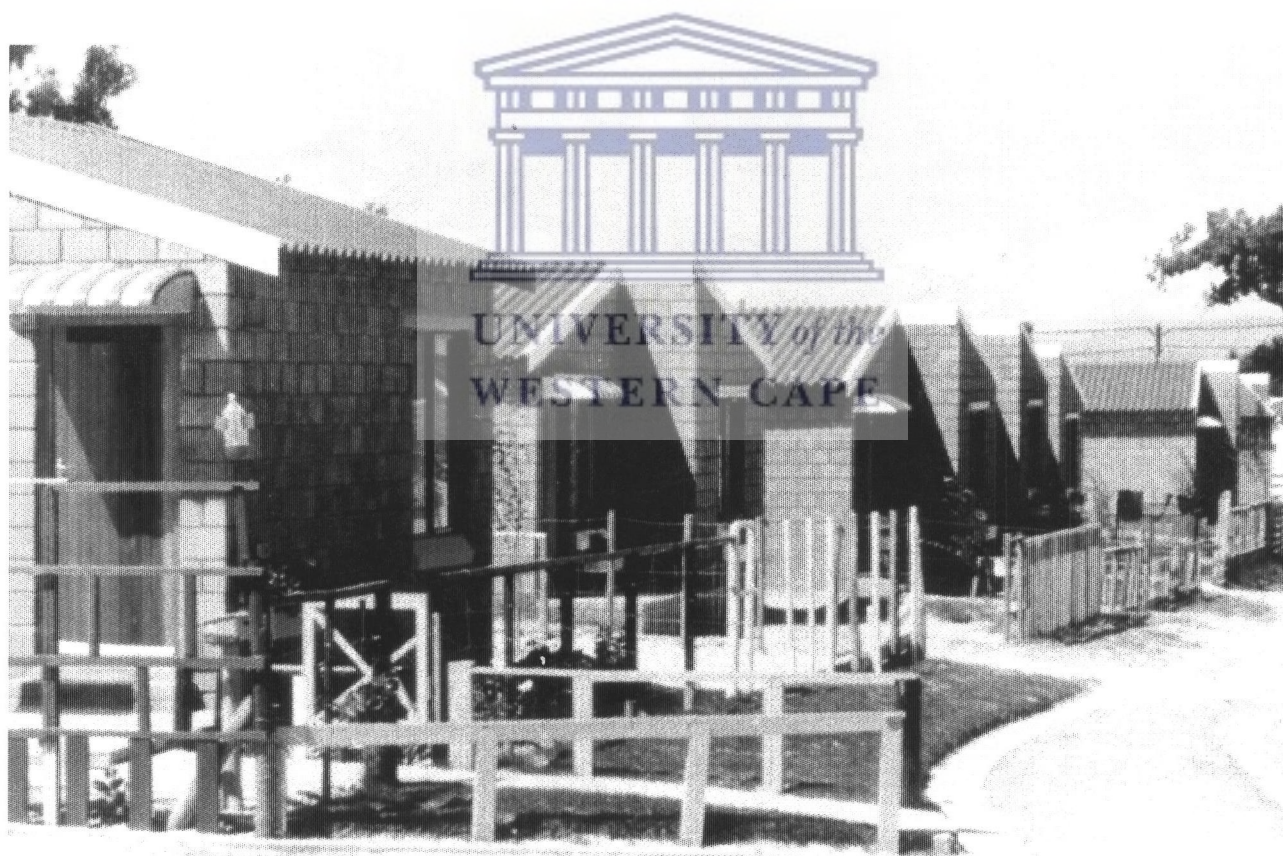


The Lack of
Adequate Housing in the Western Cape
and its Impact on the Environment:
A Theoretical Analysis



Mohamed Hassan

THE LACK OF ADEQUATE HOUSING IN THE
WESTERN CAPE AND IT'S IMPACT ON
THE ENVIRONMENT:
A THEORETICAL ANALYSIS

BY

MOHAMED HASSAN

(STUDENT NUMBER : 9110520)

