984). Technically speaking, its production is accompanied by a high degree of externalities[1] and its cost structure generally resembles natural monopoly because of the high fixed costs of necessary sport infrastructure.[2] Therefore, major sport events—in contrast to regularly held events like team sports league matches[3]—can be best classified in economic terms as *major public projects* and should thus be subject to sound economic evaluation (see Preuß 2000; Késenne 1999a; Kurscheidt and Rahmann 1999; Maennig 1998 and 1991; Burgan and Mules 1992; Thöni 1984). This is especially the case for one-time or singular events whose uniqueness underpins the project characteristic of temporally and geographically limited impacts.

In fact, though, nearly all major sport events are regularly recurring since most of them are *championship series* (e.g. ATP tennis tournaments, world championships of any sport, Commonwealth or Olympic games) (Ritchie 1984). This is even necessary because the actually tradable and valuable good is not the single event but rather the label and conception of the series or, more precisely, the property right on this label and conception which, in general, is exclusively owned by the (world) umbrella organization of the respective sport.[4] Thus, these organizations may be interpreted as monopolistic suppliers in the market for major events of their sport. The allocation mechanism for the right to host the event in a particular year, i.e. the entry to the market for the event series, exhibits characteristics of an *auction* (see e.g. Baye 1997, 464-475). (This system may also be compared to franchising.) The umbrella organization awards the event to one of normally several bidders which is in their eyes the best candidate to stage the event this time. This decision process is often quite intransparent and diplomacy dominated, but nevertheless (rational) economic considerations may play an important role.[5] But the exact decision criteria are generally not made public. However, since the event is rarely given twice or more to one particular candidate, from the perspective of the

bidder, major sport events are *singular events* which cannot be planned to be repeated in a foreseeable period of time (Kurscheidt and Rahmann 1999; Rahmann *et al* 1998).

For this reason, organizers willing to hold a major sport event face a *twofold decision problem*. The first level consists of assessing the overall socio-economic impact of the event or, more generally, the public project in order to determine the *expected* (subjective) *value* of the project. Such an *ex ante* analysis must provide a clear picture of all possible repercussions of the project from a public perspective. On this basis, a rational decision has to be made whether or not the overall outcome is favorable or, in other words, whether the opportunity costs of alternative use of resources justify the project (Késenne 1999a and b; Maennig 1998; Thöni 1984). Moreover, the conditions for such a result have as well to be identified and evaluated since such forecasts always yield conditional outcomes (Thöni 1999). In particular, the probability of critical variables of the general environment must be carefully considered. The second level concerns the decision whether to enter the respective event market on *strategic considerations* that take into account the resources available, structures and processes, as well as the competitive and general external environment (internal and external organizational analysis) (see Collis and Montgomery 1997, 4-13). This includes (1) the formulation of goals and objectives—or even a vision[6]—in order to guarantee corporate action of a, more or less, heterogeneous group of decision-makers; (2) the determination of strategies for possible contingencies, such as political constellations in the course of the auction,[7] a successful candidature, as well as the auction and market exit, i.e. a non-successful bid and the period after the event, respectively; (3) the control of (strategic) risks and achievement of the defined consistent goals, i.e. strategic controlling (Hinterhuber 1997). Determining and evaluating both levels should yield the final decision of bidding or renouncing and the overall strategy or policy to be pursued.

Actually, both decision levels are already well known, on the one hand, in the public economics literature on public investment planning (Gramlich 1997; Boardman *et al* 1996; Hanusch 1994; Mühlenkamp 1994; Mishan 1988) and, on the other hand, in the management and business or corporate strategy literature (Miller 1998; Collis and Montgomery 1997; Hinterhuber 1997 and 1996; Besanko, Dranove, and Shanley 1996; Grant 1995). But yet, the link between both streams of thought is missing. The first branch entirely focuses on public decision-making by referring especially to *cost-benefit analysis (CBA)*, excluding, though, any strategic considerations as to the management of public projects. The second treats the strategy issue in depth but rather from a private sector business perspective, yet, largely

disregarding public affairs. This is indeed surprising because there are obvious conceptional similarities between strategic management approaches and the construction and purpose of CBA as will be discussed later. However, there is currently no integrated methodology for the inherently interdisciplinary and complex decision and management problem that arises when evaluating and planning a major sport event as characterized above.

Moreover, the literature on management of sports and, more specifically, on sport event management neglects the strategy issue to a great extent. The first sometimes underpins certain fields with strategic considerations, e.g. marketing aspects (Pitts and Fielding 1991) or league organization (Horak 1999). The latter is commonly quite pragmatic and practice oriented, e.g. "to-do-lists" for staging an event are developed and described (see e.g. Graham, Goldblatt, and Delpy 1995; Schauer 1993), or focuses on leisure and touristic matters (see e.g. Hall 1992; Getz 1991). Consequently, there is virtually no significant work that has been done on strategic management of major sport events, let alone on an integrated approach of the evaluation *and* management of such events. But this is indeed not a trivial task to fulfill since the debate on the "proper" methodology—if there is any (Davidson 1999)—of assessing the economic impact of sport events is still lively, controversial (see Jeanrenaud 1999), and sometimes even negative (see e.g. Hunter 1988). Nevertheless, there is a certain agreement in the literature on the fact that actual *evaluation* destined to make a decision on public investment in sport events might best be done by applying CBA (see Preuß 2000; Jeanrenaud 1999, 1-3; Késenne 1999a and b; Kurscheidt and Rahmann 1999; Maennig 1998; Rahmann *et al* 1998; Burgan and Mules 1992; Thöni 1984). Opposite to this, national or regional *input-output analysis* is advocated for ascertaining the *interrelationships* in the economy and for assessing variables like income and employment effects, induced tax revenue, project financing effects etc. (see Kurscheidt 2000; Ahlert 1999; Mayrhuber, Relja, and Wörgötter 1999; Meyer and Ahlert 1999; Lager 1995; Gouguet and Nys 1993). Anyway, there is an obvious need for a consistent and widely accepted approach to efficiently advise decision-makers in the field of major sport events.[8]

Considering the outlined problems and state of the art in the literature on major sport events, the aim of the present paper is to undertake a first humble step towards an integrated approach of evaluating and managing major sport events which is guided by the concept of a consistent strategic *"event management system"*. The focus is set on identifying and illustrating methodological ties between CBA and strategic management. In section 2, this is done by appreciating these ties in the theory of CBA and business strategy with respect to sport event

management. Section 3 discusses issues of the empirical application and examines in further detail the use of sensitivity analyses as a quantitative tool of strategic event management. This is illustrated for the case of a mega-event, the Soccer World Cup 2006 in Germany. Finally, the paper concludes with a critical appraisal of this approach and suggests further developments towards an "event management system".

2 The Framework of an "Event Management System"

2.1 Categories of Major Sport Events and Economic Evaluation

Formerly, major sport events did not use to be questioned on economic grounds. People and, of course, politicians supported these projects for societal reasons like: first of all, the sporting cause and its positive values but as well national pride by showing to a world-wide audience touristic attractiveness, domestic mentality, political system, and—in a qualitative sense by an "exemplary" event organization—industrial performance etc. A change of mind took place when the 1976's Montreal Olympics exhibited a considerable (long-term) loss for both the local organizing committee and community which was attributable to planning and management deficiencies (Barutta and Fahrion 1994; Wright 1978). After the Olympic Games of Los Angeles in 1984 (which had been the only candidate in 1971!), it is commonly believed that the turnaround is made and the "Montreal lesson" had been learned. Nonetheless, the series of examples for irrational, emotion driven decision-making with respect to event series auctions and sometimes fatal misplanning in organizing the events—especially concerning the construction of the necessary infrastructure—is unfortunately going on.[9] Thus, especially in the light of tight public budgets, there still *is* a substantial need for improving major event planning and (strategic) management in order to enhance production and allocation efficiency.

Depending on the specific characteristics of the event under examination, a consistent integrated evaluation and management approach becomes ever more important, the more sports or disciplines are involved and the more locations are necessary to meet the infrastructural requirements to host the event. This is because the complexity of impacts increases and induced effects widely spread, as well geographically as functionally. Furthermore, the group of involved decision-makers and individuals affected by the event gets larger. This is important with respect to the interpersonal and interorganizational distribution of costs and benefits over time. Singular events are held at a certain point of time but, in general, economic effects unequally occur in the *pre-event*, *present*, and *post-event phase*. Hence, there may well be beneficiaries and losers who should be compensated for allocative efficiency reasons, in

particular intertemporally but also in other dimensions (Rahmann 1999; Kurscheidt and Rahmann 1999). An consistent *"event management system"* ought to incorporate this compensation issue.

In order to categorize major sport events according to these features they may be classified in a portfolio with two dimensions, *number of locations* and *number of sports*, each having the two items, *one* and *several*. This is done in figure 1. According to the leisure and tourism literature (see e.g. Hall 1992 and 1989; Getz 1991; Ritchie 1984), an additional distinction can be made and introduced: *Hallmark events* are regional tourist attractions intended mainly to enhance people's awareness in a rather limited geographical area, whereas *special events* have a national or even international scope and are linked to a certain political, cultural or sporting cause. Finally, *mega-events* are international events of universal scope that can be hosted anywhere in the world in exactly the same way and under the same rules, i.e. independently of the exact location, local culture, political and economic system.

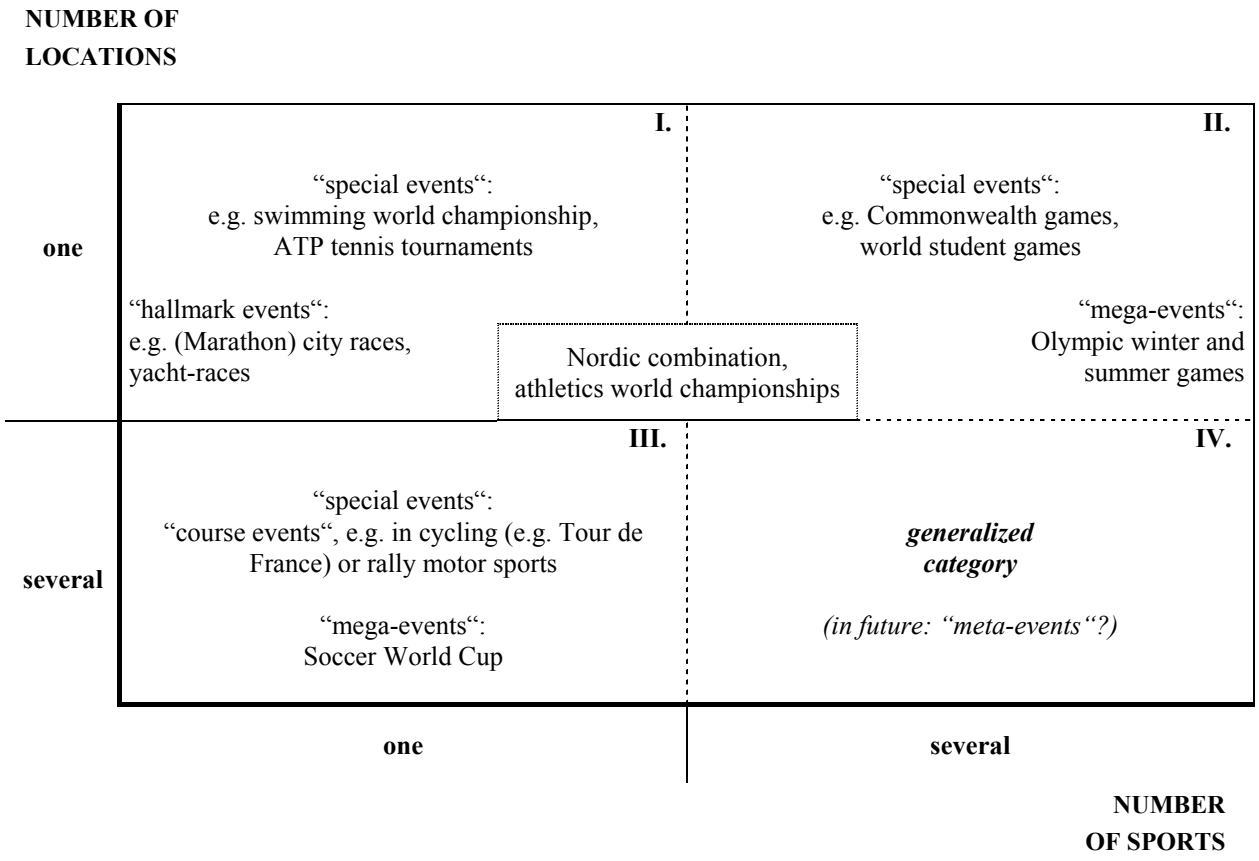


Figure 1. Categories of Major Sport Events

Of course, the categorization in figure 1 is not in every case clear as indicated by the dotted lines that separate the categories, e.g. world student games or Olympics incorporate several sports or disciplines that could well be performed at different places, though generally not far away from the main location of the event. Moreover, athletics and Nordic combination seem

to be special cases since they are perceived as being one sport although the respective disciplines could differ significantly in type, i.e. also in attractiveness for spectators (potential demand), and infrastructural requirements.

