

The Stockholm CBD
Renewal 1951–1978
Good Business or Planning
Disaster?

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Abstract

Municipal site leasehold was implemented in the post-war renewal of Stockholm's central business district in order to render the transformation process more efficient and secure the municipality a share in increased land values. The purpose of this study is to analyze the profitability of the project for the municipality. The results indicate real returns of over one percent per annum, which means the project cannot be considered a fiscal catastrophe. Private leaseholders have however benefited most, the lion's share of land value increments having accrued to the building owners. Municipal site leasehold has not proven to be an effective policy instrument. More flexible instruments need to be designed for regulating the relations between private and public agents in urban renewal.

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Introduction

Over a period of more than a quarter of a century beginning in 1951, the central business district (CBD) of Stockholm underwent a modernisation that was both sweeping and in many respects painful.¹ The operation was unique, not so much in its fundamental conception as in the consistency and perseverance with which it was carried out. The arena in which the transformation was executed can be briefly described as follows. The central City district of the steadily-growing capital city region had not been rebuilt to any significant extent since the “bank rush” of the decade leading up to 1920. Financial crises or retrenchments (1920–1924, 1931–1934 and 1947), world war (1914–1918, 1939–1945) and bickerings over town planning policy (1929–1945) had presented obstacles. The first fifty years of the twentieth century brought a fundamental change in the conditions of the City’s activities. Intensive housing construction beyond the confines of the inner city created communication problems. The capacity of the tramway network to the suburbs was inadequate. The solution was an underground railway project, gigantic for a metropolis the size of Stockholm, whose City section, completed in 1957, directly triggered the great City renewal. Motor traffic too was revolutionising urban life and the conditions of the City’s activities. It was already clear by the end of the 1920s that vast upheavals of street traffic were to be expected, but not until after 1950 was a start made on rebuilding the City with the motor car as the criterion. The boom in department store business, the massive expansion of office work (banking, insurance, public administration, professional and industrial organisations) and strong economic growth, manifested for example in an amazing investment capacity on the part of local authorities, also formed part of

¹ The material presented here forms a minor portion of a larger work on the renewal of Stockholm City, with its emphasis on political, administrative and developmental questions. The project has been assisted by the Swedish Council for Research in the Humanities and Social Sciences and by the Stockholm Research. A preliminary presentation may be found in Clark and Gullberg (1991 and 1997). The full scale study is published in Swedish as Gullberg (2001a,b). On the redevelopment of Stockholm City see also Hall (1979). The calculation and main results in this paper was presented in Gullberg (1993). Translation of this fairly modified version was made in 1994 by Geoffrey French, and has not been updated since then, except for this and the next footnote.

the picture. The pattern which guided the redevelopment of the City was of functionalist cut. "[T]he complete reconstruction of the city" (Sert, 1942, p. 216) implied a wholesale repudiation of whatever already existed. Residential accommodation was to be taboo in the new City, which would contain only shops, offices, multi-storey car parks and certain cultural activities. New development units were to be big and technically rational. Traffic facilities and separation would be of advanced design. The division of urban functions was carried to great lengths. This approach can be recognised in a large number of city renewals undertaken after the Second World War. "[T]he phenomenon labelled reconstruction was not limited to cities or even countries affected by destruction through war. [R]econstruction [...] was an important theme everywhere, whether in the United States, Europe or Australia." (Fischer, 1990, p. 132). What was original about Stockholm, however, was the attempt to apply an active land development policy in the shape of extensive local authority acquisitions and grants of enjoyment of site leaseholdship rights in order firstly to overcome the sub-optimisation of land development which could be attributed to private ownership of small sites and speculation in future rises in land values, and secondly to cope with the notorious problem of city renewal entailed in the fact that "large-scale public projects could not recoup their costs by capturing the gains in land value they generated" (Hohenberg and Lees 1985, p. 326). The radical approach in Stockholm had its genesis in the experience of private profits and municipal authority costs arising from modernisation of the town plan and street system during the early phase of urbanisation. The question of so-called unearned incremental land values was to remain on the national political agenda for many fruitless decades. The so-called land reform movement was very active around the turn of the century and had important international counterparts not infrequently inspired by the ideas of Henry George. All attempts at legislation failed, however (Holmström 1988). The object which the critics of land speculation had in view was to siphon off, for the public benefit, the gains in land value ensuing from rapid urban growth; some variations focused only on that portion which could be

ascribed to public investment in urban building development. If the land went over into municipal ownership the problem was regarded as solved. In the redevelopment of Stockholm City, a very consistent policy was followed with respect to land acquisition and site leaseholds. What could be called the second most radical model was applied in order to attack the so-called unearned incremental land value. The most radical model would involve the municipality's retention not only of ownership of the land but also of the new buildings.

The great City redevelopment operation was the means by which Stockholm's rulers wished to create a centre for the entire Stockholm region, which had to compete with the great metropolises of the Continent. In today's debate this mega-project, under municipal direction but with substantial private participation (in point of fact the aggregate private investment – divided among many hands – was significantly greater than the public contribution) is almost exclusively described as a disaster from the urban landscape, architectural and even functional standpoints. It is true that valuable environs and buildings were destroyed unnecessarily and that a good deal of what is new lacks the qualities expected of a city centre. However, it is difficult to accept that such environmental judgments should be the sole criterion by which the entire City reconstruction should be judged. It is more the rule than the exception for a recently-vanished epoch of urban transformation to be downgraded, then possibly rehabilitated long afterwards. At the same time it is impossible to overlook the remarkably high frequency with which planning disasters can be substantiated by examples, especially among the very biggest projects. In the case of the new Stockholm City one may hazard the guess that in certain respects condemnation will endure.

During the course of the 1970s it became increasingly evident that many large-scale projects – including the reconstruction of Stockholm City – which had been started in the expansive post-war spirit were running out of control. Peter Hall captured this phenomenon in congenial fashion

with the book-title *Great Planning Disasters*. His definition of disaster is difficult to apply, however, because of its extreme relativism. In Hall's view, disaster is at hand if a planning process "is perceived by many people to have gone wrong" (Hall, 1980, p. 2). Therefore it may very well happen that projects "that once appeared to be disasters [...] turned into apparent successes" (p. 3). Nevertheless, in the case studies reported, Hall attaches most weight to the projects' costs and what was received for the money. The result is also set in relation to original calculations and other expectations.

In his review of a classic planning disaster – the Sydney Opera House Hall (1980, p. 138ff) provides a fascinating account of the varying manifestations of wisdom after the event. Had it been possible, when the decision to build was taken in 1958–1959, to see seven years ahead in time, Sydney would not have got its Opera House. However, if the range of second sight could have been extended a further thirteen years, then in Hall's (1980, p. 151) judgment the building project would have been given the go-ahead. By that time the financial and to some extent functional fiasco entailed in the project had been more than sufficiently outweighed by the symbolic radiance in which the building had succeeded in bathing Sydney's name all over the world.

Planning disasters are presumed by Hall to result in not inconsiderable measure from human error and bungling. To try to reduce explanations of planning disasters and unsuccessful projects to human shortcomings alone trivialises the problems involved. More particularly, very interesting questions are liable to be overlooked: for example, to what extent are people prisoners of the spirit of the age and their conception of the world, and how far is it possible to stand aside from these without being defined out of existence? It simply is not possible to be faithless to all principles, and most especially not where large-scale, long-lasting projects are concerned. To this we may add that projects, especially of this type, tend to take on a life of their own so that regardless of their

being the result of human actions, it is impossible to kill them off without ado or to leave them to die of themselves.

In examining whether the Stockholm City redevelopment ought to be given disaster status, it will be elements of Hall's analyses that I shall have in mind rather than his definition. In particular it is the question of the project's financial outcome that I shall explore. The other aspect, what Stockholm's inhabitants have received for their money and what they think about it, I shall merely glance at.

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Financial results of large-scale projects

Generally speaking, exact costings of large-scale projects after the event are unusual. Private firms devote considerable resources to preliminary costings when making investments (Jansson, 1992, p. 12f), while the results of large-scale investments once committed attract a considerably milder degree of interest (Hägg, 1979, p. 211). Segelod (1986, p. 2), who has collected and analysed material on both private and public enterprises, finds “it surprising to see how seldom experiences of completed projects are documented and analysed”.² He also considers that “[t]he recommendations which are given [by experts as to how investments ought to be costed] are based to a remarkably small extent on empirical studies of how earlier costings turned out” (p. 3). However, from the studies which have been collected and analysed by Segelod and Merewitz (1973) it is evident that massive underestimates of the costs which planned projects will incur are relatively common. Certain links with the projects’ characteristics can be identified. For example, there are considered to be increased risks of cost overruns when projects are eccentric, clear criteria of success are lacking, purchasing procedures or contract wordings are inappropriate, decisions must be taken before risk reduction can be accomplished, and management misjudges the project’s need for expertise (Segelod, 1986, p. 193).

There are many interesting arguments suggesting why cost underestimates can be positive. “One cannot read far in the history of great economic undertakings – particularly great developments in transport and the opening up of new resources, for example – without being struck by the recurrence of [...] instances in which entrepreneurial error or misinformation not only is massively present but where it appears to have been a condition of successful enterprise.” (Sayer, 1952 quoted by Merewitz, 1973, p. 280). This has especially been the case with investment in canal- and railway-building both in the United States

² Since this study was finalized in 1994 there has been some interesting publication on this subject. One example is Flyvbjerg (2008).

and in Europe. In many instances, such miscalculations of costs have been balanced by at least as large an underestimate of demand (Sayer, 1952, cited according to Segelod, 1986, p. 119). What could be characterised as deliberate miscalculations have even been identified (Jansson, 1992, p. 164), which is not surprising having regard to the rhetorical impact these computations wield. One type of infrastructure project in which tendencies to underinvestment because of uncertainty of outcome are often pointed out is R & D, especially when the pure research element is large (Segelod, 1986, p. 120). The potential positive external effects are great here, as with investments in other infrastructure. Therefore projects of this type which have been unsuccessful in terms of entrepreneurial economics have probably been socioeconomically beneficial in many cases. Certain macroeconomic studies report a clear link between the stock of civil public infrastructure and productivity advances in the private sector (Auschauner, 1989, Munnell, 1990). However, the nature of the mechanisms which are responsible for this link, and the directions in which they operate, forms an exceedingly open question. Of course there are no grounds for supposing that every infrastructural investment will lead to beneficial socioeconomic results.