UNIVERSITY *of the*
WESTERN CAPE

MASTERS MINI-THESIS IN ECONOMICS,
THE DEPARTMENT OF ECONOMICS,
FACULTY OF ECONOMIC AND MANAGEMENT
SCIENCES,
UNIVERSITY OF THE WESTERN CAPE
SOUTH AFRICA,
NOVEMBER 1998

ACKNOWLEDGEMENTS

I am deeply grateful to my supervisor, Professor Carl- Erik Schultz, for the extraordinary co-operation and the sense of companionship that characterised our work on this mini-thesis. The countless " mini - conferences " he had with me and his extremely useful and detailed suggestions were very much responsible for the shaping-up and, the subsequent polishing-up of this mini-thesis. I sincerely hope that the finished product justifies the time and effort you put into it with me, especially your never-ending patience. I also wish to thank his family, especially his wife Inga for all her support and understanding.

I wish to thank my course-mates, Ingrid van Niekerk; Kenneth McQuene and Adenaan Hardien, for their friendship and support over all the years that we were together as students at U.W.C. A special thanks to the " HOVEDVAK STUDENTE " of NFH, TROMSØ , viz: Michael Owusu-Nimako; Uddmund Klæboe; Vidar Nyheim; Frode Lindseth and Jan Inge Eridem, for their friendship and hospitality that they have shown me during the course of my stay in TROMSØ.

Last but not least my family. To my parents, without whose help and guidance I most probably would have been nowhere. I would like to thank them, my sisters, my loving wife and my children, for their support, patience and understanding, as without you I would not have reached this milestone, thank you.

Despite the fact that I have made extensive use of the ideas and perceptions of most of the authors in my reference list, I would like to emphasize that I am solely responsible for any omissions in the context of this mini-thesis.

Thanking one and all.....

MOHAMED HASSAN
(NOVEMBER 1998)

TABLE OF CONTENTS

Section	Content	Page
A.	Introduction	1
B.	Present Situation	9
C.	Why is the Free Market Inefficient	15
	1) Externalities	15
	2) Public Goods	27
	3) Public Bads	32
	4) Income Distribution and the Lack of Market	34
D.	Evaluation of Housing Policy Measures	35
	1) Public Goods Effect	35
	2) Externalities	37
E.	Policy Recommendations	39
F.	Conclusion	43
G.	Bibliography	46

List of Figures and Tables

iii & iv

LIST OF FIGURES

Number	Title	Page
1.	Population Density	3
2.	Model of Apartheid City	5
3.	Population Distribution	5
4.	Government Revenue	6
5.	Monetary Allocation	7
6.	Government Social Expenditure by Race	8
7.	Model of the Housing Sector	11
8.	Social and Private Demand	21
9.	Negative Effects of Consumption	22
10.	Utility Maximization	29
11.	Social Demand for Housing	33
12.	Net Effect of a Subsidy	36
13.	Effects of a Subsidy and / or a Tax	37
14.	Reaching Optimum	40

LIST OF TABLES

Number	Title	Page
1.	Travelling Distances	4
2.	Informal Housing	12
3.	Water Supply in Rural Areas	25
4.	Tabulation of Externalities	32



LIST OF MODELS

Number	Model	Page
1.	"Hassan" Model	16
2.	Samuelson Model	28

A] INTRODUCTION :

The debate, about the role of the State, involves both normative and ethical judgements. Thus, what should the state do and not do? How can the desired ends be attained most efficiently? What distribution of income and services is socially just / desirable?

Economic change must proceed apace with political dispensation. Democracy pre-supposes that conflicting needs and desires of the various groups in society can be fairly sorted out through enfranchisement and participation. This can only be judged as fair if its base (society) has shared values, which is only possible if society is not too divided by inequality in Income, Wealth and Opportunity.

A precondition for success is an increase in per capita income i.e. economic growth. South Africa in many ways has Third World characteristics. This and its racially associated differences requires urgent attention. Apartheid has resulted in the nation foregoing several decades of potential economic and human development gains.

Apartheid has resulted in a number of development issues reaching crucial / crisis levels (Van Der Berg: 1991 : A):

- Dualism resulting in 85% of income inequality (O. Shima, 1962)
- Income inequality, with a gini coefficient of 0.6.
- Rural to urban unemployment, urban growth outstripped urban infrastructural and industrial development.
- Squatter settlements resulting in the concentration of poverty, crime, dehumanisation, etc.
- Unemployment at a conservative estimate of 40%.