Moving from left above towards the right or down, Figure 1 systematically shows the rise in complexity and, thereby, as well the increasing need of an integrated methodology. It gets clear that the first category (field I.) requires a less sophisticated planning methodology (at least for transaction costs reasons)[10]. But sport mega-events—currently represented by only three event series, winter and summer Olympics and Soccer World Cups (Thöni 1999; Rahmann *et al* 1998; Ritchie 1984)—and big special events demand an elaborated approach. This is to a great extent due to the unique characteristics of mega-events. In fact, there is virtually no substitute project in a meaningful set of possible alternatives which serves more or less similar public functions, e.g. the provision of public goods in the leisure or health sector[11] (Maennig 1998; Steiner and Thöni 1995). In other words, nothing is really comparable to the Olympics or a Soccer World Cup and, therefore, it is a "do-it-or-leave-it" decision, i.e. the *status quo* is the "alternative" (Boardman *et al* 1996; Hanusch 1994; Maennig 1991). This means that, not only for bounded rationality reasons, the opportunity cost principle cannot be properly applied in practice (Kurscheidt and Rahmann 1999). Finally, field IV. represents a theoretical generalized category since such events do not exist, yet. But perhaps, in the future, we will see "meta-events" emerging e.g. from the Olympics.[12] However, an approach that is suitable for this general case may be systematically simplified for less complex cases.

2.2 Linking Up Strategic Management with CBA

The above described twofold decision problem, first, consists of assessing the socio-economic impact of the sport event. This is generally done by applying an expenditure approach and multiplier analysis, often in the framework of input-output analysis (see Baade and Matheson 2000; Kurscheidt 2000; Davidson 1999; Késenne 1999b; Lager 1995; Gouguet and Nys 1993). But in view of an actual evaluation, i.e. determining the total "value" of the event relative to a consistent set of goals, both the initial event related expenditures and their induced impacts have to be categorized according to their effect on those goals. CBA is explicitly designed for this task and therefore provides a clear structure that helps classify the repercussions of the project under examination. The effects are to be distinguished in direct and indirect as well as tangible and intangible costs and benefits. This means that the CBA comprehends not only quantitative but also qualitative information which is impossible or difficult to express in money values. The qualitative part of the CBA provides an additional perspective on the

evaluation problem, though, consistently embedded in a common methodological framework. Nevertheless, the core of the CBA is the *net present value (NPV)*, a highly aggregated single figure that depicts all negative and positive quantifiable impacts of the project. It is computed by summing up all discounted net benefits which occur over time within a defined planning period. According to the Kaldor-Hicks welfare criterion, i.e. a *potential* pareto optimality, the NPV should at least exceed zero to reach a positive overall evaluation (for further details on CBA see e.g. Gramlich 1997 or Boardman *et al* 1996; with respect to sport events see the surveys of Preuß 2000 or Rahmann 1998, 94-106). In this sense, CBA can be qualified as applied welfare economics.

However, regarding major sport events, a decision has also to be made on the strategic usefulness to enter an event series auction. Furthermore, once the bidding country or city has been awarded to host the event, the question of how to efficiently organize the event comes forth. Both choice problems characterize the second level of the twofold decision. As reasoned above, the appropriate approach to this decision level would be strategic management. Since the relevant literature in the field largely focuses on corporate or business strategies that aim at enhancing competitive advantage in certain markets, it is difficult to find a general definition of the concept. We may therefore define strategic management here as a "pattern of decisions" (Collis and Montgomery 1997, 5) that determines goals relative to which an organization "creates value through the configuration and coordination" (ibid.) of its activities. As to sport events, this organization is in general represented by the national federation of the respective sport and, at a later stage of the event planning and managing, by the *Local Organizing Committee (LOC)*. But we may enlarge the concept of organization as well to stakeholders who have a very close relation to the LOC and who are actually involved in the event organization to a certain degree. Those are especially certain political bodies but as well sport and business managers, for instance, in the construction and tourism industries. The term "configuration" in the definition refers to certain boundaries and conditions under which the organization's activities have to take place whereas "coordination" means the particular way the organization manages its activities.

There are a number of features that CBA and strategic management have in common: (1) Both are decision support methods that address choice problems in order to raise efficiency of projects or actions. (2) They are guided by the evaluation of effects or actions relative to a hierarchical set of goals and objectives. (3) Both are value oriented, CBA asses the NPV of an economic contribution to GNP over time whereas strategic management aims at creating value

by some economic activity. (4) They are both approaches that are not precisely defined, i.e. they rather provide a certain structure or model which allows to identify and consider key factors and variables relative to which effects and actions, respectively, are to be evaluated and/or implemented by applying the concept. (5) Ultimately, both CBA and strategic management aim at applying basic (micro-)economic principles to a well-defined object of examination in order to support rational decision-making on complex choice problems. But both methods pursue this end by the use of different analytical techniques and may be distinguished according to their output as follows: The result of a CBA is the qualitative and quantitative assessment of the efficient action relative to alternatives and thereby raising or establishing *allocative efficiency*. The outcome of strategic management is a set of strategies and action plans or programs emerging from a "hierarchy of strategic intent" (Miller 1998, 41), i.e., first, a mission statement emerging from a rather vague vision, then, more concrete goals which are finally made operational by (quantitative) objectives (see ibid., 40-59; Collis and Montgomery 1997, 7-13). Those are destined to enhance the *production efficiency* of the respective organization. The successful implementation of a strategic management of that type should actually lead to an increase of the organizational efficiency.

At that point, the most important link between CBA and strategic management can be made. In the process of the latter, evaluation activities for predicting and/or controlling the (potential) success of the strategic planning and implementation should be undertaken at several stages and especially in the end as a feedback (for a figure of this process see e.g. Miller 1998, 49; Hunger and Wheelen 1996, 10). Hence, regarding strategic management of major public projects like sports mega-events, CBA may play the role of a forecasting and feedback instrument that allows an appropriate evaluation in the process of strategic management. In fact, CBA is particularly suitable for examining the repercussions of specific action plans on the overall result. This helps identify and then prevent possible trade-off effects that might be induced since not all measures and variables work in the same direction. Moreover, a variety of different goals and objectives may be pursued such that achieving a certain aim could infringe another one. Such counter effects can be made visible by CBA since it always shows the total picture and critical values of the project's impacts.

Furthermore, the structure of the CBA forces the analyst to acquire a deep understanding of the driving forces and interrelationships of project effects. This knowledge may be applied to make out fields of action which promise the highest potential effectiveness. Thus, CBA itself can be a tool for indicating efficient strategies that direct resources to a productive use. This

function of CBA can be better exploited and reinforced by the use of *sensitivity analysis* (see Gramlich 1997; Boardman *et al* 1996; Fiacco 1983; for details see section 3.5). It is a mathematical method which enables the analyst to reveal the quantitative mechanics of single variables or parameters. By applying and interpreting sensitivity analyses, those variables can be identified that are most effectively controllable by specific strategic policies. Such information is particularly useful in cases where the decision-makers face a multitude of alternative action plans and/or variables that might be actively influenced. Since, then, the consequences of their activity is not always clear at first glance because of possible counter effects provoked by their intervention. Ultimately, sensitivity analysis, used in this sense, turns out to be a *quantitative tool of strategic management*. And even more than that: It represents a crucial link between CBA and strategic management with respect to their integration in the framework of a consistent "event management system".

That link appears to fit quite well the spirit of the *managerial economics* approach. Baye (1997, 4) defines that field of research as "the study of how to direct scarce resources in the way that most efficiently achieves a managerial goal". This describes exactly what such an "event management system" is about. Yet, the broader and more precise definition of Reekie and Crook (1995, 3) makes it even clearer:

> Managerial economics is the application of economic concepts and methods of thought to the decision making process within the firm or organisation. The relevance of the subject stretches beyond the business firm. Managerial economics can often be applied in public sector or government organisations just as it can in commercial ones.

Both CBA and strategic management are based on economic principles and pursue a set of goals. The essential difference is that CBA is rather designed for the public sector and strategic management, though also applicable in other areas, focuses on private sector business. Hence, having in mind the approach of managerial economics that combines (esp. institutional) economics methodology with management issues, it seems to be most fruitful to develop a concept of an integrated approach of economic evaluation and management of major sport events. This is all the more sensible as such an approach might be applied to other types of projects as well.

The following sections, however, discuss an empirical application to the Soccer World Cup 2006 which had been awarded to Germany by a voting of the FIFA Executive Committee on July 6, 2000 (Radford 2000).

3 Empirical Application: The Soccer World Cup 2006 in Germany

3.1 The Structure of an Ex Ante CBA

In 1997, i.e. nine years prior to the event, Rahmann *et al* (1998) carried out a CBA study on the expected repercussions of a Soccer World Cup 2006 in Germany. Because of this early date of the analysis, the main analytical challenge was the simulation of a meaningful set of locations where the 64 matches of 32 participating teams were to take place since, at that time, they were not yet nominated (and they are still not). (It should be noted that this allocation mechanism is the same kind of auction as described above. Thus, in fact, soccer tournaments even involve a two-stage auction and decision problem.) But this first step of a CBA model of the World Cup 2006 could not be dropped or avoided since the driving force of the national impact is indeed *local action*, i.e. investment in sport and other infrastructural facilities decided and managed on the regional or local level (Rahmann 1999; Kurscheidt and Rahmann 1999). Moreover, the local circumstances play as well an important role for the extent of demand side driven effects.

The approach used to construct significant constellations of spatial economic structure at the respective location is straightforward. The main determinant on the supply side is the need of investment in facilities which consists of (1) non-sport (yield) interests, especially of private sector investors, (2) the politically desired improvement of infrastructure, and (3) the (existing) *infrastructure endowment*. Since, *ex ante*, the first two components are hardly observable, the latter is sufficient as a proxy for expected investment expenditure. On the demand side, one can only consider the *potential of demand* which is responsible for the future capacity utilization of the new or renovated sports stadiums, i.e. their profitability. Obviously, there is no appropriate proxy for the local demand because it has a number of elements, like e.g. population density, purchasing power, propensity to consume, competitive environment in the leisure sector. Considering also financing costs, the local net benefit results from the effects of these determinants. But for a first step, the financing problem is neglected because the exact financing mode cannot be determined in a standardized way. It strongly depends on the very specific characteristics of the local investment project, e.g. technical construction details of the stadium, extent of private partnership, organizational structure and property rights distribution of the facility management (Dietl and Pauli 2000 and 1999; Kurscheidt and Rahmann 1999; Rahmann *et al* 1998, 177-204). This information is not available yet. Therefore a dept-based financing and the resulting capital charges will later be simulated with

a generalized approach for all locations, i.e. it cannot yet be incorporated in the modeling of the local level.

The remaining two determinants of the spatial economic structure at the locations, potential of demand and (sport) infrastructure endowment, can be combined with each other in a portfolio matrix. In order to derive meaningful standardized locations, it is sufficient to ascribe three levels to each of the two determinants: (1) low, (2) medium, and (3) high. This yields the nine-field portfolio shown in figure 2. For each of these fields, the expected net benefit effect can be assessed both in the short and the long run according to the level of investment and utilization, respectively. Those fields that are not plausible in a meaningful set of locations should be sorted out. Field IX. can be omitted since the combination high infrastructure and low demand is not realistic. Field VII. should be dropped because it is (rationally) not desirable to consider locations that lead clearly to a negative outcome.