It would be desirable – especially if, like Hall, one ascribes great responsibility for failures to actors who are fairly sovereign and uninhibitedly rational – “to chart where the divergences between pre- and post-calculations occur, what the causes are and what the consequences will be” (Segelod, 1986, p. 5). However, Hägg (1979, p. 221) and others have been able to establish that a frequently-assumed leaning effect from this type of study not infrequently fails to materialise. This failure has its roots in the limitations of the same rational thinking that simultaneously enjoins calculation based on past experience (cf Gullberg 1986, p. 41). Specifically, this manifests itself in an aversion to allowing unhappy experiences of projects implemented in the past to stand in the way of the necessarily bold flight of new project ideas. There are many occasions when the rejection of justified criticism becomes a necessary condition of the launching and carrying through of great projects. Of many possible

immunisation mechanisms against the admission and correction of project failures, Beckman mentions several examples which function at a “superindividual” project or organisation level. He believes that “immunization is not something that individuals and organization can do without as long as ambitions are abundant” (Beckman, 1979, p. 257).

Stockholm City Redevelopment as an Economic Project

To appraise the economic outcome of the redevelopment of Stockholm City offers an exciting challenge and can be described as a follow-up or evaluation – an *ex post facto* development calculation capable of being compared with analyses of other large-scale projects.

The municipality’s approach to the large-scale reconstruction of the City was conditioned by such factors as the land-policy tradition cited above. The municipality acquired the land, in so far as this had not been done already. This was accomplished with the aid, when required, of land redemptions and expropriations. In many instances properties were acquired by means of composite transactions in which financial compensation, the municipality’s right to allocate new premises and the granting of site leaseholds might be included. The municipality also attended to the planning and preliminary projecting of prospective building permits, evacuation of tenants of dwellings and premises, demolition, excavation, and negotiations with prospective site leaseholders and tenants of premises. The municipality defrayed the costs of laying out streets and other traffic facilities, underground railways and also, via the municipal departments, of water, sewage and electricity supply systems. It was the municipality too which took responsibility for the project’s coordination in a number of respects. This meant, firstly, acquisition, evacuation, demolition, preparation of ground, and new construction; secondly, acquisition of land and grants of leases; thirdly, utilities and communications systems (streets, underground railways, electricity, telecommunications, water and sewage systems) and foundation-laying for and erection of buildings; fourthly the creation of functional shopping streets during the protracted redevelopment period

by granting strategic site leaseholds to be made ready at controlled timings and by assigning business tenants to private premises as well. The municipality also dictated coordination between groups of tenants with respect to parking, delivery traffic and heating. The provision of parking turned out to be unprofitable for the most part, and the municipality was forced to assume and/or subsidise this function. During periods of weak demand the municipality offered inducements in the form of rebates and/or rentals subsidised at levels far above those prevailing on the market. In other words the municipality undertook to place development rights, well prepared and defined, at the disposal of interested builders on site leasehold terms. The immediate financial risks of delays or default of development were borne by the municipality alone. In this way the municipality reduced the risks to which private developers usually have to expose themselves. Indirectly, however, delays in the redevelopment process could cause private interests which had already committed themselves to the City project to suffer as well.

The municipality's revenues from the City redevelopment scheme consist mainly of rents of leasehold sites (or lease fees), i.e. the site leaseholder's remuneration for the right to use the land. The financial outcome of the municipality's mode of tackling the City development can be compared with the site leaseholders' results. Their costs include, in addition to rent, other running costs plus maintenance and depreciation. The revenues consist mainly of rents. The factors crucial to the outcome of a property commitment are firstly the direct yield (the difference between current income and expenditure) and secondly the change in real value (the difference between the builder's buying and selling prices).

Special character of the project

The economic analysis of urban building projects presents special problems. A strong dependence exists between location of businesses (and thus also land values) and transport systems or infrastructure in general. Irreversibility, long physical life and strong mutual dependence

between different elements of urban building means that vast external effects can arise.

The hopes entertained with regard to site leasehold rights, alongside the capacity for coordination and control which they placed in the hands of the municipality, were that they would prevent too flagrant a transfer of value from the community at large to private landlords. One argument was that the municipality, in its capacity as risk-taker, also ought to avail itself of its opportunities for appropriating whatever profit might eventuate. The extensive urban renewal in the United States after the Second World War was also assisted by public authorities but along different lines. The common feature was that the public authorities acquired large continuous tracts of land with a view to total redevelopment. The risks involved for private interests were thus considerably reduced. The option followed in the United States was to sell the land thus acquired and prepared below its market value (Barekov, Boyle and Rich 1989, p. 39). What this signified was a considerable transfer of tax money to the big real estate corporations.

The idea underlying the application of the site leasehold principle to residential housing, as well as to commercial building construction, was that “[s]ince, in theory, cities by owning large tracts of land can internalize some of the external costs and benefits that arise in urban land markets, leasehold [can help to] eliminate many urban ills caused by market imperfections and inefficiencies”, (Ratzka, 1981, p. 22).

One of the central questions in assessing whether site leasehold fulfilled its economic intentions is the division of the incremental land value (or development gain) between proprietor and site leaseholder (cf Ratzka, 1981, p. 53). Ratzka has studied the results of site leasehold transactions in Stockholm 1907–1970 with respect to their use for housing from this and other perspectives. The effect of site leasehold rights on land value is another issue (Ratzka, 1981, p. 87ff). Ratzka (p. 125) could find no reason to believe that site leaseholds influenced land value for housing

purposes, despite the fact that theoretical arguments suggest they would have the effect of increasing it. The promoters have asserted that site leasehold has a moderating effect on the appreciation of land price. In Stockholm City, however, this theme was of secondary importance.

According to Ratzka's figures, the site leasehold system for residential housing has had favourable results. The average annual return on invested capital during the period 1907–1970 amounts to 5.58%, which may be compared with inflation of 3.25% and a long-term municipal borrowing rate of 4.82 per cent (p. 148f). The municipality's revenues from the site leasehold system are of two kinds. There are firstly the annual rents and secondly the land value at the end of the period of calculation. However, current yield is a poor reflection of current land values. Ratzka calculates the interest yield at 7.35 per cent if rents had followed the trend of land value (p. 155). Thus site leaseholders are subsidised to the extent of the difference between the annual interest yields of 7.35 and 5.58 per cent. This has sometimes been justified in terms of housing policy. In the case of Stockholm City no subsidy policy has existed to be justified on such grounds.

The growth of the aggregate site leasehold rents exceeds the nominal rise in the municipality's investment in the business by only a negligible margin. This means that the municipality misses out on more or less the whole gain in land value. It accrues to the owners of the site leaseholdership rights instead. When these rights are re-sold the value of the subsidised rent can be capitalised in the form of an increased purchase price, to the benefit of the owner of the first leasehold.

The municipality's preliminary calculations and bookkeeping

Towards the end of the City's urban-planning stalemate which lasted until 1945, disputes over the figures for the developmental economics of different alternatives played a central role in the debate. These arithmetical exercises were of no significance in the decision, nor in the

timing of the commencement of redevelopment. The figures that existed were kept secret. In an estimate of 1952, when the project was already in motion, the data were very sparse and difficult to interpret (Fastighetsnämndens arkiv, akt nr 8c 1952). It presented the rents and land values which would be required for the project to pay its way. The scope for comparing the forecast of the project's costs with the actual results is limited. There is only partial correspondence between the forecast variables and the categories employed in the bookkeeping. One fixed point, however, is the land value (1 090 SEK in the current year's cost position per square metre of permitted floorage), which was calculated so that the project should pay for itself in terms of the costs which were then foreseen. This is compared below with the actual outcome.

In a cost calculation covering a somewhat larger plan area, dated 1959, the property values were estimated at 198 million SEK prior to the renewal. The area of the building sites in the zone amounted to 105 000 square metres before and 55 000 after renewal. (Mehr, volume F22:2). Despite this severe reduction, the land value was presumed to rise to 207 million SEK. This estimate was based on the size of site leasehold rents (as indicated in part by signed contracts). But mainly it was a matter of forecasts of future grants of enjoyment. After taking account of other costs (e.g. of demolition, evacuation, interest, rent rebates, excavations, street substructures, roadworks and utilities supply works) a deficit of 74 million SEK was arrived at. This was not regarded as a deterrent. The conclusions contained the argument that considerable losses must always be allowed for in such projects. Moreover, it was questioned whether the City project ought to bear the entire cost of the dramatic increase in the acreage devoted to communications (i.e. roads, car parks etc) and of bringing cables and piping into the zone. It was considered that a "scarcely [...] too unrealistic" rise in rents would be capable of reducing the municipality's losses in the long run.

These cost estimates were reserved for a narrow circle of leading politicians and officials with responsibility for the City project. When the project's situation was at its gloomiest, in the early 1970s, politicians of all parties united in demanding a financial report on the hazardous – as it was then considered – City renewal. As the acuteness of the problems diminished so did these demands ebb away. The municipality's own report on site leasehold rights found “that some further investigation [...] especially as regards the City zone might admittedly be of great interest but [would] hardly yield further basic material for” the task (SSK, 1975, p. 234).

It has been no part of the purpose of the bookkeeping of the costs and revenues involved in the City project to facilitate an appraisal in real economic terms. The accounting principles have been changed on many occasions without any provision for continuity and comparability. Likewise a number of settlements have been made in such a way as to merge costs into major exchange and compensation transactions, so that the actual charge upon the City project can be discerned only with great difficulty. This combination of rigidity and flexibility in the bookkeeping has helped to shield the project from objective testing. The scope for concealing or obstructing the discovery of less flattering results by means of flexibility in the bookkeeping has been commented on by Beckman. Many of the immunisation processes against criticism which he mentions manifest themselves as influence over the bookkeeping (Beckman, 1979, p. 257).