Whites reinforced the initial inequality in technological endowment with customary discrimination and legislative measures which prevented equal access to social services and employment opportunities, hence the accumulation of wealth. The budget was one of the major forms of economic discrimination in South Africa. It is also the most effective instrument available for redistribution and restitution. The budget will have to bear a large part of the burden for ensuring a smooth transition to sustainable democracy. The dilemma in South Africa lies in reconciling democracy with a limited tax capacity. Large scale increases in social transfers seem premature in the light of large scale unemployment, underemployment, the lack of an institutional basis for such transfers, and most importantly, the resource constraints.

The causes of the economic malaise are sufficiently numerous that only multi-dimensional strategies would be likely to succeed. Policies will have to be implemented over longer periods of time and will have to be guided and nurtured all the way through. The development process must be based on participatory processes and upon consensus by society at large. What we had in the past is what Jerry Eckert calls ".....unfettered capitalism placed in an unequalitarian setting.....". As a result we are now faced with these development problems. Since apartheid entailed a redistribution from non-whites to whites, the demise of apartheid should imply a redistribution from the rich to the poor, which in reality is from the whites to the non-whites. So, non-whites have a basis for redress.

At present the housing sector is highly distorted. The key aspect of this distortion is the spatial segregation of the different racial and income groups, within the cities. South Africa's investment in housing, and in the flow services from housing is approximately 50% of that in countries with similar per capita G.N.P. levels. It is important to remember that housing is the major asset of most households (especially the poor), it is a source of collateral to purchase goods and services, and for capital investment (productive activity), i.e. it can be a source of economic activity hence income generating opportunities, and it is a source of revenue for the local authorities in the form of rates and taxes and other services.

Constructed as residential dormitories to serve white employers from a distance, black townships have been deprived of the ability to serve their own personal household needs, let alone provide the facilities and infrastructure that are vital to economic sustainability. These implications are even more far reaching and severe for the thousands of informal settlements across the country.

In South Africa we also have to look at the transport system. The present system is a clear reflection of the aims and objectives of the Apartheid Regime. On average 8% of income is spent on transport and 35% of commuters spend more than 10% of their income on transport. This is hardly surprising given the distances of townships from the major centres, 65km between Cape Town and Atlantis, 39km between Khayelitsha and Claremont and Bellville.

A survey of Black Households around Cape Town reflected that they spend 8.6% of their income on Housing and Electrification, which is less than the 10% that they spend on transport (which in itself is heavily subsidised, World Bank :1991:18). This is a consequence of the increase in density of the population as you move away from the city centre, which is in contrast to the more typical pattern (refer to diagram 1). One can clearly see that the majority of the population is suburban dwellers, in direct contrast to the Demand driven profile (an inheritance from the Apartheid legacy). To compound the issue even further one could include the time spent / lost while travelling into the equation. This is economically productive time, lost. This impinges on the issue of Social Efficiency, which I discuss later on in this paper.