POTENTIAL OF DEMAND	**low**	**medium**	**high**
high	short-term: B < C, high investment **I.** long-term: B > C, high utilization	short-term: B ≈ C, medium investment **II.** long-term: B > C, high utilization	short-term: B > C, low investment **III.** long-term: B > C, high utilization
medium	short-term: B < C, high investment **IV.** long-term: B ≈ C, medium utilization	short-term: B ≈ C, medium investment **V.** long-term: B ≈ C, medium utilization	short-term: B > C, low investment **VI.** long-term: B ≈ C, medium utilization
low	short-term: B < C, high investment **VII.** long-term: B < C, low utilization	short-term: B ≈ C, medium investment **VIII.** long-term: B < C, low utilization	short-term: B > C, low investment **IX.** long-term: B < C, low utilization

where: B = benefits, C = costs

(SPORT) INFRASTRUCTURE ENDOWMENT

Figure 2. Matrix of Potential Locations

Grouping the remaining seven fields according to their net effect of short-term and long-term impacts yields four distinct *scenarios*: Scenario 1 (field III.) leads to the best result with certain net benefits, scenario 2 (fields II. and VI.) generates a good result with probable net benefits, whereas the outcome of scenario 3 (fields I. and V.) is uncertain and, finally,

scenario 4 (fields IV. and VIII.) yields a poor result with probable net costs. It should be kept in mind that political and private preferences could shift the position of their location in this scheme. If for instance, a location with a high or medium level of infrastructure decides for any reason to build a new stadium instead of adjusting the old one to basic FIFA requirements by renovation works, it places itself more to the left of the portfolio than it would have been initially categorized, e.g. a shift from field II. to I. Ten locations are at least necessary to stage a Soccer World Cup. Therefore assumptions have to be made on the distribution of these scenarios in hypothetical sets of potential locations. This is done in an objective way by assuming a mean hypothesis, called hypothesis II, based on a stylized normal distribution, i.e. 2-3-3-2 beginning with scenario 1 up to scenario 4. Maximum and minimum hypotheses can be derived by systematically altering the normal distribution for one position in each scenario, i.e. a *positively* shifted distribution 3-4-2-1 for hypothesis I and, accordingly, a *negatively* shifted distribution 1-2-4-3 for hypothesis III.

Money values have now to be ascribed to each scenario in order to compute the aggregated outcome of the hypotheses, i.e. the model parameters are estimated in currency units. For uncertainty reasons, an appropriate spread of the true value around the estimate has to be systematically implemented in the estimation design.[13] The most suitable technique for this purpose is *worst-best-case analysis* (Boardman *et al* 1996; Hanusch 1994; Mishan 1988). It consists of building upper and lower bounds for each estimate. When computing the model, the right combination of these upper and lower values yields two aggregated results, one for best-case assumptions, and one for worst-case assumptions. All outcomes in between these extremes represent the realistic, or (most) probable range of net benefits. The probability that the true result falls within this range actually rises with the number of variables considered in the model. The interval between the worst and best case, of course, gets larger, too.

Having considered three hypothetical sets of locations so far, the model contains already upper (hypothesis I) and lower (hypothesis III) bounds for distributions of scenarios. As shown in table 1, the expected net benefits of H_I are therefore supposed to exceed the result of H_{II} which again should realize a higher outcome as H_{III}. Since the latter is the minimum hypothesis it will then be of special interest to investigate whether it yields positive or negative net benefits. Ascribing upper and lower bounds to each variable, thus, leads to six results for net benefits. In a next step, the net benefits are discounted for time to find net present values. Hence six highly aggregated figures will be given for each period of a certain time horizon. Finally three

cases can be distinguished and analyzed: a best case, a worst case, and a base case which is, in fact, a range of outcomes.

DISTRIBUTION OF SCENARIOS FOR 10 LOCATIONS

SCENARIOS (fields in figure 1)	**HYPOTHESIS I** maximum		**HYPOTHESIS II** mean		**HYPOTHESIS III** minimum	
scenario 1 (III.)	3		2		1	
scenario 2 (II., VI.)	4		3		2	
scenario 3 (I., V.)	2		3		4	
scenario 4 (IV., VIII.)	1		2		3	
expected NET BENEFIT	$NB_I > NB_{II}$		$NB_I > NB_{II} > NB_{III}$		$NB_{III} \leq 0$ or $NB_{III} \geq 0$ (?)	
	estimation interval H_I		estimation interval H_{II}		estimation interval H_{III}	
VALUATION	upper bound H_{Iu}	lower bound H_{II}	upper bound H_{IIu}	lower bound H_{III}	upper bound H_{IIIu}	lower bound H_{IIII}
NET PRESENT VALUE	NPV (H_{Iu})	NPV(H_{II})	NPV(H_{IIu})	NPV(H_{III})	NPV(H_{IIIu})	NPV(H_{IIII})
CASES	***best-case***	***realistic or (most) probable range***				***worst-case***

Table 1. Hypotheses of Location Distribution and Estimation Intervals

3.2 Generating the Data

Currently, there is a significant lack of data due to the fact that, firstly, the exact locations are unknown[14] which renders empirical work on a well defined local area impossible and, secondly, there are virtually no generally valid research results available on the expenditure behavior of foreign visitors of Soccer World Cups.[15] Hence, quantitative information on the two main driving forces of economic impact, local investment and tourism expenditure, is poor. One has therefore to rely on mainly three sources: at least some data from the past, experiences from practitioners (e.g. in the field of sports facility management), and plausible assumptions.

Only those cost and benefit variables are implemented in the model that can be quantified with sufficient precision: (1) costs induced by investment during the pre-event phase (which also determine the subsequent capital charges) (see appendix, table 2); (2) net benefit returns on the utilization of the sport infrastructure during the post-event phase (revenue from rents minus operating costs and capital charges including interests and amortization) (see appendix, tables 3 and 4); (3) benefits from foreign tourist expenditure during the present phase (see appendix, tables 2 and 5); (4) benefits from multiplier effects of investment and consumption expenditures (see appendix, table 5); finally, (5) benefits from the budget surplus of the LOC (revenues minus expenses) (see appendix, table 5).

The general economic setting (i.e. inflation, relative prices, exchange rate, tax system etc.) is hold constant since the project impacts are to be isolated from other influences and the mechanics of discounting refers all cost and benefit flows occurring in the future to the starting point of the calculation period. Therefore, all money values in Deutschmarks are given in 1996 prices. Since it would be certainly insufficient to focus on the effects close to the present phase a time horizon of 15 periods is assumed, starting in the year 2000 with FIFA's decision to award the event to Germany. Thus, both a pre-event of six years and a post-event phase until 2015 are included.[16]

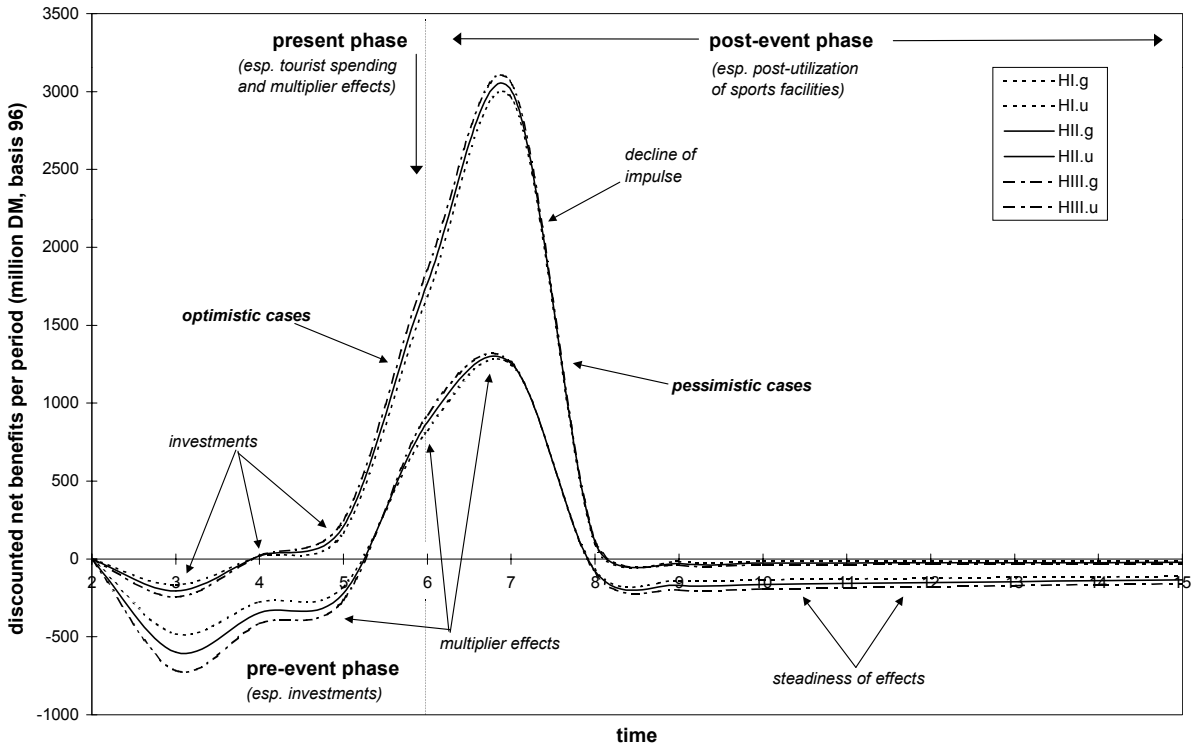
A detailed discussion of assumption building and data gathering for the various parameters can be found in Kurscheidt and Rahmann (1999) and Rahmann *et al* (1998, 128-148). The latter provide also a thorough qualitative analysis (ibid., 39-84) which underpins a deeply subdivided classification of costs and benefits in the qualitative part of the CBA (ibid., 106-110). Summing up the data inputs to the model, they can be categorized as follows: (1) effects related to the construction and operation of durable facilities: scenario distribution, investment costs, operating costs, capital charges (interests and amortization), benefits on investment (i.e. esp. revenue from rents of soccer clubs, sponsoring, catering, and special events); (2) effects related to the actual staging of the Soccer World Cup: tourist expenditure, budget surplus of the LOC; (3) effects related to micro- and macroeconomic relationships: multipliers, discount rate. Hence, there are 9 variables that represent 3 sources of effects. The exact values and the dynamics of all data inputs are shown in the appendix, table 5.

3.3 Major Results of the CBA

Computing the model with these data yields the aggregated results over time depicted in the figures 3 and 4. Both of which show six graphs since two aggregated numbers for each of the three hypotheses were calculated as described above, one upper and one lower bound result. Figure 3 depicts the *discounted net benefits per period* and figure 4 shows the *net present values* over time, i.e. the discounted net benefits per period cumulated for different time horizons up to 15 periods. The first documents the course of economic impacts in time whereas the latter reveals the sustainability of effects and the overall value of the event at different points of time.

The general shape of the graphs in figure 3 is consistent with the expected pattern of a singular major sport event. During the pre-event phase, the investment costs first generate negative results which are soon recouped by multiplier induced positive income effects penetrating into the entire economy by three successive and overlapping waves. This is the reason for the early

positive trend of the aggregated impact. Shortly before and after the present phase, there is a considerable peak of positive economic effects lasting about 3 periods which, then, fall off to steady development. The multiplier effects strengthen the expenditure injection by foreign event tourists and shift it at least one period into the future. But once they have run out the impulse declines very quickly. Finally, both in the pessimistic and the optimistic cases, the post-event phase is determined by constant deficits accruing from the operation of sport facilities (see appendix, tables 3 and 4). The described pattern of impacts exhibits an important role of multiplier effects and clearly distinguishes the outcome at the upper and lower bound. In the optimistic cases, investments soon get self-sustainable, foreign tourist spending exercises a strong impulse on the national economy, and deficits of the stadiums after the event seem to be manageable. In the pessimistic cases, investments demand a strong collective effort and show an above-average risk of hypothesis III, the exogenous demand push is



significantly dampened, and continuous post-event losses of facilities are considerable.

Remark: The German language subscripts *g* (= *günstig*) and *u* (= *ungünstig*) of the hypotheses in this and all following figures indicate the upper and lower bound assumptions, respectively.

Figure 3. Discounted Net Benefits Per Period

The question whether and under which circumstances a Soccer World Cup 2006 in Germany may nevertheless have a positive economic value over time can be answered by an analysis of the net present values in figure 4. This calculation reflects the previous development of the in-

duced periodic effects and is therefore more appropriate to show the differential between the levels of the aggregated results for the optimistic and pessimistic forecast.