Accounting that was difficult to interpret in combination with security classification of information was a way of safeguarding the municipality's business interest in the City. The fact that this also hampered broad political control was a matter scarcely likely to have worried the project managers. On the contrary, it was always necessary to try to neutralise criticism of widely different kinds – even where justified – in order to minimise the sluggishness of the transformation process

which was for ever threatening to delay progress, increase its costs and in the worst case halt it completely.

Ex post analysis

The analysis which follows aims at “a balance sheet at project level” rather than from the municipal or national economic standpoint. In principle, that is to say, the costs and revenues of City redevelopment are described (with sundry necessary modifications) from the standpoint of how they directly (i.e. in the first instance) affect the municipal accounts, or more precisely the accounts of a hypothetical separate “city redevelopment project”. The project is charged with the costs incurred by the municipality in order to implement it and is allotted the revenues falling to the municipality from the project. It should be observed that the sums thus dealt with are not always identical to the values incorporated in the municipal accounts. This applies especially to property acquisitions.

Indirect effects of the redevelopment scheme on the municipality’s finances, e.g. in the form of increased or decreased rents outside the City because of the effect of City redevelopment on land value levels, or of an enlarged or reduced tax base arising from the possible impact of redevelopment on taxable profits of firms and households, are not included in the calculation (which could be described as a municipal financial evaluation). Nor is any attempt made at an overall evaluation of the redevelopment project’s total cost/revenue picture (irrespective of whom it affects) – in other words, socioeconomic problems are ignored here.

Evaluations of effects presuppose some form of counter-actuality reasoning. In the present case this would be a matter of sketching out one or more hypothetical courses which events might have taken in the absence of City redevelopment. The difficulties this presents are of two types. Firstly it is necessary to construct some plausible alternative not

too drastically in conflict with what really would have been a possible train of events, and secondly it involves deducing what consequences this alternative would have brought in relevant respects.³ It is possible, without major difficulties, to outline two realistic alternative scenarios for the Stockholm region had the City redevelopment either not taken place or only done so in substantially diminished form. In the first case, the City redevelopment under municipal direction is assumed not to have started. One of the consequences of this is that the underground through railway would not have come into being. Many thoroughfares in the City district would also have remained on the drawing board. This would probably have resulted in a more decentralised expansion of offices and shops to secondary centres. The City district would have been considerably less accessible to travellers, whether by car or by public transport, than the actual renewal scheme has made it. In the second case, the municipality's commitment would have come to an end once the development initiated by the underground railway had been completed. Accessibility of the City district would hardly have been less than in the alternative actually implemented. Redevelopment after this point would probably have attained a somewhat lower total volume, taken place in smaller units and on private initiative.

However, to deduce with some reasonable degree of reliability what effects these hypothetical but still realistic events would have had in the respects referred to is a very formidable task. A particular reason for this is our defective knowledge of how the urban structure affects "gross factor returns" (Artle, 1959, p. 56) in a city or region. There is a conspicuous lack of empirical studies in this field. On the other hand, highly stylised models of location patterns and transport in towns and regions are common. But these are far too schematic and unrealistic to be capable of providing tangible help in estimating the socioeconomic consequences of the City redevelopment scheme – "the overlap between

³ On the relation between effect/causality and counterfactuals see e.g. Elster (1978, p. 175ff) and the discussion in Gullberg (1986, p. 69ff).

simplicity and relevance may be very small” (Richardson, 1977, p. 234). This justifies our confining ourselves to a balance-sheet analysis.

The following types of cost are included in this analysis: Property acquisitions, evacuation, investigation and preliminary projection, demolition, construction works (streets, vehicle tunnels, substructures, foundation-laying, certain tunnelling operations for underground railway), administrative costs, maintenance of existing structures (bridges, tunnels, etc).

The following costs are not included in the calculation: Administrative implementation of political decisions where appropriate, land already laid out for streets and planning work carried out prior to 1950. Neither is investment in technical works included where in principle this is to be borne by charges to consumers which are assumed to cover capital costs.

The following types of revenue are included in the calculation: Sales of properties, site leasehold and other rents (after reduction by rebates granted and losses on agreed guaranteed tenancies), and land values at the end of the calculation period.

Costs and revenues arising within the project are offset against each other in accordance with principles described below. The real return on the municipality's investment in the project is calculated. The results of the calculation are compared with an alternative investment in government bonds.

The price trend of site leasehold land and the results of certain investments in buildings on leasehold sites are compared, with the aim of elucidating the distribution of rising values in the City between private developers and the great financial risk-taker – the municipality.

Accounting principles

Costs and revenues of the redevelopment (for more detailed discussion see Appendix 1) are accounted for on an annual basis at the amounts which were charged to the municipality's finances, in principle meaning at the times when disbursements were made and revenues were received and recorded in the books, not when appropriations were approved. But exceptions were made in the case of properties which the municipality had had in its possession for more than a year at the time of demolition or granting of the site leasehold. Likewise, in certain cases compensation for expropriation which was determined, and thus finally paid out, a long time after demolition took place, has been charged to the project at the time of the municipality's taking possession (at the amount subsequently assessed by the court for that point in time).

The net balance of these annual cost and revenue items is deflated by the consumer price index and modified by reference to the municipality's conditions relating to volume, interest rate and term when floating bond issues. Capital outgoings for each year are split into a tax-financed and a loan-financed item. The amount not loan-financed is charged along with current expenditure directly against the results for the year, while the remaining amount is dealt with by applying the respective year's local authority loan interest rate as the basis for a hypothetical 20-year bond issue. On this basis, an annual cash-flow calculation can be made for the project from its launch up to the end of the period of calculation on 31 December 1991. An alternative calculation without loan financing has also been made.

Summation of the deflated annual cash-flow net balances gives the capital value of site leasehold land at a nil result. The real interest on the funds invested in the City project is calculated by introducing the land values applicable at the end of the period into the calculation.

The project's annual, nominal and deflated net flows are accounted for in Appendix 2 Table 3 (the NCL and NCLD columns respectively). This also shows how big the nominal amounts have to be for each of the individual years 1950–1991 in order to influence the project's annual average return by 0.1 per cent (Column TRO1). The calculation formula and the sources are described in Appendix 2. How the land value is calculated is described in Appendix 1. It amounts to 14 314 million SEK. Two per cent of the rent is reckoned to go on costs. Maintenance of erected structures (OC4 in Table 3) during 1990 and 1991, according to the model employed, amounted to 15 per cent of the aggregate rent. The land value is reduced correspondingly. In this fashion, the value entered in the calculation after these adjustments is $0.83 \times 14\,314$ million SEK = 11 881 million SEK.

Result

At current prices the municipality's investment has produced a yield of 9.1 per cent (N91, N92 in Table 5), which is equivalent to 1.4 per cent per year at fixed money values (ND13, ND14 in Table 5). Equivalent sums invested in government bonds with accrued interest and redemptions successively reinvested would have produced a real return of 0.6 per cent per year (BD06, BD07 in Table 5). The possibilities open to the municipality of raising loans at what would turn out to be a negative real rate of interest have been of significance for the results of the City project. By direct financing, the real yield falls to about 1.0 per cent per year. If costs of the underground railway are not included (in accordance with point 9 in Appendix 1), the return on the City project rises from 1.4 to nearly 1.8 per cent on an annual basis. For the City to achieve a nil result requires the land value to amount to 10 496 million SEK on 31/12 1991, which corresponds to 73 per cent of the 14 314 million SEK figure used in the calculation (Appendix 1).

On the income side of the calculation, the land value at the end of the period is the strongly dominant factor. Accrued deflated rents and ground

rents over the entire period 1954 to 1991 inclusive amount to 4 433 million SEK or 31 per cent of the above estimated land value.

The rents rise at about the same rate as inflation. For three of the earliest site leaseholds (S1, S2 and S3) the following rent changes can be recorded, here stated as real percentage changes on an annual basis.

Site leasehold	Period	Annual rent
S 1	1963–83	-0.2 per cent
S 2	1958–78	+0.6 per cent
S 3	1959–79	-0.4 per cent
S 3	1959–89	+0.6 per cent

Table 1: Rent changes reckoned on an annual basis at fixed money values for three different site leaseholds (S1–S3).

A comparison with the trend of land values in the City which is described in Appendix 1 reveals that in broad terms the rents do follow this trend, though with something of a downward tendency during the early period and an upward tendency towards the end of the 1980s. The latter offsets the earlier decline. Viewed over the period up to 1991 as a whole, however, rents did not rise at the same pace as land values but remained close to a constant real level. From this standpoint the land valuation in Appendix 1 can be called into question as long as site leaseholdship remains. For site leasehold land in the City is an asset very difficult to realise. Under current legal practice the only conceivable purchaser is probably the owner of the site leaseholdship right in question. If interest in purchasing is lacking in this quarter, then the municipality's only recourse is to obtain a financial profit from any rise in land values through the rents. Under current legal practice with regard to the fixing of rents the prospect of accomplishing this is heavily circumscribed.

In the figures for 1952 cited above, it was calculated that an average site value of 1 090 SEK per square metre of floor-space would bring the municipality's costs and revenues associated with the project into equilibrium. Converted to 1991 money values this value becomes 11 450 SEK. Corresponding values for a centrally-situated site leasehold according to the estimating principles applied

in Appendix 1 would make the figure 16 200 SEK. A nil result for the municipality from the City scheme is reached at a land value corresponding to 73 per cent of this amount, i.e. at 11 800 SEK. The concordance between the 1952 *ex ante* calculation and the *ex post* ditto carried out above is remarkable. It is unclear, however, what conclusions are to be drawn from this. The *ex post* analysis covers a significantly larger geographical area, includes a larger portion of the infrastructure costs and is debited with liquidation costs for parts never transformed into highly-developed office sites. When comparison is made with the numerous examples of miscalculations reported in the above-cited literature, however, the concordance is astonishing. There may possibly be some link between this and the fact that the figures were not cited as arguments in the contention over the project. They were reserved for a very exclusive circle.