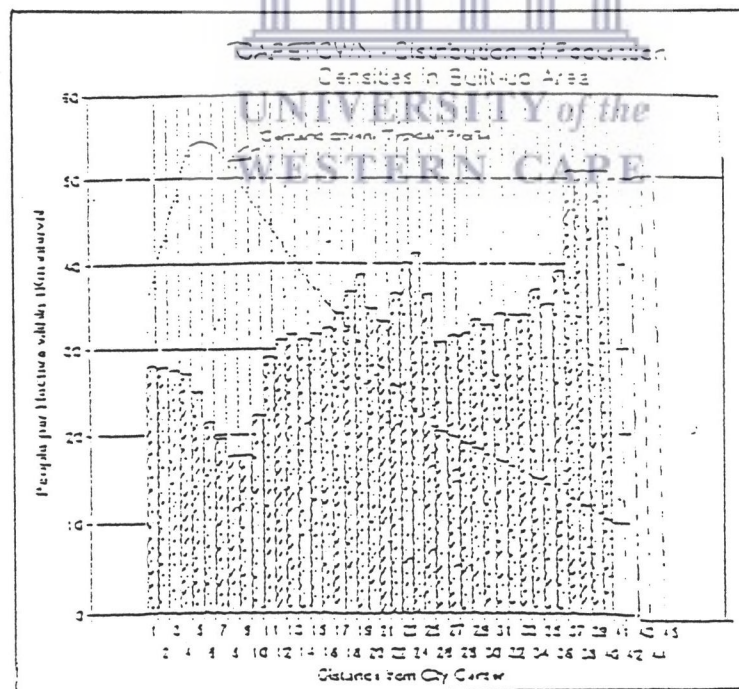


FIGURE ONE

(Source:SAIRR:1993)

This graph typifies the urban sprawl in South Africa. It is contrary to the typical models eg. the Monocentric City model, as used by Arthur O'Sullivan. It is a reflection of the aims and objectives of the Apartheid Regime. A one kilometre radius from the city centre has a population density of 28 people per hectare (SAIRR:1993). Whereas a 40 kilometre radius has 51 people per hectare. One important consideration is thus a transport system that is very efficient, fast, regularly etc, as table 1 reflects that the average Capetonian has to travel 16,7 kilometres to work daily. The government is presently talking about the "Megacity " model, but this model also has its' advantages and disadvantages.

AVERAGE TRAVEL DISTANCE FOR THE JOURNEY TO WORK (CAPE TOWN)				
YEAR	1975	1980	1985	1990
DISTANCE (in kilometres)	14.9	15.2	15.8	16.7

Average travel distances for subsidised bus commuters (August 1986)

TABLE ONE

(Source:SAIRR:1993)

When looking at the transport issue, those who have to travel distances to and from work , make use of the Mini-bus taxi system. It is used because it is fast, effective, regular, cost-efficient and convenient. But this system is fraught with problems and dangers. It has been estimated that there are 1.2 million taxi-drivers countrywide (SAIRR:1993). These taxis were involved in 14% (i.e. 55,000) of accidents in 1991 alone (SAIRR:1993). Then one can also consider the number of deaths and damages caused by the "TAXI WARS". Another crucial point is the fact that taxi-drivers generally don't even use the lay-byes that were constructed for them in order that they may pick up passengers. Their non-compliance leads to congestion, frustration and unnecessary accidents. The number of non-roadworthy vehicles, tyre & road wear and the amount of pollution caused by these taxis, who travel large distances daily, makes one wonder whether alternative means of transport should be considered eg. Metro, Trams and most definitely an improvement of the present system i.e. a system that is accessible, regular, cost effective etc. The removal of these responsive taxis result in an efficiency loss, because they have to follow a fixed route, and this must be minimised.

Due to our history and the Apartheid Philosophy the Income Distribution calculated South Africa is very "racially" skewed. We have a Gini Coefficient of 0.6 , one of the largest amongst the countries where these calculations were made. During periods of high growth, like the "golden sixties" we had a widening of the inequality gap partly because we had little or no "trickle down effect".