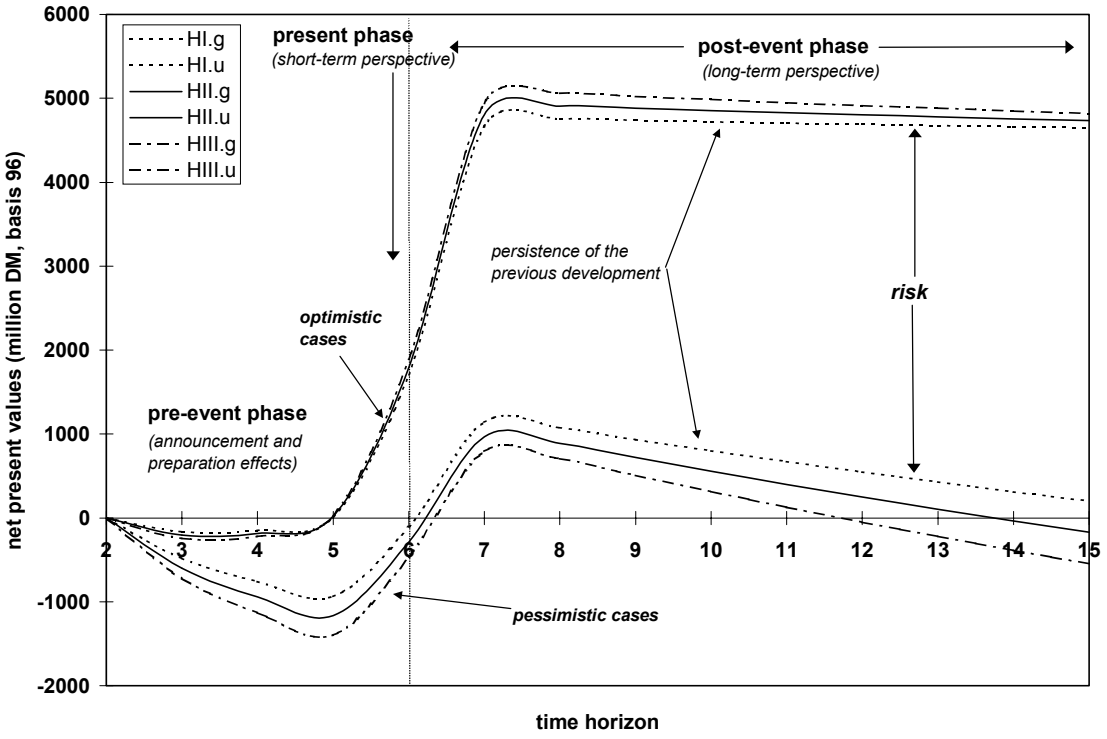


Figure 4. Net Present Values and Time

Under *upper bound assumptions*, all hypotheses yield a fairly high gain for the national economy which amounts to nearly DM 5 billion. Even in the long run, this overall outcome is not significantly reduced by the subsequent burdens of the financing, i.e. a "hysteresis-like" sustainable shift in economic wealth is generated. Moreover, the differences between the results of the hypotheses is almost negligible. It has to be noted, though, that the "bad" hypothesis III that causes the highest investments actually represents the best case (see also appendix, table 6). This is due to the ambivalent character of investments. On the one hand, they are costs and, on the other hand, they induce benefits by their multiplier effects such that it depends on which of these effects prevails to ascertain the net impact of investments. Obviously, the optimistic cases support the thesis of a positive net effect. In principle, this overall evaluation holds as well under average or *base assumptions*, though, on a lower level of nearly DM 2.5 billion. Hence, an optimistic decision-maker would be convinced that a Soccer World Cup 2006 is beneficial to Germany.

Under *lower bound assumptions*, the initial impulse of the present phase is by far weaker (about DM 800 up to nearly 1,150 million) than for the optimistic forecast and the financing costs have a much higher weight. This can be seen during the post-event phase which is

marked by a clearly negative slope of the graphs. The capital charges show an increasing importance because a significant spread between the hypotheses can be observed (see also appendix, table 4). This effect differentiates them decisively. Hypothesis III realizes a negative result after a time horizon of 11 periods (i.e. 5 years after the event) and hypothesis II after 13 periods (i.e. 7 years after the event) whereas hypothesis I is the only one yielding at least a small long-term gain of about DM 200 million after 15 periods. Consequently, a pessimistic (rational) decision-maker would be cautious. He or she would either have to accept this economic price for other significant, but intangible (non-economic) benefits to the society or reject the whole project. But there are still alternative actions that could be adopted. A smart decision-maker might think of appropriate policy measures to avoid this negative outcome and would perhaps commission advisers to seek for efficient strategies to control major variables determining the outcome and to cope with risks of the event. At least at this stage of evaluation and decision-making, the benefits of CBA, and even more, the usefulness of combining CBA with strategic management become obvious.

3.4 Goals, Objectives, and Strategic Variables

We have not yet established a set of goals and objectives which are to be followed by staging a Soccer World Cup. It was implicitly supposed that the maximization of the overall economic gain for the national economy is the ultimate goal, i.e. the allocation objective has been assumed predominant (Kaldor-Hicks rule). But such a sport mega-event of course induces multi-dimensional effects and is therefore capable of serving (and harming!) as well other societal goals. Thus, such goals have to be jointly formulated by sport and political officials. The global objective might be an increase of both economic and non-economic (i.e. social, psychic, cultural, sporting etc.) well-being for everyone, ultimately—though rather problematic in practice—a better position of society after the event (Pareto rule). This can be supported by also following sub goals (e.g. regional development or urban planning purposes, control of risks), additional or side goals (e.g. distributional equity in different respects, social or educational purposes etc.) and preventing or reducing conflicting effects in this respect (e.g. hooliganism to name the most prominent). However, identifying efficient strategies requires a consistent and clearly formulated common set of objectives for the event (see Rahmann *et al* 1998) which takes also account of goal conflicts. This is a prerequisite to extend the use of resources to a variety of well-defined goals in order to raise both tangible and intangible net benefits. In other words, the more objectives are positively affected or even achieved, the higher is the overall net benefit for society. (Here, we take some goals often raised in the

public debate as given and discuss appropriate strategies because, currently, there is no such "official" set of objectives for a Soccer World Cup 2006 in Germany.) For a pragmatic economic definition in this sense, we may say that strategies enhance the event efficiency (production and allocation efficiency) if they direct/allocate resources to (the most) productive use or activate/extend (previously unused) potential of resources or avoid/reduce risks. But first of all, strategic variables that are suitable for these purposes have to be identified by utilizing the analysis structure and results of CBA.

It became clear from the previous section that tourist expenditure, investments, and, during the post-event phase, net benefit returns are the major driving forces of induced effects. These variables are, either fully or to a certain extent, determined by the *choice of locations* for the matches. In particular, supply side features are (at least indirectly) set by this decision, i.e. investment costs, stadium capacities, capital charges, and operating costs. But they cause as well repercussions on the demand side, e.g. benefit returns of facilities (direct effect) and local attractiveness with respect to spending preferences of foreign tourists (indirect effect). Because of these far-reaching implications, on the one hand, the choice of locations is the most powerful strategic tool for organizers of a Soccer World Cup. But, on the other hand, for the same reason, it is fairly complex to handle. The quantitative consequences of the choice of locations can especially be seen at lower bound assumptions in figure 4. The hypotheses II and III should be avoided in favor of hypothesis I because the latter is the only distribution of scenarios that yield a positive long-term net present value. Moreover, figure 4 reveals another important point. The area between the optimistic and pessimistic forecast has to be interpreted as *risk*. Thus, risk-averse organizers should definitely choose hypothesis I because it represents the less risky possible set of locations in the model. But it has, of course, the lowest potential under upper bound assumptions, though not far away from the best case, hypothesis III. But the latter exhibits a much higher risk since the spread between the hypotheses is significant under lower bound assumptions. Furthermore, the pessimistic cases are divergent whereas those under favorable conditions converge. Hence, choosing hypothesis I is the dominant strategy in the model.

In practice, it might be even possible to find a better set of locations, e.g. 4-4-1-1. But, here, there may be conflicts with side goals or conditions. For instance, a Soccer World Cup 2006 in Germany may entirely take place in North Rhine-Westphalia (NRW) and some additional western cities. This is because NRW is the *Bundesland* with the highest population density, the biggest agglomeration and soccer region, the Ruhr area (e.g. cities like Dortmund, Gelsen-

kirchen-Schalke, Bochum, Duisburg all of which have enthusiastically supported high level soccer clubs), and consequently appropriate conditions as well on the supply as the demand side. Theoretically, this scenario would be feasible. But it is, of course, not realistic at all since, for socio-cultural and -political reasons, it is not imaginable to exclude neither East-Germany nor the South or North from a nation-wide mega-event like a Soccer World Cup. Thus, in any case, some locations bearing considerable risks (scenarios 3 or 4) will be indispensable. Furthermore, now that the event has been awarded to Germany, there is an incentive for the cities to review their already existing investment planning in the light of additional benefits from the World Cup (e.g. tourist spending but also possible grants-in-aid or subsidies from federal governments). On average, a tendency to enhance the quality of the venues can be expected (e.g. a new arena instead of renovation works or a superdome instead of a conventional stadium which would shift the position of the location in figure 2 to the left and thereby moving to a weaker scenario). This is due, on the one hand, to the struggle of intermediate locations (in particular scenario 3) to meet the technical requirements of the FIFA to apply as a World Cup location at the organizing committee of the *Deutsche Fußball-Bund (DFB)*, the German soccer association. On the other hand, there could well be a sort of "arms race" between the bidders which increases also the informal standards.[17] Hence, the organizing committee should implement suitable strategic policies to prevent or dampen this conduct of bidders in order to find a set of locations that performs at least as well as hypothesis I. This ought to be done by setting the right incentives for a reasonable decentral decision-making on stadium construction (see Dietl and Pauli 2000 and 1999). Additional regulations for (the access to) the auction could keep bidders from upgrading their plans. But these additional rules will be certainly incomplete because the object is too complex. Organizers have therefore to back them by an effective signaling. This means, for instance, that they express their reliable preference for financially sustainable planning, be it at the expense of a less impressive arena in some locations.[18]

These considerations connected with the risk of the hypotheses II and III indicate another important implication for *regional development goals* that might be part of a set of objectives. The choice of locations should take into account that there will be an unequal distribution of the aggregated impact on the regional and local level. Developed regions (scenarios 1 and 2), especially major agglomeration areas, will presumably benefit, on average, more from the event than backward regions (scenarios 3 and 4 or even less developed). On the one hand, according to hypothesis I, this is reasonable since supply and demand side constellations are

more appropriate in developed regions. On the other hand, the distributional impact ought to be considered both in the choice of locations and in the design of the match schedule.[19] Locations may be chosen such that they are sufficiently dispersed over the whole country and matches could be distributed among locations according to certain equity considerations, especially in the second round with the elimination matches. Finally, it should be noted that a Soccer World Cup is certainly no suitable strategic instrument for the economic development of problematic regions. But it may well be an effective strategy for activating endogenous growth potentials of appropriate regions (scenarios 1 and 2) because, under favorable spatial constellations, a mega-event is capable of creating a regional economic impulse. This push might be even utilized—when actively transferred to following periods—for strengthening regional technological progress which again may generate innovations and growth such that, ideally, a sustainable economic development for the future is originated by the initial regional impulse of the Soccer World Cup. Furthermore, this effect might induce positive spillovers for the hinterland of the agglomeration areas if spread effects outweigh backwash effects which, of course, is *ex ante* uncertain (for the regional and endogenous growth foundations of these arguments see e.g. Aghion and Howitt 1998; Richardson 1973; Myrdal 1957).

Though surprising at first glance, another strategic variable is *time*. The model was computed for a period of 15 years that had been supposed on pragmatic considerations. But, *ex ante*, the proper time horizon for an investment project like a Soccer World Cup is actually unknown. It can neither be theoretically deduced nor politically exactly set by society. Hence, the return on investment cannot be ascertained for a well-defined period of time. That is why in figure 4 the net present values were calculated for a continuously extending time horizon up to the assumed end in 2015. Therefore, it could, for instance, turn out that a time horizon of 15 years might be too long and e.g. 10 years were considered appropriate. It may then be legitimate to revise the cautious evaluation under lower bound assumptions since even hypothesis III yields a positive result until 2012. But this can of course not be actively influenced by organizers unless there is a realistic opportunity of hosting a comparable event, say the European soccer championship in 2012 or 2016, which is not very likely. Nevertheless, England presumably pursued this strategy. Having established a modern sport infrastructure for the EURO 1996, English officials tried to get the World Cup 2006 to reutilize the existing venues and to enhance the net benefit of technically ambitious arena construction plans like the expensive new building of the Wembley Stadium. So it seems indeed to be a strategic option to attempt to somehow “escape“ the model’s implications under disadvantageous circumstances.

3.5 Sensitivity Analyses: Identifying and Analyzing Strategic Variables

Sensitivity Analysis and Characteristics of Variables

Thus far, we discussed still rather aggregated strategic variables whose analysis only permits to deduce global strategies. But it is likewise important for event management purposes to identify *single parameters* of strategic significance that may be effectively controllable by *specific* policies. This raises in particular the question to which extent and in which direction a positive or negative (actively induced) modification of such parameters could influence the overall outcome. Moreover, consequences of an unexpected downgrading of lower bound assumptions should be analyzed to find critical values of key variables. Investment methodology provides a tool for these problems which offers very helpful insights if it is thoroughly interpreted: *(partial) sensitivity analyses* (see e.g. Gramlich 1997; Boardman *et al* 1996; Blohm and Lüder 1995; for an introductory mathematical treatment see Fiacco 1983; for a demanding comprehensive formal work see Insua 1990). This method consists of varying parameters of an (investment) calculation (under uncertainty) within a meaningful range of values while holding the remaining variables constant (*ceteris paribus*) in order to analyze the impact on the aggregated result. It reveals as well the sensitivity of the overall outcome with respect to changes in certain parameters as the sign of this reaction, i.e. the mechanics between the variables under examination and the computed result is made visible. It could therefore be described as a "numerical derivation". Sensitivity analysis is particularly informative when a (non-linear) calculation gets complicated and/or includes mathematical operations with contrary effects whose result depends on the constellation of values of several parameters. Furthermore, the method can be used to evaluate the risks of changes in crucial variables, i.e. it provides an additional sound consideration of uncertainty (see Insua 1990). For the purposes here, the so-called *partial* sensitivity analysis is well suited (see Boardman *et al* 1996). It examines, *ceteris paribus*, the effect of variations in only one single parameter on the total outcome. Carefully interpreted, the results can be utilized both for identifying strategic variables and for isolating their functioning. A thorough economic appreciation of this information indicates appropriate management actions to control the variables such that efficiency is enhanced. Applying sensitivity analysis to the lower bound assumptions leads to the specific method of *breakeven analysis*. It reveals at which point the computed net present values reverse sign, i.e. the breakeven value of the examined parameter.