The results for owners of site-leaseholdership rights

When a number of property owners attempt to cooperate in a development, the question arises how the development profits achieved are to be divided. This question is explored in some detail by Kalbro, who confines the problems discussed to “land development”, i.e. the preparation of the land for development (Kalbro, 1988, p. 17). In the reconstruction of Stockholm City the municipality assumed the entire responsibility for this function and thus unified the risk-bearing. The object, as noted earlier, was for the municipality to be able to appropriate the profits from this and from other land value-enhancing processes such as continuing urbanisation and improved infrastructure, for example. This makes the distribution problems different from Kalbro’s, i.e. horizontal rather than vertical. When the municipality initially grants a site leasehold there is contractual freedom with regard to the amount of the rent but not its term. The law prescribes ten years as the minimum duration. After this period the rent can be adjusted. In the event of the parties being unable to agree, the case is referred to the court. One of the purposes of site leasehold, according to the legislation, is that the gain in land value should accrue to the landlord. As long as the land is not sold this can be achieved only by raising rents. What I propose to do below is firstly to discover the return on site

leaseholds and compare this with the changes in rents, and secondly to give a brief account of court practice with regard to the fixing of rents. The aim is to determine whether, under the present system, the landlord has succeeded in appropriating the gain in land value or whether this has accrued to someone else, meaning primarily the owners of site leaseholdship rights.

The return on a site leasehold is no different from that on freehold properties save with respect to the rent which accrues and the land acquisition costs to be deducted (SOU 1980:49, p. 235). The result depends partly on the direct profit arising from differences between rent revenues and running and maintenance costs, partly on the gain in value (cf e g Lundström, 1980, p. 52ff or SOU 1980:49, p. 124). The return is influenced in high degree by the site-leaseholder's tax and financial situation (Lundström, 1980, p. 21 and SOU 1980:49, p. 229). This complication is ignored because of lack of appropriate data. Information about the direct return on site leaseholds included in the City redevelopment scheme not being available, certain models had to be resorted to instead. The direct return on freehold tenanted commercial properties in Sweden can be presumed in normal circumstances to amount to between 8 and 9 per cent and the total return to between 6 and 7 per cent, which means an annual change in value of -2 per cent (including both building and land). These figures are based on certain data recorded by the site-leaseholdship rights committee of 1977 (SOU 1980:49, Annex 1). The total return on tenanted blocks of flats is estimated at 4 to 4.5 per cent (7 per cent direct return and -3 per cent change in value), while tenanted commercial properties are presumed to lie 1–2 per cent higher (p. 228). The real change in value of large commercial properties seems to amount to about -4 per cent, and of buildings erected in the 1960s and later to -6 per cent per year (p. 221). Having regard to the economic life of the buildings, such a rapid depreciation in value seems unrealistic over a lengthy period. A more cautious estimate has therefore been made.

Should the value of the land be maintained, or even grow somewhat in the long run (cf Appendix 1), the annual depreciation in value of site leaseholds becomes even bigger. With a gain in land value of 2 per cent per year and a land value of 30 per cent of the total value when newly developed, the change

in value of the site leasehold becomes -3.7 per cent in the first year and -5.0 in the tenth year. During the twenty-second year the land value, under the given assumptions, overtakes the value of the entire property. In the absence of any change in the real value of the land, the corresponding values become -2.9 per cent in the first and -3.1 per cent in the tenth year. The land value overtakes the value of the entire property in the sixtieth year.

Two methods are employed in order to elucidate the change in value of some of the site leaseholds in the City project. Firstly, production costs approved by the rent tribunal are compared with subsequent purchase prices, and secondly the assumptions concerning the trend of real land value are used, with the aid of the ratio between land and building values in property taxation, to generate the trend of real site leasehold value.⁴

Site leasehold	Production and purchase price data		Assumed land value gain per year		
	Per cent	Period	0 percent	2 percent	Period
S2	-1.8	1961–75	-0.8		1961–88
S5	-0.6	1961–70			
S6	-1.0	1957–80	-2.1		1960–88
S7	-1.0	1977–84			
S1+S8	-2.2	1962–71			

Table 2: Annual percentage change in value of selected site leaseholds (S1, S2, S5–S8), reckoned by various methods; firstly production and purchase price data, secondly based on assumptions concerning the trend of land value and the ratios between land and buildings in property taxation.

The depreciation in these actuality-related arithmetical examples is clearly slower than in the model-based argument above. At the same time rents tend to be unchanged in real terms, or to rise very slightly, despite a perceptible long-term appreciation of land value. This is to the advantage of site leaseholders of course, and to the disadvantage of the municipality in like measure, and it

⁴ In the case of early site leaseholds it is possible to estimate building costs in broad terms with the aid of the data supplied to the rent tribunal by the builders (Hysesnämndens arkiv). The tribunal determined its position regarding costs presented as a basis for decision in accordance with the rent-control law on permitted rent levels in newly-erected commercial buildings. These data have been used previously in an attempt to estimate production costs of office buildings in Stockholm (Nuder and Johansson, 1970).

indicates that (a part of) the gain in land value has escaped the landlord. In one of the government site leaseholdership rights committee's arithmetical examples it appears that a constant rent in real terms puts the first-hand owner of a site leasehold in a favourable position, while the municipality loses heavily (Lind and Strand, 1980, p. 241).

The practice which has been developed by the Supreme Court for the fixing of site leasehold rentals may be cited in further support of this thesis. A Supreme Court judgment of 1975 (NJA 1975, p. 385) became the benchmark in site leaseholdership law "for guaranteeing the landlord the same return as other investors of capital" (SOU 1980:49, p. 125). The principles underlying the Supreme Court's handling of the question mean that the higher the gain in land value is expected to be, the lower the level of rental set. This means that the municipality "receives the same real return, irrespective of the trend of land value" (p. 127). The conclusion is that "the basic aim of rent control, viz that society at large should appropriate the profit on the appreciation of land value, is not achieved" (p. 134).

Ratzka's conclusion points in the same direction: "the analysis of the fee determination methods prescribed by the Supreme Court and suggested by Stockholm's Real Estate Department, the Building Committee of Private Commerce and Industry in Sweden, and the Swedish Homeowners' Association showed considerable theoretical and technical shortcomings. The formulas result in fees which do not allow the City to benefit from land value increases." (Ratzka, 1981, p. 207).

In other words, site leaseholdership law does not seem to have brought about confiscation of land value increases for the public benefit either. In spite of the fact that the financial results achieved by the municipality through the City redevelopment beat both inflation and investments in long-term government bonds, it still seems to have been primarily the site leaseholders who appropriated the real gains in land values arising in the City over the long term. However, what is of great importance in the individual instance is the timing of acquisition and sale. Events have turned out particularly favourably for original

site leaseholders who sold out at the peak of the property boom in 1989 and 1990. Those who purchased at this time, on the other hand, have been hard hit.

Plan intentions and results

Site leasehold, and the attempt to utilise it as an instrument for safeguarding the municipality's financial interests, was one of the cornerstones of the City redevelopment scheme. Nevertheless it was not a principal issue but a question of means. The primary objectives were to make suitable provision for the traffic needs of a new age and to replace partially out-of-date buildings with new complexes designed for modern City activities. Ambitions of this sort had been nourished ever since the 1880s, although the solutions pursued during each epoch had their own characteristics. The intentions underlying the City redevelopment scheme serve as starting points for the following summary account of what the inhabitants of Stockholm received in exchange for the tax money risked.

In 1950, when reconstruction of the City was launched, the underground railway was the trigger factor. Two systems traversing the City in the same direction were projected. They have both been realised. In 1957 the traffic flows from north and south were linked up under the City, resulting in a theoretical enlargement of traffic capacity by 200 per cent. This has given the City district exceedingly good accessibility from large parts of central Stockholm and the inner suburbs.

The system of traffic routes which were sketched in and adjacent to the City has been brought to fruition only to a limited extent. There are many places where streets and thoroughfares conceived on the grand scale end in bottlenecks. A number of street widenings or new thoroughfares have not come into being. Some of the vital links have not been built at all and certain temporary solutions have become permanent.

The City's parking requirements were intended to be met in large measure by special multi-storey car parks and underground garages. In the middle of the 1950s, when there were about 6 500 parking places, the future need was

estimated at 20 000. By the end of the 1960s the figure had been adjusted to 27 600. The realised capacity at that time was 8 400 and by 1975 it was 11 300.

The vehicle inflow to the City has turned out to be significantly smaller than was expected originally. A traffic forecast made in the middle 1950s estimated a rise in City traffic by a factor of 2.3 by the year 1970 (SSH, 1956). The actual increase by that year – one of the most vehicleintensive in the City's history – amounted to 1.89. The most intensive traffic in the City's history was recorded in 1969. The City's proportion of the traffic flows of central Stockholm and region has diminished steadily since then.

The endeavour to create a regional centre for the retail trade, with functioning shopping streets, has met with some measure of success. The strategy was based to a large extent on an expansive department store business. Despite strong competition from suburban centres and subsequently from external centres, the City has managed to defend its position as the primary shopping district of the region, although the role of the department stores has been reduced.

The City was intended to provide accommodation for office business with sophisticated requirements and high ability to pay. However, the need of large firms to be in the City seems to have been exaggerated. Many manufacturing firms in particular have established their offices in suburban areas. However, the concentration of banks, insurance and finance companies in the City is very high. The great professional and industrial organisations are likewise well represented, although they have preferred to locate themselves on the fringes of the totally-redeveloped City districts. The southern part of the City is dominated by government offices, some in new and some in old or restored premises.

A number of large hotels were envisaged as a vitalising feature of the City, especially after office hours. This venture on the part of the municipality either failed altogether or incurred heavy extra costs.

A great deal of thought and care was devoted to environmental questions. Underground walkways were regarded not merely as a means of facilitating the passage of traffic. They were also envisaged as convenient and attractive for pedestrians. These underground purloins have never functioned satisfactorily. Warning voices were raised from the very beginning, especially among the representatives of business interests.

One of the ambitions influencing the design of the new City was that it should function as a rendezvous and symbol for the entire region. The five tower blocks have managed to assume some such role. Sergels Torg has acquired a definite but ambiguous significance in the nation's consciousness, partly because the Riksdag was housed adjacent to this crime-ridden central square for several years. The picture of the City at present is overwhelmingly negative.