Three characteristics of variables are important in choosing the suitable parameters for partial sensitivity analysis: (1) the relative significance of the variable that can be assessed, prior to

the analysis, by plausible considerations generally based on the modeling; (2) the degree of uncertainty and/or whether uncertainty has already been (sufficiently) considered, e.g. by the use of estimation intervals; (3) the extent to which the variable can be actively influenced or even effectively controlled. The first point stresses that the analyst should reason before proceeding to technically fastidious computing. It is of course not reasonable and too costly to perform a sensitivity analysis on all variables. The second characteristic points at the uncertainty problem. It is always useful to conduct additional analyses on variables that exhibit a high degree of uncertainty. This is the major concern in the literature on sensitivity analysis (especially in the CBA literature, see e.g. Gramlich 1997 and Boardman *et al* 1996) whereas the third point indicates the most important issue for strategic management purposes. If a variable can be controlled in one way or another there might be efficient strategies to influence the variable. In general, these strategies are based on the variable's functional form which can be elicited by sensitivity analysis.

Testing Parameters for Uncertainty

In the case of the Soccer World Cup 2006, we may first consider variables that had not yet been subject to estimation intervals: (1) stadium capacities, (2) multipliers, (3) discount rate, (4) proportion of "foreign tickets" and journalists' tickets. *Stadium capacities* may be omitted because, on the one hand, it is just the initial variable for the multiplication of various parameters in order to compute total tourist expenditures. On the other hand, it is a relatively stable variable due to FIFA's technical requirements and hardly controllable by organizers. Moreover, the calculation comprises ten different capacities for each potential location which is additionally weighted by a hypothetical match schedule. This renders a sensitivity analysis technically complicated which is not justified by the presumably limited insights. Sensitivity analysis of *multipliers* do also not make sense for several reasons. Firstly, the values used in the CBA were computed by comprehensive econometric models of the German economy that take account of both diverse determining variables (marginal propensity to consume, taxation and transfers, importation and exportation, and other macroeconomic variables) and the uncertainty by applying forecast methods. Secondly, multipliers are therefore the result of aggregated decentral economic behavior and thus not controllable by organizers. It would only be useful to analyze the sensitivity of multipliers for uncertainty reasons if one had simply taken a plausible value instead of computing them econometrically (cf. the discussion of Késenne 1999a and Hunter 1988 on the use of multiplier analysis in economic impact studies).

Choosing the "proper" *discount rate* is a delicate task in applied CBA. Though technically sometimes sophisticated, the discount rate should therefore always be subject to sensitivity analysis (Boardman *et al* 1996). But, with respect to a singular sport event, it is not surprising that the variable turns out to be rather stable in a range of usual rates in CBA practice. This is due to the intertemporal distribution of cost-benefit flows of such an event. Apart from the peak of effects during the present phase, the pattern of the discounted net benefits per period shows a rather steady development over time, in particular during the post-event phase (see figure 3). Of course, the sensibility under upper bound assumptions is not negligible because of the substantially higher net present values than at the lower bound. Nevertheless, within a reasonable range of discount rates, say up to 7 percent, the aggregated result still amounts to at least DM 4 billion (see appendix, figure 8). Hence, the choice of discount rate is not as influential as in cases of strongly fluctuating cost-benefit flows over time.

It has to be noted that, now, net present values are computed for a *constant* time horizon of 15 periods, i.e. up to the year 2015, since partial sensitivity analysis holds all other variables constant. Thus, it is not possible anymore to take account of the uncertainty with regard to the "right" time horizon. But this is no problematic omission for the following analyses since we already discussed at length the impact of time.

The sensitivity of the *proportion of "foreign tickets"* and journalists' tickets should not only be analyzed for uncertainty reasons but as well because of its potential controllability. This is done in figure 5 for the pessimistic forecasts, i.e. breakeven points or critical values of the three hypotheses are examined. (It should be noted that the proportion of journalists' tickets is left out because the relative significance is rather low and the variable will be quite stable due to the expected high attendance of foreign media representatives.) The figure has to be interpreted as follows. If the breakeven point is situated *below* the base value used in the model the differential to the base assumption indicates the remaining scope until the aggregated result falls into the negative zone. Accordingly, if it is situated *above* the base value the breakeven point can serve as a clue for the extent to which the variable may be actively influenced by appropriate measures in order to direct the value into the gain zone. When it turns out that this is realistic the previously negative evaluation may be revised. But it should be noted that the analysis focuses on a single parameter and that, in this case, there would be no significant scope of action left. Concerning the graphic presentation in figure 5 (and accordingly in the following figures), the abscissa depicts the variation of the variable

and the ordinate shows the net present value for a time horizon of 15 periods. The base value is indicated by a dotted vertical line.

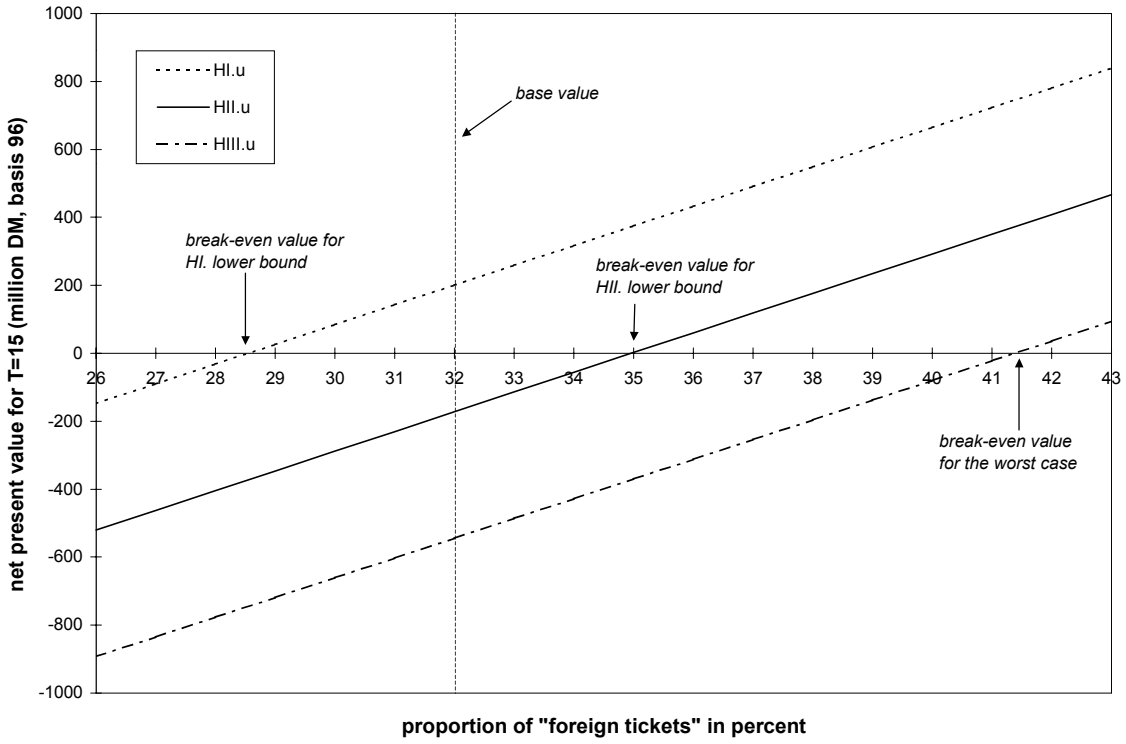


Figure 5. Sensitivity of the Proportion of "Foreign Tickets"

It can be seen in figure 5 that hypothesis I, *ceteris paribus*, would have to fall below 29 percent of "foreign tickets" to bring about losses whereas hypothesis II might be actively lead into the gain zone at 35 percent. This seems fairly unrealistic for hypothesis III with a breakeven value of about 41 percent. First of all, this finding supports the rejection of hypothesis III on risk considerations as discussed above. On disadvantageous conditions, there is no opportunity to avoid losses even if the event management is highly effective. Secondly, the result underlines that hypothesis I is indeed the less risky set of locations in the model. According to all experiences from the past, the proportion of "foreign tickets" is very unlikely to fall significantly below 30 percent. Thus, hypothesis I guarantees a positive total outcome even if general circumstances are poor and a good deal of potential soccer tourists from abroad stay at home. Thirdly, hypothesis II exhibits the most interesting constellation from a strategic management perspective since its result could well be influenced such that possible losses are averted. If organizers succeed in realizing an increase of at least 3 percent of foreign participation hypothesis II bears no severe risks, even under lower bound assumptions.

Thus, attracting foreign tourists to the World Cup is an important strategic goal with respect to a rise in event efficiency. The implementation of effective measures requires a well designed

strategic marketing mix abroad. The product component should comprise specific service packages for foreigners that might be differentiated according to their provenance and preferences, e.g. special travel and lodging offers for wealthy South Americans. The ticket distribution system is a crucial element of event marketing. The quota of "foreign tickets" have to be carefully chosen and distributed among international soccer associations and strategic partners of the travel industry. The quality standards for the ticket distribution should be strict and organizers ought to maintain an effective central control of distribution channels. Finally, prices and communication policy, based on an international campaign, may be flexible enough to be adjusted as the expected foreign participation rises or declines during the event preparation. This enables organizers to react to the sales development such that the goal of, say, 35 percent of "foreign tickets" will be achieved by intensifying the advertising campaign or reducing prices.

Regarding recent experiences, the ticket and travel packages distribution system obviously plays a strategic key role. The World Cup 1998 in France experienced a serious ticket scandal. A substantial number of foreign soccer tourists, especially Japanese, could not exchange their already paid vouchers for tickets because of considerable deals on the black market. Several intermediate agencies turned out not to be reliable. At the EURO 1996 in England, there were complaints of foreigners that, for security reasons, it had not been possible to buy tickets immediately prior to the matches although the stadiums were not at all sold out. Both incidences had a negative influence on the proportion of "foreign tickets" and, hence, caused efficiency losses. It is most probable that these deficiencies could have been prevented by a carefully elaborated strategic conception for the ticket distribution. Actually, it has already been decided to strengthen the central control of the ticket distribution in view of the FIFA World Cup 2002 which will be co-hosted by Korea and Japan (FIFA 2000). Nevertheless, we may emphasize the need of a common strategic marketing mix in order to exploit synergies.

Strategically Controllable Variables

So far, we discussed four variables that had not yet been subject to estimation intervals. The latter of which turned out to be a major strategic variable. Now, we deal with variables that, *ex ante*, seem to be controllable to a certain degree and therefore have potentially strategic importance: (5) capacity utilization, (6) tourist expenditure, and (7) investment expenditure. *Capacity utilization* is a determining factor in the calculation of total tourist expenditure but, to a greater extent, it is responsible for the level of domestic participation since foreigners are assumed to represent a third of total attendance. Thus, the variable has a much stronger effect

on the event induced domestic expenditure that had been omitted in the model because of the expected prevalence of substitution effects. This means that, most probably, there will be a tendency among residents to shift the spending from other uses (in the leisure sector) to World Cup related affairs instead of actually increasing the propensity to consume, at least temporally (see Baade and Matheson 2000; Davidson 1999; Késenne 1999a). The net effect on costs and benefits therefore is neutral but there will of course be a distributional impact (so-called pecuniary benefits; see Rahmann *et al* 1998). Nonetheless, a rise of the domestic propensity to consume might occur on the regional level at some locations as suggested by the *ex post* results of Dobson, Holliday, and Gratton (1997) on the European soccer championship 1996 in England.[20]

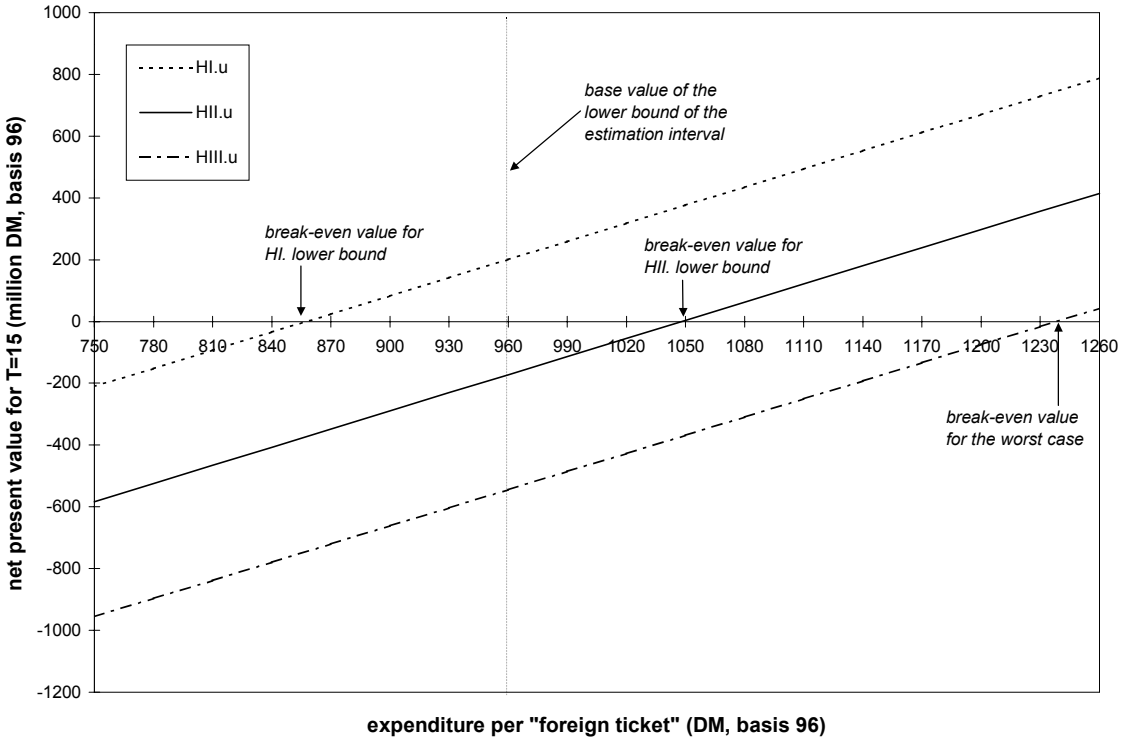


Figure 6. Sensitivity of Expenditure per "Foreign Ticket"

Although capacity utilization may be influenced by organizers, a sensitivity analysis of the *expenditure per "foreign ticket"* ultimately yields better strategic insights. Its impact is analogous to the proportion of "foreign tickets", as can be seen in figure 6. But there is a slight methodological difference because the variable had been provided with an estimation interval. Thus, one has to decide whether the upper or lower bound value or both are to be varied in order to examine the sensitivity of the variable. An analysis of the lower bound of DM 960 per ticket is preferable since this reveals breakeven values. Figure 6 shows that hypothesis I, *ceteris paribus*, exhibits a scope up to about DM 870 whereas hypothesis II enters the gain

zone at a spending level of DM 1,050 and hypothesis III at DM 1,230. The interpretation of this result is also similar to the proportion of "foreign tickets", though less pessimistic. It could well be possible that foreign visitors will spend on average at least DM 1,200 per ticket since this is the expected value under base assumptions. Hence, provided that tourists maintain about the average expenditure even if all other variables adopt lower bound values, hypothesis III is likely to yield either a negligible loss or the breakeven point. This is a somewhat surprising and strategically very important finding. The expenditure per "foreign ticket" is obviously the most effective variable with regard to the objective of enhancing the event efficiency. It seems even realistic to compensate the risks of hypothesis III by controlling the variable such that the previously negative evaluation might be revised. Hence, provided that the outcome under lower bound assumptions can be actually steered this way, by choosing hypothesis III a "best case strategy" intended to maintain at least a chance of achieving the maximum result becomes feasible without taking the risk of possible losses. But it should be kept in mind that the best case outcome is just slightly higher than the "second-best result" yielded by hypothesis II (see figure 4 and appendix, table 6).

However, one ought to remain cautious since, nevertheless, hypothesis I or a better set of locations *still is* the superior alternative under risk considerations. By all means, it has to be noted that the expenditure per "foreign ticket" is more sensitive than the proportion of "foreign tickets", apparently due to the stronger impact of multiplier effects on this variable. It is therefore of high strategic importance and has to be carefully implemented in the above-mentioned strategic marketing mix. In particular, four fields of action can be identified that may have a potentially effective influence on tourists' spending: (1) an attractive program of fringe events, (2) special tourism offers, (3) attractive commodities and services near to the stadiums, (4) the use of means of transportation run by domestic corporations. In general, these elements of an action plan have to be strictly based on consumer tastes. If this is neglected there could well be a substantial risk that these measures will be ineffective and visitors might feel annoyed by excessively high prices, useless, or obtrusive offers of goods and services. Likewise, actions must not be focused too strongly on foreign tourists because that could make both them and domestic spectators feel uneasy. Cultural events with clear links to the soccer championship may be offered as alternative leisure activities to fill the gap between the encounters and to attract those tourists who do not hold tickets for particular matches. At least a part of them have to actually meet visitors' willingness-to-pay instead of being merely of representative type (e.g. parties with a Soccer motto). Specific offers of

guided tours, short trips or any other happenings designed for foreign soccer fans would complement accompanying leisure activities. Surrounding the venues, attractive commodities and services that are easy to access may be offered. Again, these have to be carefully composed in order to not repel consumers. Finally, it makes a great difference whether a soccer tourist from a distant country travels by a foreign or domestic airline since only benefits of the latter accrue to the domestic economy. Thus, specific travel packages should be offered to induce the choice of domestic transportation companies.

Investments: Crucial But Difficult to Control for Organizers

The last variable to be examined is the *investment expenditure*. It should be thoroughly analyzed for several reasons. (1) It is subject to significant multiplier effects over three periods and, therefore, will presumably exhibit a considerable sensitivity. Moreover, the high importance of investments in durable facilities is supported by all experiences available from past major sport events (see Spilling 1999; Andreff and Nys 1994; Gouguet and Nys 1993; Obermair 1993). This is in fact why investments had been carefully modeled in the present CBA. (2) In the model, investment expenditure is not only strengthened by multipliers but also determines operating costs and capital charges, having thereby a substantial influence on the problematic post-event phase. (3) As yet, the direction of the variables' impact analyzed above could have been clearly determined since a rise in foreign participation and expenditure obviously generates benefits and therefore exercises a positive effect on the aggregated result. But the impact of investments in sport infrastructure is ambivalent because they are as well of cost nature, i.e. investment expenditure and post-event burdens, as benefit nature, i.e. multiplier induced additional income. Hence, it depends on which of these two effects prevail to determine the sign of the overall impact of investments. This can be revealed by sensitivity analysis. (4) Judging from diverse experiences on inefficiencies of public construction works in general and specifically at major sport events (see e.g. Andreff and Nys 1994; Obermair 1993; Wright 1978), politico-economic repercussions of investment projects both in quantitative and qualitative respects can be massive. Hence, if the new building or renovation of arenas is publicly planned and managed it is most probable that actual costs exceed initial plans (see Dietl and Pauli 1999; Rahmann *et al* 1998). Furthermore, qualitative impacts, for instance with regard to urban development planning and ecological aspects, may be substantial as well (ibid.). Ultimately, systematic control of investment expenditure is a crucial but difficult element in a well designed strategic "event management system".

Sensitivity analysis of investment expenditure is more complex than in the previous cases. This is due in particular to the ambivalent character of investments. On the one hand, the sensitivity of both upper and lower bound values is of interest. On the other hand, absolute variations of the values would shift relative ratios between scenarios and, thus, the aggregation of the hypotheses would yield false or misleading results. Therefore, as well the upper as lower bound of the estimation interval has to be varied by the *same* rate in percent. In figure 7, the abscissa depicts the variation of the whole investment interval of scenarios in percent where the value zero percent (no variation) indicates the values of the base assumption. Hence, a value of, say, 5 percent means a rise of investment expenditure in *all* scenarios and *all* future contingencies of 5 percent, i.e. a positive shift of the entire estimation interval. Analogously, - 5 percent represents a simultaneous reduction of the investment intervals, i.e. a negative relative shift of all absolute estimations. This technique thus resembles to the concept of elasticity.

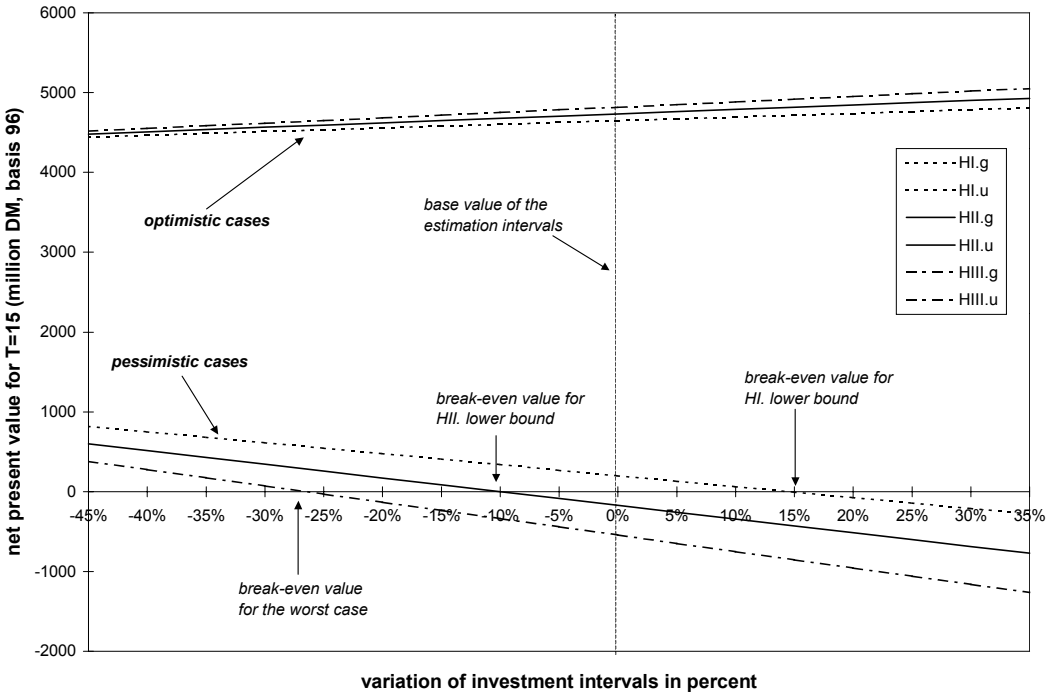


Figure 7. Sensitivity of Investment

The results of the sensitivity analysis may be distinguished for optimistic and pessimistic cases. (1) Under upper bound assumptions, the graphs exhibit a positive slope, i.e. the benefit effect of multiplier induced additional income prevails. It can thus be stated that the higher are the investments the higher will be the net present values. But the sensitivity of the variable is rather low. This means that the induced benefit effect for the entire economy just slightly

exceeds the direct cost effects. Therefore, it is most probable that the positive net impact of investments soon gets neutral or even reverse sign as general conditions deteriorate in any respect. Hence, it is dangerous to rely on a long-term positive net benefit effect of investments even if all circumstances are presumably advantageous. (2) Under lower bound assumptions, the cost character of investments clearly predominates. All graphs show a negative slope which is significantly steeper than in the optimistic cases. Furthermore, the differential between hypotheses gets larger as the investment expenditure increases. Thus, the sensitivity under pessimistic circumstances is higher and the relative weight of costs connected with the hypotheses rises with a positive variation of investments.

Breakeven analysis may indicate chances for strategic policies. Though slightly more pessimistic, the result is similar to the proportion of "foreign tickets" but the interpretation is different since, now, the aim is to *reduce* the values of the variable. Again, hypothesis I offers a scope up to a rise in investment costs of 15 percent whereas hypothesis II requires cost-cutting of 10 percent and investments of hypothesis III need to decrease by 25 percent in order to reach the breakeven point. It gets clear that the problem of cost reduction is unlikely to be solved in the case of hypothesis III. The necessary decrease of 10 percent for hypothesis II seems to be manageable at first glance. But one has to keep in mind that this actually means a successful *uniform* cost-cutting in *all* scenarios. This is a very ambitious project in practice because the level of investment expenditure for sport stadiums is largely determined autonomously by local communities (and their private partners). For this reason, the influence of organizers or national political bodies on these decisions is very limited and at best indirect. Furthermore, as reasoned above, there might be a tendency to upgrade construction plans, not to mention possible inefficiencies with regard to the implementation of these plans. Taking this effect into account, once again, hypothesis I should be clearly favored since it allows a 15 percent *risk premium* for the pessimistic circumstances.