When the optimism of growth was at its peak early in 1968, the City's dimensions were conceived in terms of a region of 2.5–2.6 million inhabitants by the year 2000 (i.e. a doubling of population in 32 years). According to this plan, more than 52 hectares of land in the area were to be affected by the total redevelopment (City 67). When the City scheme on the lines of the model described above came to an end some way into the 1970s, less than half this area, i.e. 24 hectares, had been redeveloped.

Conclusions

From the standpoint of business and project economics the results of the Stockholm CBD renewal are far from catastrophic. At 1.4 per cent per annum at fixed prices, the municipality has achieved a reasonable return on the capital invested. Bearing particularly in mind its original character (which meant there were no completed earlier projects to learn from) and the fact that decisions were continually having to be taken before risk reduction could be effected, the results seem good (cf Section "Financial results of large-scale projects" above). No detailed economic analyses of similar city renewal projects in other metropolises have been made, so far as is known. But the mere fact that in many such cases the local authority handed over the land to private developers at heavily-subsidised prices suggests that these projects can hardly

have produced a nil result. The outcome from the local or national economic standpoint is very difficult to judge. What is primarily lacking here is empirical knowledge of the effect of different urban structures on the size and growth of the regional product.

The redevelopment of Stockholm City can be said to bear out the thesis that “[t]wentieth-century answers to the dilemma of how to build ‘the good city’ have failed” (Hohenberg and Lees 1985, p. 330). The division of functions has been carried too far. Valuable neighbourhoods have been laid waste. The new buildings and localities are not infrequently sterile. Yet the new City cannot be classed as a total disaster in its functional aspects. Public transport to and from the City functions well. Vehicular access is satisfactory too. Because many of the planned traffic projects have not been put into effect, large numbers of older, and today attractive, buildings have been preserved in the fringe districts of the City centre. But dangers lurk. Buildings and localities must match the changes which are taking place in office, retail trade and other City activities – not least as a cultural centre and rendezvous. Specifically, finance will have to be found for the renovation of the CBD necessary at a building age of between 25 and 45 years. If this fails, all the unfavourable judgments which have been passed on the City’s design and functioning will become likewise applicable to land values and the municipality’s financial results.

In many instances the costs of large-scale projects have been considerably underestimated in the preliminary analyses cited as arguments for their implementation. There is a set of figures dated 1952 which arrives at a result in amazingly close agreement with the *ex post* analysis which has been made. This may possibly be the work of pure chance. But there is probably significance in the fact that the figures were not used in the battle over the project which had already started. They were kept strictly confidential.

One aim of the way in which the reconstruction of Stockholm City was approached was to avoid the handing over of tax money to property and building interests. In the exhaustive and protracted discussions held on the topic of how to check the so-called unearned gain in land values, it was considered virtually axiomatic that ownership of the land by the municipal authorities would solve this problem. This study shows that such is not the

case. Private site leaseholders have managed to appropriate a large part – perhaps indeed the whole – of the incremental land value. The municipality's inability, as landlord, to negotiate rent rises to keep pace with the appreciation of land values caused the latter to accrue to the private site leaseholders instead. Under the prevailing rules it is hardly feasible for the municipality to realise the gain in value by selling when the only conceivable buyer is the site leaseholder. All the indications are that a quite different relationship between the ownership of land and buildings should be looked for. The classic question of unearned incremental land values appears wrongly formulated in the situation of today. A general tendency towards rising land values scarcely exists any longer in countries where the great urbanisation is over. Site leasehold legislation has been far too clumsy in dealing with these complicated questions. By its rigidity it threatens to frustrate the necessary renovation of the CBD. The municipality and the various site leaseholders are so dependent on one another both financially, functionally and from the building standpoint that new and more flexible forms of cooperation need to be sought between the parties concerned. A more rapid adaptation of site leasehold rents to the movement of market values could be tried out, and so could private letting of land on site leasehold terms. The paradoxical element in the present situation is that it was the strong position enjoyed by the municipality that caused the courts to protect the private interests in the first place. The original aim of the legislation, which was to reserve the gain in land values for the municipality, has therefore not been met. This would probably be better accomplished by the municipality's position being weaker in formal terms, i.e. by its being a formally equal party with other actors in land and property transactions.

A better financial outcome for the municipality, without any impairment of the City's functioning, would have been achieved if the project had been wound up on completion of the development work initiated by the underground railway. There was a relatively widespread current of opinion in favour of this line of action based on arguments concerned with the general urban landscape, antiquarian considerations and land policy. These views had no impact, however, because they were unable to shake the basic political credo of the epoch regarding the necessity of a maximum offensive strategy for the

expansion of traffic facilities, housing and workplaces. No other way could be discovered of matching the future soaring increase of population and demand which was the first axiom of contemporary urban and regional planning. Consequently the criticism was resisted by every means. Independent testing – i.e. independent in relation to the axiom of growth – was impossible. Actors and debaters in the early 1960s were in high degree prisoners of the world picture prevalent in that epoch. Moreover actors were bound together in a network of mutual dependence and functioning business relationships. Not until the end of the decade, when it became possible to call into question the desirability and inexorability of growth, did criticism of the Stockholm City redevelopment scheme grow into a significant force, gaining its most celebrated victory in the struggle to save the elm trees in Kungsträdgården, the King's Park, in May 1971. It was this battle, in combination with a severe crisis in municipal and real-estate finances that brought the City redevelopment project to its downfall.

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The Stockholm CBD Renewal 1551-1978
Good Business or Planning Disaster?
1994, 2014

Appendix 1 Reflections on the municipality's costs and revenues arising from the City redevelopment scheme

Introduction

The figures are based in principle on the items entered in the municipal books. However, these have been modified in several respects. The criticism of the numerous agreements reached by the municipality with sundry parties is based on municipality publications, on data in the municipal archives and, in the case of dealings involving the government as landlord, on documents in the Public Record Office. Certain material which had been kept strictly confidential has been located in private archives. In some cases, especially with regard to more recent times, valuable ideas have been expressed by persons who took part in the negotiations.

Costs

Land acquisitions are charged to the project in the year when the respective property was demolished or, if a grant of enjoyment was given on the existing building, when the site leasehold contract began to run. The amount entered is that which the municipality had to pay under agreement or judgment (including any expropriation etc costs arising). If more than a complete calendar year elapsed between purchase of a site and commencement of its redevelopment, the amount has been increased in proportion to the consumer price index. Properties acquired by the municipality prior to the launching of the redevelopment scheme in 1951 have been entered at the taxable value adjusted upwards by a sale price/tax assessment ratio for central Stockholm. In other words losses – or profits – on property business conducted prior to development have not been charged to the project. Thus, the question whether early land acquisition was favourable for the municipality is not gone into.

The following observations are offered on the subject of the cost of roadway land and road building:

1. Traffic routes traversing the district were not intended to increase through traffic. The object of the improved traffic standard was to improve the accessibility and usefulness of buildings and premises in the district, i.e. to make them more attractive.
2. Building density in the district was to be neither increased nor reduced. The increased area devoted to traffic purposes was intended to be offset by more intensive exploitation of building sites.
3. Contributions to road costs were normally paid by property owners. In this case the municipality is the landlord and defrays such costs, which can be thought of as falling in turn upon site leaseholders via rents.
4. Vehicle tunnels under the City surface have been justified on the ground that in terms of real-estate costs, they were no more expensive than an equivalent adaptation of the above-ground traffic network. Their purpose was not to facilitate through traffic but to improve traffic flow within the district.
5. The road building in the City qualified to some extent for government subsidy. Because this subsidy was of limited magnitude, as a labour-saving short cut the relatively small amount involved was not claimed by the project.
6. The conclusion from this is that costs of traffic routes and tunnels within the district should be charged to development as regards both land and construction costs. A traffic interchange in the south western corner of the City is treated differently, however. Only the costs of land have been included, since a significant proportion of the traffic using this interchange has destinations outside the City.
7. Running costs of road maintenance are not charged to the project. On the other hand an annual cost, amounting to 2 per cent of the procurement value, is included for maintenance of structures owned and built by the municipality, such as bridges, elevated roadways and squares.

On the subject of the underground railway:

8. By a decision made in 1941 (and in accordance with earlier practice) the costs of construction of the underground railway were divided up to make the municipality responsible for building the tunnels (and other basic works), while the municipally-owned tramway company provided fixed equipment and rolling stock. Only the municipality's costs are discussed here.
9. The underground railway is of crucial importance to the City's efficient functioning, but in addition it performs vital communication tasks for a large part of the region. The costs of tunnels and bridges to and through the City have therefore been brought into the calculation to the extent of 40 per cent for tracks under the City and 20 per cent for tracks crossing the area of water to the south of the CBD. Since these percentages are somewhat arbitrarily chosen, an alternative exclusive of this cost item has been calculated as well.
10. The increased costs which arose as a result of evacuation, preliminary projecting, and foundation works having to be speeded up and the ground lying in cleared condition for a lengthy period because of the underground railway construction works, have been charged to the calculation, as also have the associated cost increases resulting from design requirements and restrictions on right of use and enjoyment.
11. The underground railway current deficit is not charged to the calculation.

Revenues and certain associated costs

Site leasehold and other rentals are brought into the calculation after deduction of rebates granted. Losses on real-estate items which the municipality itself undertook to rent are likewise entered as a reducing factor. This applies to car parks, shops and offices. The losses are calculated conventionally, being assumed to amount to not more than 50 per cent of the rental amount at commencement of tenancy and in economic conditions of maximum depression. Calculated losses diminish and then by degrees disappear by the end of the tenancy or when the market in City premises has reverted to equilibrium. The land values of City land are also included as revenue at the point in time when the calculation is closed, viz 31/12 1991.

Computation of land values in the City

Land values in the City at the required moment in time, viz 31/12 1991, are particularly difficult to establish, the reason being that the property market collapsed after a very vigorous boom in values during the late 1980s. That land values are on the way down from the very high quotations achieved during the peak years 1989 and 1990 is clear. A cautious estimate is made below based on the assumption that the price explosion was an artificial phenomenon occasioned by the coincidence of a number of exceptional phenomena. Therefore land values are assumed in the long run to follow the considerably calmer pattern of growth recorded before the start of the almost headlong upward rush of values in the second half of the 1980s.