Nevertheless, serious efforts ought to be undertaken to establish an effective investment cost controlling even if hypothesis I could be realized. For this purpose, two elements seem to be important: (1) Organizers and federal political bodies should follow a consistent *information policy*. The above revealed relationships, especially the deficit problem in the post-event phase, have to be actively communicated to local jurisdictions and their private partners. Best practices and perhaps "hit lists" of cost-cutting efforts of communities may be made public and underlined by official appeals. This might exert a positive public pressure on local decision-makers, at least via press and media. (2) Of course, the best measure to adjust

interests of involved groups is to set the *right incentives* for communities to control their investment costs. The probably most effective approach in this sense would be to ascribe a high weight to cost criteria in the bidding procedure. Organizers should require a clear-cut planning of cost control activities from bidding communities. Bidders whose plans are not convincing may be excluded from the procedure in certain cases. Furthermore, once the locations are chosen, the successful communities should commit themselves to regular reporting. If the differential between the initial plans and the state of local project budgets gets too large organizers may have the right to sanction the community. In the extreme case of repeated violations of budget plans, organizers should be even authorized to replace misconducting communities by the next-best bidder which had not been chosen in the first round. In general, the credible thread of sanctions or exclusion because of rising costs is already likely to discipline communities. If such a procedure were implemented there would be a substantial individual incentive for bidders to control their investment costs, be it at the expense of a slight reduction of the stadium quality. The reason is the cost side would be a crucial variable in the auction process which would be credibly underpinned by the bidding regulations of the LOC. Thus, it is in the very interest of the bidders to enhance cost efficiency of their local stadium construction since their cost planning has to be competitive to raise chances of being chosen. The described procedure is a much more effective instrument to control the overall costs of the event than simple appeals that are likely to be ignored. However, it got clear that the coordination of the decentral investment activities remains a very important but the most demanding task for organizers.

4 Conclusion

The present paper dealt with economic issues of decision problems in connection with bidding for, evaluating, and managing major sport events from the perspective of a country or city willing to host such an event. From an institutional economic analysis and categorization of major sport events, it had been derived that a bidding country faces a twofold decision problem. The first level choice consists of determining the expected socio-economic value of the event in question. The second level concerns strategic issues of whether or not and how to enter the auction, i.e. actually bidding for the event, and how to efficiently manage the event in order to sustain or even raise its value. It was reasoned that this decision problem should be tackled by a consistent integrated evaluation and management approach in the sense of what had been called “event management system”. It was furthermore argued that CBA is the appropriate approach to the first level decision whereas strategic management is suitable for

the second level, i.e. deciding on and coordinating action plans to efficiently organize the event. Against this background, methodological ties between both approaches were, first, theoretically discussed and, then, demonstrated by an empirical application to the case of the Soccer World Cup 2006 in Germany.

After outlining the structure, data, and main results of an *ex ante* CBA of this event, meaningful goals and objectives to be pursued by staging the event have been formulated. Then, relative to this set of targets, strategic variables had been identified and examined to deduce alternative actions plans of how to control them. It had been found that the choice of match locations with regard to allocative efficiency and regional development goals is a crucial task for organizers of a Soccer World Cup. The majority of socio-economic effects that are induced by the event are more or less set by this decision. Therefore, this task has to play a key role in an "event management system". Some issues of institutional economics to dampen a possible tendency to overinvest in sport facilities were outlined. Finally, we examined in detail the use of sensitivity analyses in order to both identify strategic variables that might be most effectively controlled and to derive efficient strategies of managing them. The major findings were that (1) hypothesis I turned out to be, under risk-aversion, the dominant strategy of the distribution of match locations in all analyses, (2) the expenditure per "foreign ticket" is the strategic variable that promises the highest increase of efficiency if it can be actively influenced, for instance, by a strategic marketing mix, (3) the investment in sport facilities actually is the variable with the highest weight but it is fairly complex to handle for organizers. Nevertheless, a number of policies were proposed in view of setting incentives for bidding cities to establish an effective cost control. Among other things, this goal should be incorporated in the regulations on the choice of match locations.

We believe to have shown in this paper that a methodological integration of CBA and strategic management is most fruitful to improve the planning and organizing of major public projects like sport mega-events. This is because, up to now, the levels of the twofold decision problem, if at all discovered as such, have been tackled independently from each other. Thus, the concept of an "event management system" of the type developed here seems indeed to be able to enhance the event efficiency and, herewith, appears to be a convincing path to be continued. For this purpose, a further theoretical and methodological foundation that goes beyond what has been presented here is needed. Moreover, the academic debate on this proposal might reveal strengths and weaknesses which have not yet been seen.

What certainly remains to do is to think about ways of how to potentially meet pareto-efficiency conditions. It has to be taken care for future burdens that will be especially vital in some intermediate and backward match locations. Those local jurisdictions might be negatively affected, in particular in case of disadvantageous circumstances and sets of venues close to the hypotheses II and III. Thus, the weaker the overall result, the likelier will be the existence of "loser locations" and, thereby, the higher could be the need of a certain amount of compensation on allocative grounds, but, at the same time, the lower would be the benefits left for compensating (for further details on that issue see Kurscheidt and Rahmann 1999 and Rahmann 1999). These problems and risks arising at the lower bound of possible results have to be carefully considered and all necessary precautions should be taken in the framework of a strategic "event management system" to avoid such an outcome.

Notes

[1] Nevertheless, the externality concept is questionable with regard to major sport events. Because it could be argued that socio-economic "benefit spillovers" are sometimes more important for the decision to host such an event than the original sporting cause. Thus, these "external effects" may be rather part of the production function of a major sport event than a by-product.

[2] Késenne and Butzen (1987) showed that big sport facilities are natural monopolies. Since major sport events—depending on the category within which they fall—need at least one facility of that kind, the natural monopoly argument can be extended as well to the whole event. Nevertheless, one restriction has to be made. The fact of high fixed costs is, of course, not sufficient for a natural monopoly. The condition of subadditivity of cost functions must hold. For the case of major sport events, theoretically, one could easily imagine that, in an unregulated market of event series, one would end up with only one supplier who has first realized the development of the necessary infrastructure. But this is, of course, just a theoretical train of thought because, for political and socio-cultural or simply tradition reasons, it is hardly imaginable that, for instance, the Olympics would always take place at, say Athens, every four years.

[3] Concerning regular team sports matches, the object of the investment project is rather the stadium (esp. in professional sports), not just one league match. Major sport events as a whole include, of course, the construction of appropriate venues, too. For the latter the question is whether the event induced benefits can at least recoup (construction) costs that are with no doubt attributable to the event. Often the event just counts for a part of stadium construction costs because it is also utilized for other purposes after the event. But a major sport event involves other additional cost items. A stadium investment that is done independently of the intention to host a major sport event must cover costs by the regular revenue from league matches' gate receipts and other sources like merchandising etc. (see Dietl and Pauli 2000; Rahmann *et al* 1998, 177-204). Extra-spending of major event tourism cannot, *ex ante*, be expected. In other words, the investment objectives and induced effects are similar but *not the same* and, hence, have to be analyzed in a different framework. For a survey of this problem and recent USA and German studies see Dietl and Pauli (2000 and 1999). Baade and Matheson (2000) and Baade (1999) provide good insights in the USA situation as to the economic impact of the construction of sport facilities.

[4] The reasons why there should be an event series instead of a variety of isolated or loosely linked singular events are numerous. Surely, the attractiveness for the public or even the creation of supporters' enthusiasm as well as transaction costs aspects are crucial points. In fact, especially in the professional team sport literature, there is a lively debate about what has actually to be considered as being the final product in team sports: just the entertainment or the match or rather the league competition as a whole? Most of the authors now plead for the latter—often on efficiency grounds (see e.g. Franck 1995 and Cairns, Jennett, and Sloane 1986). Anyway, the problem of economic organization is similar to the major event series issue.

[5] The IOC corruption scandal is the most prominent example for the dubious practices in such "auction" processes. The decision on the hosting country of the European soccer championship "EURO 2004" was economically difficult to understand and the criteria were not quite clear, too. Three countries—Portugal, Spain, and Austria (see Mayrhuber, Relja, Wörgötter 1999) together with Hungary in a joint candidature—submitted a bid for the event. Finally, Portugal succeeded, although it had been considered as an outsider by independent experts. (It could be speculated that the often raised argument by sports federation officials that major events generate a sustainable sports and economic development impulse has been a major motivation for the decision in favor of Portugal.) The allocation of the Soccer World Cup 2006 had also been subject to controversies. South Africa, Morocco, England, Brazil, and Germany had submitted a bid. The 24 members of FIFA's Executive Committee took the decision in favor of Germany at the most narrow ballot result possible with 12 votes to 11 and one abstention against the last remaining competitor, South Africa, in the third and final round of voting (Radford 2000). Therefore, the South African officials were very disappointed and questioned the correctness of the ballot. (Here, the economic reasoning for Germany might have been rather the opposite of the one at the "EURO 2004" voting.)

[6] The "vision concept" is controversial, but leading scholars in the field do support it (see e.g. Miller 1998; Collis and Montgomery 1997; and for the German language literature Hinterhuber 1996). Therefore, it might be significant and should not be rejected beforehand.

[7] Such auction processes, in practice, are generally characterized by diverse tactical maneuvers of the bidders and auctioneers. Here, a good strategy might raise the chances of success. The recent example of the Soccer World Cup 2006 illustrates this very well. In the beginning of 1997, there had been quarrels between

England and Germany because they could not agree on a single European candidature. (German soccer officials claimed that the new managers of the English soccer association had broken a "gentleman's agreement" made by their predecessors.) In 1998, the FIFA president Joseph Blatter frankly supported the bid of the Republic of South Africa. Then, Brazil entered the game with an emotionally formulated candidature. Later, Mr. Blatter stated that the dossier of the German bid was convincing. Was that a signal of a change of mind? However, such tactics went on until the decision was finally made on July 6, 2000 (see note 5 and the survey in Ahlers 1999).

[8] It is currently an unsatisfying situation that political and organizing practitioners are confused by the controversial opinions of specialists in the field of economic impact analysis. The unfortunate result is that, ultimately, some of them completely do without sound *ex ante* analysis or follow the widespread opinion "a number is better than no number" (Davidson 1999, 9) regardless of the appropriateness or correctness of the applied methodology and the significance of those figures (see also Kurscheidt 2000; Thöni 1999).

[9] For an, in this sense, critical treatment of various types of mega-events see Andreff and Nys (1994) and Gouguet and Nys (1993). Misplanning at Olympics are, for instance, documented in Barutta and Fahrion (1994). Examples of "emotional bidding" for Olympics can be found in ibd. and Maennig (1991), in particular with respect to the candidatures of Cape Town and Rio de Jeneiro at the recent award of the Olympics in 2004 see Drechsler (1997), Handelsblatt (1997), and Sosalla (1997). Even the financial success of the "famous" 1984's Los Angeles Olympics is questioned by Thöni (1999). Information on irrational planning and decion-making as well as mismanagement at Soccer World Cups and European soccer championships is given in Ahlers (1999) and Obermair (1993) (see also notes 5 and 7). Quite optimistic and to a good deal methodologically questionable *ex ante* studies are URBSFA (1994) for the EURO 2000 in the Netherlands and Belgium (The original authors of this study are even not indicated!) as well as Foucard and Torrenti (1991) for the World Cup 1998 in France. For an *ex post* study that entirely neglects costs see Dobson, Holliday, and Gratton (1997). For a discussion of typical analytical deficiencies or omissions of such studies see Késenne (1999a and b) and Baade and Matheson (2000). Unfortunately, it would not be too difficult to continue this list.

[10] The planning approach should also be subject to cost-benefit considerations. It is obvious that a thorough analysis of a sport event may be costly. Therefore these (transaction) costs should at least equal the benefits of the additional information that is gained by the analysis (Boardman *et al* 1996). But, in general, any analysis—if carefully performed—is believed to be beneficial (Davidson 1999; Thöni 1999).

[11] In stead of constructing sport stadiums, one could think of e.g. building sport centers to enhance sporting activity of the population to raise public health, at least in the long run. But it would be functionally inappropriate and meaningless to compare, for instance, the construction of kindergartens with big sport venues.