Even under normal conditions, the valuation of City land is a difficult task, chiefly because practically no regular trade in building land has occurred for several decades. Recourse must therefore be had to a variety of indirect methods. I employ as a basis the general property tax ratings, court valuations in cases involving control of site leasehold rents, and tax valuations increased by sale price/tax assessment ratio. The value of the Stockholm municipality's landholdings in the City project in 1988 (AFT88), as estimated by the most recent general property rating (for 1/7 1986), was 6 668 million SEK.

In the case of the 69 City redevelopment real-estate items in AFT 88 which were also included in the most recent previous property rating (AFT81) and for which no changes of building permission occurred, land value increased from 753 million SEK to 3 027 million SEK. This is equivalent to a real rate of increase of 11.7 per cent per year. During the period 1/7 1963 to 1/7 1979, on the other hand, land values of some early leasehold sites in the City fell by between 2.5 and 3.2 per cent per year. The considerable rise in the tax valuations between AFT81 and AFT88 meant that the annual change in value became positive at between 1.8 and 3.1 per cent per year during the period 1963 to 1986.

A centrally-situated leasehold site (called here S4) has been the subject of a rent control dispute that is of fundamental and precedent-setting importance. The date for which the value is to be determined is 1/4 1990. The opinions delivered during the case as to real growth per year in the period 1986–1990 varied between 27 and 7 per cent (Stockholms tingsrätt, 1992). Higher courts afterwards arrived at a verdict signifying a real gain in value of 21 per cent per year. However, this is to be interpreted as only a conservative assessment of the land value at the point in time at issue. The decision handed down by the court furnishes no indication of the trend of land value after that time. In order to arrive at a valuation of all the City project's land on 31/12 1991, the land values in AFT88 have been adjusted upwards by applying the lowest claimed rise in real value, which gives a figure of 14 314 million SEK.

The growth rate 7 per cent may appear high for the land value trend of the site leaseholds cited above when compared with the years 1963 to 1986, when the figures varied between 1.8 and 3.1 per cent. On the other hand the rating procedure tends to under- rather than overestimate the land values affected. Upward adjustment by the sale price/tax assessment ratio for sales of commercial rented properties in Stockholm county in 1991 (3.34) and the first nine months of 1992 (3.53) (SCB, 1993) gives much higher land values, or 16 743 and 17 696 million SEK respectively. The data indicate a gain in value during 1992, which is surprising. However, the result is based on a few purchase transactions (43 and 23 respectively). A decrease in value will probably reveal itself in due course.

Preliminary processing of data from Szynekier (1983), with the aid of sale price/tax assessment ratio, suggest that the real value trend of City land was slightly negative during the period from 1933 to 1957, by a factor of -0.5 per cent on an annual basis. Over the entire period 1933–1981, land value appreciated by about 2.5 per cent, which is indicative of a very rapid gain in value during the years 1957–1981, in excess of 5 per cent per year. For building site land in 1991 the municipality took a rent of 303 million SEK or 2.1 per cent of the land value computed above.

Properties to which special considerations apply

* Three “evacuation buildings”, of which the municipality acted as builder. One of these is located outside the actual City district and therefore is not included in the calculation. Other so-called evacuation houses are treated as though they were let on site leasehold terms, i.e. a fictitious leasehold rent is calculated for these as long as both land and buildings remain under municipal ownership. The justification for this is that the calculation is not intended to reflect the municipality’s performance as a builder or housing manager. The municipality’s ownership of these properties was untypical of the City redevelopment and was occasioned by initial difficulties.

* Repurchased site leasehold

The site leasehold of one of the new office tower blocks in the City was repurchased by the municipality. Here too a fictitious rent is calculated after the repurchase. In addition the project is charged with an extra cost of 50 per cent of the excess price paid by the municipality in order, *inter alia*, to establish other site leaseholdership rights.

* Squares, monumental sites, parks

All costs of newly-built squares and monuments are charged to the calculation as also is the purchase of a centrally-situated park formerly under government ownership.

* Cultural centre

A large cultural centre erected at the best location in the CBD, at Sergels Torg, was intended to do much more than merely embellish the City redevelopment. Only part of this municipal investment has been charged to the City redevelopment calculation. The land costs have been included. Costs of projecting, building or managing the cultural centre complex are not included in the figures, however. But the project is credited with a fictitious rent for the period when parts of the complex were let to the Swedish Riksdag and to a United Nations conference.

Treatment of cancelled projects

* Sundry transactions with the central government and government bodies.

These transactions are relatively difficult to assess because as a rule they form ingredients of complicated barter arrangements of which the aim at times was to utilise the massive scale of the agreements to conceal strongly divergent valuations of individual items of real estate. In certain instances the parties' joint valuation was available and could be used. In other cases the method of up-rating taxable values by the sale price/tax assessment ratio had to be resorted to.

* Other items disposed of by exchange

These are valued according to the product of taxable value and sale price/tax assessment ratio.

* Un-redeveloped items still in municipal ownership at the close of the calculation period.

These items are excluded from the figures completely.

* Compensation to individuals for uncompleted expropriation.

In certain cases individual property owners have been awarded or granted compensation on the ground of damages occasioned by non-implementation of expropriation. These costs are included in the figures.

Appendix 2 Calculations

Economic return on the City renewal project, considered as a whole, is calculated below. Two main alternatives are presented: one with an element of loan financing and one with direct financing. In a variant of the calculation with loan financing, the costs for the underground rail system under the City have been excluded by adjusting the main results with CE7*TR01 in Table 3. Government bonds have been considered as an alternative investment opportunity.

The City affair

In calculating economic return on the City renewal, the following basic data have been employed. Unless otherwise stated, the sources of the data are municipal balance-sheets or compilations of spendings in connection with budget preparations.

Operative costs

OC1: Evacuation (1952–1969)

OC2: Municipal investigations and administration (1955–1977); 2 percent of site leasehold fees (1978–1991)

OC3: Deficit in rental and parking affairs (1960–1986)

OC4: Maintenance of municipal infrastructure (bridges, tunnels etc); 2 percent per annum of original investment calculated as half of the posts CE3–CE8.

OC=OC1–4

Capital expenditure

CE1: Demolition costs (1950–1977)

CE2: Evacuation (1961–1977)

CE3: Design and foundation works (externally commissioned) (1956–1977)

CE4: Foundation works, internal (1970–1977)

CE5: The Klaraberg viaduct (1951, 1955–1965)

CE6: Road construction on Lower Norrmalm (1954–1978)

CE7: Underground tunnel through the City (part of) (1951–1963, 1971–1977)

CE8: Construction of car tunnels in the City (1967–1979)

CE18=CE1-8

CE9: Property costs (1951–1991)

Capital income

CI1: Sale and exchange of land (minus indirect costs and compensation for uncompleted expropriations) (1964–1986)

CI2: Site leasehold fees, sales of building in connection with site leasehold

CI3: Incidental earnings minus costs of site leasehold (1971–1991)

CI=CI1-3

CI4: Land values, 31 December = 11 881 Million SEK

Municipal loan business

ML1: Accrued interest on bonds (1952–1991)

ML2: Redemption of bond loans (1971–1996, the present values of 1992–1996 have been recorded during 1991)

ML=ML1-ML2

TFI: Share of tax financed investments during the year (1951–1978). After the point when capital income exceeded capital expenditure (except costs of loans), that is from 1977, it is assumed the project did not take new loans.

RLB: Rate of interest on long term municipal bonds.

Annual net costs (NCL; alternative with loan financing) calculated as follows:

$$NCL=OC+ML+TFI(CE18+CE9-CI)-CI4.$$

NCLD=NCL, values deflated with CPI.

TR0I=amount in current prices which influences the total result by 0.1 percent per annum, based on real prices.

Annual net costs (NC; alternative without loan financing) calculated as follows: $NC=OC+CE18+CE9-CI-CI4.$

NCD=NC, values deflated with CPI.

YEAR	OC1	OC2	OC3	OC4	OC	CE1	CE2	CE3	CE4	CE5	CE6
1950	0	0	0	0	0	0,1	0	0	0	0	0
1951	0	0	0	0	0	0,2	0	0	0	0,1	0
1952	0,1	0	0	0	0,1	0,2	0	0	0	0	0
1953	0,2	0	0	0,1	0,3	0,1	0	0	0	0	0
1954	0,3	0	0	0,1	0,4	0,2	0	0	0	0	0,3
1955	0,2	1,2	0	0,3	1,7	0,4	0	0	0	0,1	2,2
1956	0,5	1,8	0	0,4	2,7	0,5	0	8,4	0	0,8	0,5
1957	0,4	2,1	0	0,7	3,2	0,6	0	10,3	0	1,4	3,1
1958	1,2	2,1	0	0,9	4,2	0,5	0	12,7	0	2,4	6,3
1959	1	2,4	0	1,1	4,5	0,5	0	0,1	0	4,5	6,8
1960	2,1	2,4	0,3	1,3	6,1	1,6	0	7,6	0	4,5	5,7
1961	0,1	2,4	0,3	1,5	4,3	1,4	0,7	4,3	0	5	6,8
1962	0,3	2,1	0,3	1,8	4,5	2,3	1,5	5,9	0	0,9	6,5
1963	0,4	1,8	0,5	2	4,7	2,3	4,1	1,9	0	0,9	13,6
1964	0,8	3	0,5	2,3	6,6	1,8	4,4	7,4	0	1,2	9,6
1965	1,1	4,8	0,6	2,5	9	3,5	14,8	5,1	0	1,2	9,6
1966	1,7	6,6	0,6	2,9	11,8	2,1	18,7	8,4	0	0	10,2
1967	2,5	7,8	0,6	3,3	14,2	2,3	12,1	15,7	0	0	13,5
1968	3,5	7,8	0,6	3,8	15,6	3,2	18,8	26,8	0	0	7,3
1969	5	8,1	0,3	4,2	17,6	0,4	15,8	14,5	0	0	12
1970	0	8,7	0,4	5,2	14,3	4,2	13,3	18,8	12,1	0	17,1
1971	0	9,3	0,9	6,3	16,5	4,8	11,7	29,7	9	0	18,1
1972	0	9,9	0,8	7,5	18,2	0,7	2,3	33,3	5,9	0	15,3
1973	0	10,5	2,6	8,6	21,7	0,2	0,2	16,4	3,8	0	18
1974	0	11,7	2,4	9,9	24	0,2	0,5	18,4	1,8	0	11,5
1975	0	12,9	2,4	11,4	26,7	1,4	0,9	4,3	6,6	0	15,6
1976	0	14,1	2,4	13	29,4	0,6	0,3	0,7	3,4	0	9
1977	0	15,6	12,5	14,8	43	0,5	0,7	1,3	0	0	13,3
1978	0	0,9	12,5	16,5	30	0	0	0	0	0	12,1
1979	0	1,1	12,5	17,7	31,4	0	0	0	0	0	0
1980	0	1,4	12,2	20,2	33,7	0	0	0	0	0	0
1981	0	1,5	9,7	22,6	33,8	0	0	0	0	0	0
1982	0	1,5	9,7	24,6	35,8	0	0	0	0	0	0
1983	0	1,7	9	26,8	37,5	0	0	0	0	0	0
1984	0	2,1	8,2	28,9	39,2	0	0	0	0	0	0
1985	0	3	8,2	31	42,2	0	0	0	0	0	0
1986	0	3,3	7,8	32,4	43,4	0	0	0	0	0	0
1987	0	3,6	0	33,7	37,3	0	0	0	0	0	0
1988	0	4,2	0	35,7	39,9	0	0	0	0	0	0
1989	0	4,4	0	38	42,4	0	0	0	0	0	0
1990	0	5,3	0	41,8	47,2	0	0	0	0	0	0
1991	0	5,8	0	46,9	52,8	0	0	0	0	0	0