[12] In Germany, for instance, there had already been an attempt of the Ruhr region, the biggest European agglomeration area, to submit a collective candidature for the Summer Olympic Games 2004 (Barutta and Fahrion 1994). This project would have been close to what is meant by field IV. in figure 1. Another future issue could be a change of perspective. For instance, from a European point of view, 1998 was somewhat a "meta-event" year. At least three major or even mega-events were held throughout summer time with slightly overlapping schedules: Soccer World Cup in France, Tour de France, and Tennis at Wimbledon. Likewise, 2000 is a sort of "meta-event" year: Europe had the "EURO 2000" soccer tournament co-hosted by the Netherlands and Belgium and—though not a sport event—the Expo 2000 in Hanover, Germany, shortly followed by the Summer Olympic Games in Sydney. Special events that are held every year, like the mentioned Tour de France and Wimbledon, then loose attractiveness.

[13] Note that the notion *estimation* here is not equivalent to the concept of estimation in statistical inference theory. Since there is poor information on *ex post* frequencies one cannot rely on samples and thereby it is not possible to test statistical significance or to build confidence intervals. In fact for these reasons, the notion "subjective assessment" is more appropriate. For simplicity, estimation here is used synonymously.

[14] Only the 16 cities that submitted a bid for a participation in the tournament are known: Berlin, Bremen, Dortmund, Dusseldorf, Frankfurt/M, Gelsenkirchen-Schalke, Hamburg, Hanover, Kaiserslautern, Cologne, Liepzig, Leverkusen, Mönchengladbach, Munich, Nuremberg, and Stuttgart (DFB 1999). But yet, it is not clear at all which of them will actually be considered.

[15] Apparently, the only systematic empirical research on the expenditure behavior of soccer tourists has been carried out by Dobson, Holliday, and Gratton (1997) in an *ex post* study on Sheffield as a location of the European soccer championship 1996 in England. But their insights are too (locally) specific to hold as well for World Cups. However, similar results have been taken into account to build plausible assumptions on values.

[16] Of course, this time horizon is too long for minor renovation works of existing stadiums at some locations and might be too short for costly "superdomes". Moreover, note that the problem of defining what is

actually “event induced” and what is not is very delicate (see Thöni 1999; Maennig 1991). It will be even more delicate as time goes by. For instance, the “event induced” part of costs of a newly build stadium that has been originally constructed to a great extent for the World Cup will decline with time. However, since we simply cannot know the “right” time horizon to adopt for the problem we assume that 15 years, i.e. with a post-event phase of 9 years which is probably not very long, might be a reasonable mean for all locations.

17 This reasoning refers to analogies of the debate in the German language literature on organizational restructuring of team sport leagues (see e.g. Dietl and Franck 1999; Kipker and Parensen 1999). Some of these authors raise the thesis that the overinvestment in talent by team sport clubs is largely due to a hyperactivity phenomenon (see Franck and Müller 1997) which had been introduced by Akerlof in the mid-seventies under the notion *rat race*: “In the rat race the chances of getting the cheese increases with the speed of the rat, although no additional cheese is produced” (Akerlof cited in Dietl and Franck 1999, 4). The championship race in team sport leagues seem to be characterized by the same mechanism. Accordingly, it can be expected that an auction induced significant rise of stadium investment for a Soccer World Cup will have a negligible impact on “the cheese”, i.e. benefit returns per event location, but it might raise the chances for the bidders to be chosen by the organizing committee. Thus, there is a potential incentive for the bidders to upgrade their investment planning to an extent that exceeds the necessary level to meet FIFA’s technical requirements.

18 In general, the signaling of organizers is rather the opposite since they are particularly interested in supporting and developing their sport. Therefore, they strive for a technically ambitious modernization of the sporting infrastructure. This enhances the (international) reputation of both their organization and their sport (see for analogous arguments Baade and Matheson 2000 and Baade 1999 for the U.S.; Dietl and Pauli 1999 for Germany). But, on the other hand, it cannot really be the interest of the LOC and OCF to economically harm the hosting country, especially if they have to fear that this may be revealed. Anyway, both the LOC and the hosting country would benefit from an “exemplary” organization of the event, and this would include an effective cost control as well.

19 Assuming that the regulations for the World Cup 2002 in Korea and Japan will be still valid in 2006, there will be 32 participating national teams and 64 matches organized in two rounds, the first (about 16 days) of group encounters (eight groups of four teams each) and the latter of elimination matches (about 16 days with several off-days). Thus, the first round encounters are temporally concentrated but spatially distributed among all locations whereas the second round matches are temporally spread but spatially concentrated on locations that are better endowed. The latter is due to increasing infrastructural requirements because of the higher attractiveness of elimination matches and the remaining teams, i.e. the attendance will rise.

20 Indeed, people usually take a major sport event as an opportunity to buy, for instance, a new TV set or satellite receiver in order to watch the broadcasts in a higher quality (see e.g. Rahmann *et al* 1998; Dobson, Holliday, and Gratton 1997; Andreff and Nys 1994). But it could be objected that the generated effect might rather be a temporal shift—at least to a great extend—than an actual event induced rise in consumption.

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Appendix

	HYPOTHESIS I		HYPOTHESIS II		HYPOTHESIS III	
	upper bound	lower bound	upper bound	lower bound	upper bound	lower bound
total investment (in million DM 96)	1,620	560	2,020	690	2,420	820
total tourist spending* (in million DM 96)	*(for all hypotheses)*	1,463.57 (upper bound)		813.09 (lower bound)		

Table 2. Total Investment Costs and Tourist Spending

	TOTAL NET BENEFIT RETURNS PER PERIOD (in million DM, basis 1996) *(t = 6 to t = 15)*							
	scenario 1		**scenario 2**		**scenario 3**		**scenario 4**	
	upper bound	lower bound	upper bound	lower bound	upper bound	lower bound	upper bound	lower bound
benefit returns	9.6	6.4	9.6	5.0	9.6	5.0	6.4	1.5
operating costs	6.4	9.6	6.4	9.6	6.4	9.6	6.4	9.6
capital charges	1.9	7.6	4.75	11.4	9.5	28.5	9.5	28.5
total costs	8.3	17.2	11.15	21	15.9	38.1	15.9	38.1
net benefit returns	1.3	-10.8	-1.55	-16	-6.3	-33.1	-9.5	-36.6

Table 3. Net Benefit Returns per Period by Scenario

	TOTAL NET BENEFIT RETURNS PER PERIOD (in million DM, basis 1996) *(t = 6 to t = 15)*					
	HYPOTHESIS I		**HYPOTHESIS II**		**HYPOTHESIS III**	
	upper bound	lower bound	upper bound	lower bound	upper bound	lower bound
benefit returns	92.8	50.7	89.6	45.8	86.4	40.9
operating costs	64	96	64	96	64	96
capital charges	53.2	153.9	65.55	191.9	77.9	229.9
total costs	117.2	249.9	129.55	287.9	141.9	325.9
net benefit returns	-24.4	-199.2	-39.95	-242.1	-55.5	-285

Table 4. Total Net Benefit Returns per Period by Hypothesis

VARIABLES	(TIME t)	ESTIMATION INTERVALS		
		UPPER BOUND		LOWER BOUND
investment costs	scenario 1	80 million DM		20 million DM
	scenario 2	120 million DM		50 million DM
	scenario 3	300 million DM		100 million DM
(at 1/3 in t =3 to 5)	scenario 4	300 million DM		100 million DM
benefits on investment in sport facilities *(from t =6 to t =15)*	scenario 1	9.6 million DM		6.4 million DM
	scenario 2	9.6 million DM		5.0 million DM
	scenario 3	9.6 million DM		5.0 million DM
	scenario 4	6.4 million DM		1.5 million DM
	hypotheses	H_I	H_{II}	H_{III}
scenario distribution	scenario 1	3	2	1
	scenario 2	4	3	2
	scenario 3	2	3	4
(from t =0 to t=15)	scenario 4	1	2	3
operating costs *(from t =6 to t =15)*		*(for all scenarios)* 9.6 million DM		*(for all scenarios)* 6.4 million DM
capital charges *(from t =6 to t =15)*		*(for all scenarios)* 9.5 percent of investment as annuity (interest + repayment)		
capacity utilization		90 percent		75 percent
total tickets		3,140,812		2,617,330
tickets per match		49,075		40,896
"foreign tickets" (32 percent)		1,005,060		837,546
journalists' tickets (0.36 percent)		11,307		9,422
expenditure per "foreign ticket"		1,440 DM		960 DM
total tourist expenditure "		*in t = 6:* 1,463.57 million DM		*in t = 6:* 813.09 million DM
surplus of LOC *(in t = 6)*		150 million DM		0 DM
multi-pliers[a)]	for *time:*	*in t = 4:*	*in t = 5:*	*in t = 6:*	*in t = 4:*	*in t = 5:*	*in t = 6:*
	investment expenditure	1.1[b)]	1	0.8	0.4[b)]	0.2	0.2
	for tourist expenditure	*in t = 7:* 2.45			*in t = 7:* 2		
discount rate		4 percent					

a) Both multipliers were computed by the *Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI)*. The investment multiplier is dynamic over three periods and was derived for public infrastructure investments from an econometric business cycle model. The multiplier of the tourist expenditure is a static one for the hotel and restaurant industry and had been calculated by an econometric input-output model.

b) The value of the multiplier is reduced by one in the first successive period after the investment to make sure that only *additionally* induced income from the impulse of investment *costs* (!) are counted as benefits.

Table 5. Data Inputs to the Model and Dynamic Structure

TIME HORI-ZON	NET PRESENT VALUES (in million DM, basis 1996)					
	HYPOTHESIS I.		HYPOTHESIS II.		HYPOTHESIS III.	
	upper bound	lower bound	upper bound	lower bound	upper bound	lower bound
4	-149.99	-757.02	-184.81	-943.93	-219.63	-1130.85
5	18.78	-934.55	23.14	-1165.30	27.50	-1396.06
6	1702.55	-107.97	1793.93	-288.33	1885.32	-468.69
7	4664.21	1140.56	4803.05	968.13	4941.89	795.70
8	4755.49	1073.92	4908.31	889.63	5061.12	705.34
12	4690.78	545.58	4802.35	247.50	4913.91	**-50.58**
13	4676.12	425.94	4778.35	102.10	4880.58	**-221.74**
14	4662.03	310.91	4755.28	**-37.71**	4848.53	**-386.32**
15	4648.48	200.30	4733.10	**-172.13**	4817.71	**-544.57**

Table 6. Selected Net Present Values

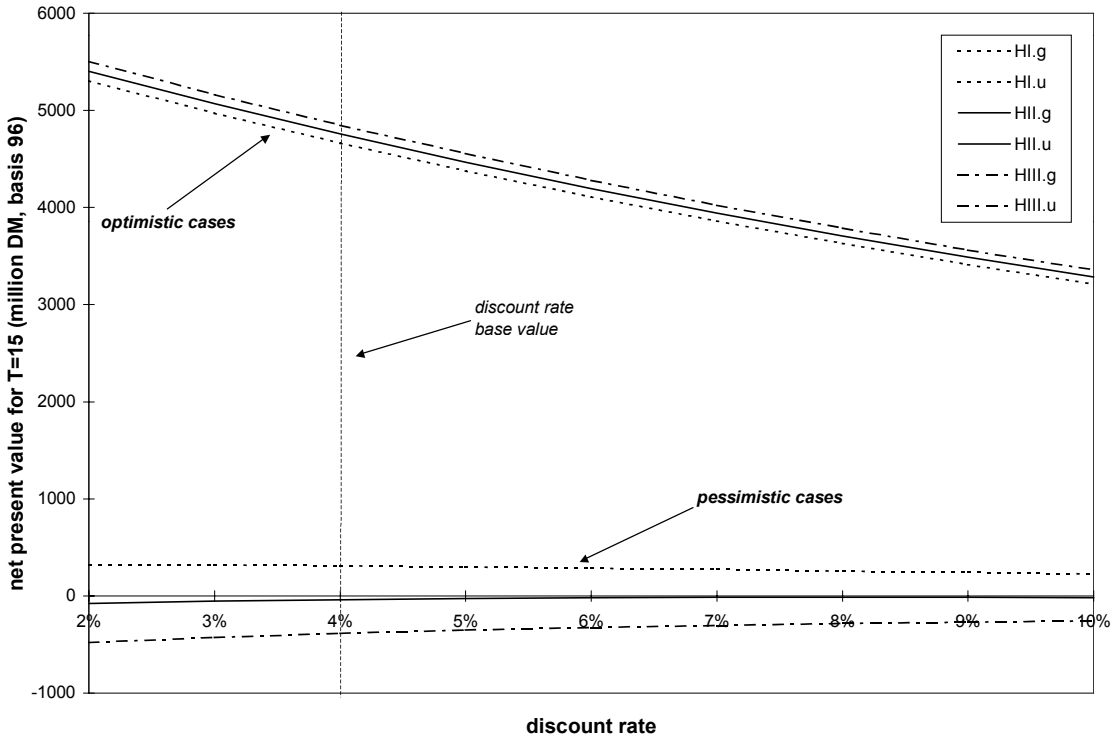

Figure 8. Sensitivity of Discount Rate