Table 3:1 The City Renewal Affair

YEAR	CE7	CE8	CE18	CE9	CI1	CI2	CI3	CI	CI4
1950	0	0	0,1	0	0	0	0	0	0
1951	0,8	0	1,1	0,2	0	0	0	0	0
1952	2,1	0	2,3	7,3	0	0	0	0	0
1953	4,1	0	4,2	11,6	0	0	0	0	0
1954	5,1	0	5,6	7,9	0	0,1	0	0,1	0
1955	9,8	0	12,5	15,3	0	0,1	0	0,1	0
1956	8,2	0	18,4	2,6	0	0,3	0	0,3	0
1957	6,2	0	21,6	0,5	0	1,1	0	1,1	0
1958	0,9	0	22,8	20,8	0	1,5	0	1,5	0
1959	1,4	0	13,3	4,2	0	1,6	0	1,6	0
1960	2	0	21,4	22	0	2,1	0	2,1	0
1961	2,7	0	20,9	10,2	0	4	0	4	0
1962	3,6	0	20,7	59,3	0	4,7	0	4,7	0
1963	3,6	0	26,4	26,9	0	7,9	0	7,9	0
1964	0	0	24,4	29,2	1,4	9,2	0	10,6	0
1965	0	0	34,2	29,2	17	9,2	0	26,2	0
1966	0	0	39,4	23	0	9,5	0	9,5	0
1967	0	3	46,6	50,6	0	9,5	0	9,5	0
1968	0	4,8	60,9	75,3	0	10	0	10	0
1969	0	7,5	50,2	33,7	0	11,8	0	11,8	0
1970	0	18	83,5	76,2	0	13,9	0	13,9	0
1971	0,6	16,7	90,6	118	0	18,2	6	24,2	0
1972	3,6	19,8	80,9	24,7	-2,1	21,1	0	19	0
1973	6	19,9	64,5	8,9	0	24,6	2,7	27,3	0
1974	8,4	5,3	46,1	6,7	-1,6	27,9	0	26,3	0
1975	11,4	15,5	55,7	51,4	39	37,2	0,9	77,1	0
1976	15	10,4	39,4	26,3	14,9	42,5	0	57,5	0
1977	15	9	39,8	0	0	42,8	0	42,8	0
1978	0	7,1	19,2	58,1	0	47,5	3,1	50,6	0
1979	0	5	5	124,7	38	54,9	1,1	93,9	0
1980	0	0	0	120,3	0	67,7	2,9	70,6	0
1981	0	0	0	5,6	0	72,8	-11,4	61,3	0
1982	0	0	0	38,8	0	75	0	75	0
1983	0	0	0	44,1	0	83,6	17,7	101,3	0
1984	0	0	0	29,7	37,5	103,6	-6,6	134,4	0
1985	0	0	0	79,1	0	150,9	7,8	158,8	0
1986	0	0	0	29,9	33,6	166,7	5,5	205,8	0
1987	0	0	0	52,4	0	177,6	0	177,6	0
1988	0	0	0	29,6	0	209,4	-25,7	183,7	0
1989	0	0	0	10,3	0	222	3,5	225,5	0
1990	0	0	0	22,2	0	277,9	8,2	286,1	0
1991	0	0	0	9,7	0	302,9	46,3	349,2	11881

Table 3:2 The City Renewal Affair

YEAR	ML1	ML2	ML	TFI	RLB	NCL	NCLD	TR01	NC	NCD
1950	0,0	0,0	0,0	100,0	0,0	-0,1	-1,3	14,6	-0,1	-1,3
1951	0,0	0,0	0,0	89,3	3,5	-1,2	-13,1	16,9	-1,3	-14,6
1952	0,0	0,0	0,0	70,0	3,6	-6,9	-72,1	18,3	-9,7	-102,2
1953	0,1	0,0	0,1	96,2	3,6	-15,6	-161,4	18,5	-16,1	-166,5
1954	0,1	0,0	0,1	69,4	3,6	-9,9	-101,7	18,7	-13,9	-142,7
1955	0,3	0,0	0,3	40,4	4,4	-13,1	-131,7	19,2	-29,4	-294,5
1956	1,0	0,0	1,0	92,8	4,5	-23,0	-219,5	20,2	-23,5	-224,2
1957	1,1	0,0	1,1	14,5	5,3	-7,3	-66,6	21,1	-24,2	-220,9
1958	2,0	0,0	2,0	28,6	5,1	-18,3	-160,4	22,0	-46,3	-405,5
1959	3,6	0,0	3,6	31,1	5,8	-13,0	-112,7	22,3	-20,4	-177,1
1960	4,2	0,0	4,2	54,4	5,9	-32,8	-273,6	23,2	-47,4	-396,0
1961	5,3	0,0	5,3	30,5	6,0	-17,9	-146,0	23,7	-31,4	-256,5
1962	6,4	0,0	6,4	64,3	5,4	-59,3	-462,6	24,9	-79,8	-621,9
1963	7,9	0,0	7,9	70,6	5,0	-44,6	-338,0	25,6	-50,0	-379,0
1964	8,6	0,0	8,6	56,0	6,1	-39,2	-287,3	26,5	-49,5	-363,1
1965	9,7	0,0	9,7	39,2	6,5	-33,3	-232,8	27,9	-46,3	-323,2
1966	11,2	0,0	11,2	45,8	7,0	-47,2	-309,9	29,7	-64,7	-424,8
1967	13,2	0,0	13,2	34,8	6,2	-57,9	-364,1	31,0	-102,0	-640,9
1968	16,8	0,0	16,8	30,9	6,5	-71,4	-440,7	31,6	-141,8	-874,8
1969	22,4	0,0	22,4	33,3	7,2	-64,1	-384,6	32,5	-89,7	-538,9
1970	25,9	0,0	25,9	35,6	7,5	-92,0	-516,4	34,9	-160,1	-898,1
1971	32,9	0,1	33,1	33,9	7,4	-112,0	-585,4	37,5	-200,9	-1049,7
1972	41,9	2,9	44,8	40,8	7,2	-98,3	-484,6	39,7	-104,8	-516,5
1973	45,5	0,6	46,1	51,5	7,3	-91,6	-423,0	42,5	-67,8	-313,4
1974	47,1	4,1	51,2	39,4	8,0	-85,7	-360,3	46,7	-50,5	-212,5
1975	48,3	16,5	64,8	53,2	9,3	-107,4	-411,2	51,3	-56,7	-217,0
1976	48,9	1,5	50,4	48,9	9,6	-83,8	-291,2	56,6	-37,7	-130,9
1977	49,2	17,9	67,1	47,7	9,2	-107,1	-333,7	63,2	-40,0	-124,5
1978	48,2	30,0	78,2	45,6	10,0	-134,9	-382,2	69,6	-56,7	-160,6
1979	46,7	11,0	57,7	100,0	0,0	-124,8	-330,0	74,7	-67,2	-177,5
1980	46,1	18,9	64,9	100,0	0,0	-148,4	-344,8	85,0	-83,4	-193,9
1981	45,0	18,8	63,8	100,0	0,0	-41,8	-86,8	95,3	22,0	45,5
1982	43,8	26,9	70,7	100,0	0,0	-70,3	-134,2	103,7	0,4	0,8
1983	42,4	13,3	55,7	100,0	0,0	-36,0	-63,0	113,0	19,7	34,6
1984	41,7	18,9	60,6	100,0	0,0	4,9	8,0	122,2	65,6	106,4
1985	40,5	22,7	63,2	100,0	0,0	-25,7	-38,9	131,4	37,4	56,6
1986	39,1	28,7	67,8	100,0	0,0	64,6	93,7	137,1	132,4	191,9
1987	37,1	57,2	94,3	100,0	0,0	-6,4	-8,9	142,9	87,9	122,3
1988	33,5	87,1	120,6	100,0	0,0	-6,4	-8,4	151,4	114,2	150,3
1989	27,9	48,1	76,0	100,0	0,0	96,8	119,6	161,3	172,7	213,4
1990	24,4	93,9	118,3	100,0	0,0	98,4	110,3	178,0	216,7	242,9
1991	17,3	229,9	247,2	100,0	0,0	11920,4	11920,4	199,7	12167,7	12167,7

Table 3:3 The City Renewal Affair

The bond alternative

The means invested by the municipality according to the calculation are assumed to be invested in long term government bonds. The highest rate of interest each year for government bonds on terms of at least 10 years has been used. If only bonds of shorter duration have been issued, the rate of interest of the longest term bonds has been used. It is assumed that interest income and redemption payments have been reinvested.

MI: Municipal investments in the City project

AI: Accrued interest of bonds acquired the previous year = $NI(-1)*RI(-1)$; [(-1) means the previous year]

AII: Accrued annual interest on previously acquired bonds minus interest for redeemed bonds = $AI(-1) + AII(-1) - IR$

RB: Redeemed bonds

RI: Rate of interest for bond loans

IR: Interest for redeemed bonds

NI: New investments in bonds

T: Term of bond loans

BA: Annual cash-flow in bond alternative (BA = NCL for 1950–1990, for 1991 BA = yield of acquired bonds sold at current value at the end of December 1991 (bonds acquired 1951, 1952, 1982–1990) and interest on bonds 1991).

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YEAR	MI	AI	AII	RB	RI	IR	NI	T	BA
1950	0,1	0	0	0	3,3	0	0,1	15	-0,1
1951	1,2	0	0	0	3,5	0	1,2	42	-1,2
1952	6,9	0	0	0	3,5	0	6,9	42	-6,9
1953	15,6	0,2	0	0	3,5	0	15,8	25	-15,6
1954	9,9	0,6	0,3	0	3,5	0	10,7	19	-9,9
1955	13,1	0,4	0,8	0	4,5	0	14,3	24	-13,1
1956	23	0,6	1,2	0	4,8	0	24,8	24	-23
1957	7,3	1,2	1,9	0	5,3	0	10,3	10	-7,3
1958	18,3	0,5	3,1	0	5,3	0	21,9	10	-18,3
1959	13	1,2	3,6	0	5,2	0	17,7	16	-13
1960	32,8	0,9	4,7	0	5,5	0	38,4	15	-32,8
1961	17,9	2,1	5,7	0	5,5	0	25,7	2	-17,9
1962	59,3	1,4	7,8	0	5	0	68,5	5	-59,3
1963	44,6	3,4	9,2	25,7	5,3	0	82,9	14	-44,6
1964	39,2	4,4	11,2	0	5,8	1,4	54,8	16	-39,2
1965	33,3	3,2	15,6	0,1	6	0	52,2	11	-33,3
1966	47,2	3,1	18,7	0	6,8	0	69,1	11	-47,2
1967	57,9	4,7	21,9	78,9	5,8	0	163,3	11	-57,9
1968	71,4	9,4	22,6	21,9	6,5	4	125,3	11	-71,4
1969	64,1	8,2	30,9	0	7,3	1,2	103,1	11	-64,1
1970	92	7,5	39	0	7,3	0	138,6	12	-92
1971	112	10,1	46,5	0	7,3	0	168,6	10	-112
1972	98,3	12,3	56,6	0	7	0	167,1	15	-98,3
1973	91,6	11,7	68,8	10,7	7	0	182,9	10	-91,6
1974	85,7	12,8	80,2	0	8	0,4	178,7	10	-85,7
1975	107,4	14,3	93	56,2	9	0	270,9	10	-107,4
1976	83,8	24,4	104,3	52,2	9,5	3	264,7	10	-83,8
1977	107,1	25,2	125,5	152	9,5	3,1	409,8	10	-107,1
1978	134,9	39	141,7	179,2	10	9	494,8	10	-134,9
1979	124,8	49,5	170,7	139,7	10	10	484,7	10	-124,8
1980	148,4	48,5	211,4	182,7	12,5	8,8	591	10	-148,4
1981	41,8	74	248,1	168,6	13,5	11,8	532,6	10	-41,8
1982	70,3	72	309,8	138,6	12,8	12,3	590,7	10	-70,3
1983	36	75,4	371,8	182,9	12,8	10,1	665,9	10	-36
1984	-4,9	84,9	434,3	178,7	11,5	12,8	693	10	4,9
1985	25,7	79,7	504,9	270,9	12	14,3	881,3	10	-25,7
1986	-64,6	105,8	560,2	264,7	11	24,4	866	10	64,6
1987	6,4	95,3	640,8	577	10,8	25,2	1319,4	10	-6,4
1988	6,4	141,8	685,3	134,9	11,8	50,7	968,4	10	-6,4
1989	-96,8	113,8	777,6	484,7	11,6	49,5	1279,4	10	96,8
1990	-98,4	148,4	878,9	148,4	13	12,5	1077,3	11	98,4
1991	-147,4	140	953,3	532,6	11	74	1478,5	11	10051

Table 4: The bond alternative

Alternative rates of interest

N91 = NCL (Annual net costs with loan financing) with 9.1 percent rate of interest

N92 = NCL (Annual net costs with loan financing) with 9.2 percent rate of interest

ND13 = NCLD (Annual net costs deflated with CPI with loan financing) with 1.3 percent rate of interest

ND14 = NCLD (Annual net costs deflated with CPI with loan financing) with 1.4 percent rate of interest

BD06 = BA (annual cash-flow in bond alternative deflated with CPI) with 0.6 percent rate of interest

BD07 = BA (annual cash-flow in bond alternative deflated with CPI) with 0.7 percent rate of interest

NCD09 = NCD (annual net costs without loan financing deflated with CPI) with 0.9 percent rate of interest

NCD10 = NCD (annual net costs without loan financing deflated with CPI) with 1.0 percent rate of interest

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YEAR	N91	N92	ND13	ND14	BD06	BD07	FD09	FD10
1950	-0,1	-0,1	-1,3	-1,3	-1,3	-1,3	-1,3	-1,3
1951	-1,3	-1,3	-14,4	-14,4	-14,4	-14,4	-16	-16
1952	-8,2	-8,2	-86,7	-86,7	-86,6	-86,6	-118,3	-118,4
1953	-24,6	-24,6	-249,2	-249,3	-248,4	-248,5	-285,9	-286
1954	-36,7	-36,7	-354,1	-354,5	-351,7	-352	-431,2	-431,6
1955	-53,1	-53,2	-490,4	-491,1	-485,5	-486,2	-729,5	-730,4
1956	-80,9	-81,1	-716,3	-717,5	-707,8	-709	-960,3	-961,9
1957	-95,6	-95,8	-792,2	-794,2	-778,7	-780,6	-1189,9	-1192,4
1958	-122,6	-122,9	-962,9	-965,7	-943,8	-946,5	-1606,1	-1609,9
1959	-146,7	-147,2	-1088,1	-1091,9	-1062,2	-1065,8	-1797,6	-1803,1
1960	-192,8	-193,5	-1375,8	-1380,7	-1342,1	-1346,9	-2209,8	-2217,1
1961	-228,3	-229,2	-1539,7	-1546,1	-1496,1	-1502,3	-2486,2	-2495,7
1962	-308,4	-309,7	-2022,3	-2030,3	-1967,7	-1975,4	-3130,5	-3142,6
1963	-381,1	-382,8	-2386,6	-2396,7	-2317,5	-2327,2	-3537,7	-3553,1
1964	-455	-457,2	-2704,9	-2717,6	-2618,7	-2630,8	-3932,6	-3951,7
1965	-529,7	-532,6	-2973	-2988,5	-2867,3	-2882,1	-4291,2	-4314,4
1966	-625,1	-628,8	-3321,5	-3340,2	-3194,4	-3212,1	-4754,6	-4782,3
1967	-739,9	-744,6	-3728,7	-3751	-3577,6	-3598,7	-5438,3	-5471
1968	-878,7	-884,5	-4217,9	-4244,3	-4039,8	-4064,6	-6362	-6400,5
1969	-1022,7	-1029,9	-4657,4	-4688,3	-4448,6	-4477,6	-6958,1	-7003,4
1970	-1207,8	-1216,7	-5234,3	-5270,4	-4991,8	-5025,4	-7918,8	-7971,5
1971	-1429,7	-1440,7	-5887,8	-5929,5	-5607,1	-5646	-9039,8	-9101
1972	-1658,2	-1671,5	-6448,9	-6497,1	-6125,3	-6170,1	-9637,7	-9708,5
1973	-1900,6	-1916,9	-6955,7	-7011,1	-6585,1	-6636,3	-10037,8	-10119
1974	-2159,3	-2178,9	-7406,4	-7469,5	-6984,9	-7043	-10340,6	-10432,6
1975	-2463,2	-2486,8	-7914	-7985,3	-7438	-7503,6	-10650,7	-10754
1976	-2771,2	-2799,5	-8308,1	-8388,4	-7773,9	-7847,3	-10877,5	-10992,5
1977	-3130,5	-3164,1	-8749,8	-8839,5	-8154,2	-8236	-11100	-11226,9
1978	-3550,3	-3590,1	-9245,8	-9345,5	-8585,4	-8675,8	-11360,5	-11499,8
1979	-3998,2	-4045,2	-9695,9	-9806,3	-8966,9	-9066,5	-11640,2	-11792,3
1980	-4510,4	-4565,8	-10166,8	-10288,4	-9365,5	-9474,8	-11938,9	-12104,2
1981	-4962,6	-5027,7	-10385,8	-10519,2	-9508,5	-9627,9	-12000,8	-12179,7
1982	-5484,5	-5560,5	-10655	-10800,7	-9699,7	-9829,5	-12108	-12300,7
1983	-6019,6	-6108	-10856,5	-11014,9	-9820,9	-9961,3	-12182,4	-12389,1
1984	-6562,4	-6665	-10989,6	-11161,1	-9871,8	-10023	-12185,7	-12406,6
1985	-7185,3	-7303,9	-11171,4	-11356,3	-9970	-10132,1	-12238,8	-12474,1
1986	-7774,6	-7911,3	-11222,9	-11421,6	-9936,1	-10109,4	-12157	-12406,9
1987	-8488,4	-8645,5	-11377,7	-11590,4	-10004,6	-10189	-12144,1	-12408,6
1988	-9267,3	-9447,2	-11534	-11761	-10073	-10268,7	-12103,1	-12382,5
1989	-10013,8	-10219,6	-11564,3	-11806,1	-10013,8	-10221	-11998,6	-12292,8
1990	-10826,6	-11061,4	-11604,3	-11861	-9963,6	-10182,2	-11863,7	-12172,9
1991	108,6	-158,6	165,2	-106,7	27,6	-202,5	197,2	-126,9

Table 5: Calculation of results for different rates of interest

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