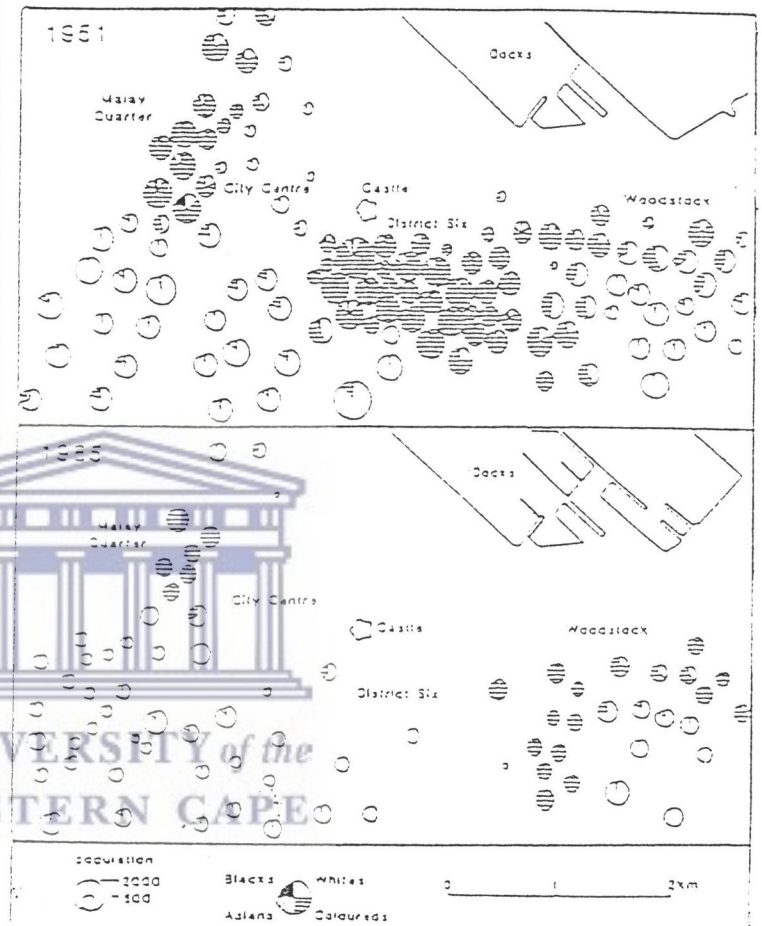
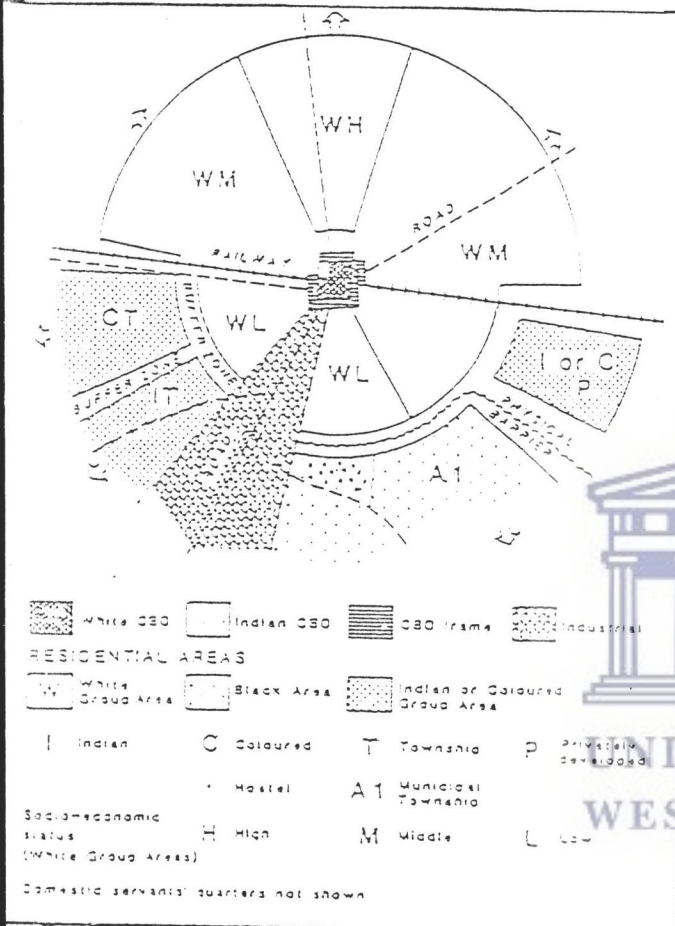


FIGURE TWO

FIGURE THREE

(Source: Christopher A.J: figures 4.2 & 4.13)

Figures 2 & 3 clearly reflect the impact of the Apartheid philosophy on the urbanisation of South Africa's population. Figure 3 clearly shows what the apartheid state achieved in 34 years, from 1951 to 1985 they managed to move the majority of the non-whites (mainly working class people) away from the city centre to the Cape Flats. Figure 2 is a model of an Apartheid city (which is a reality in many South African towns today), where the White Upper-Class was protected from the rest of society, and the Coloured and Indian Communities were used as buffers against the Black Communities.

TYPICAL BUDGETARY ALLOCATION DURING THE APARTHEID ERA

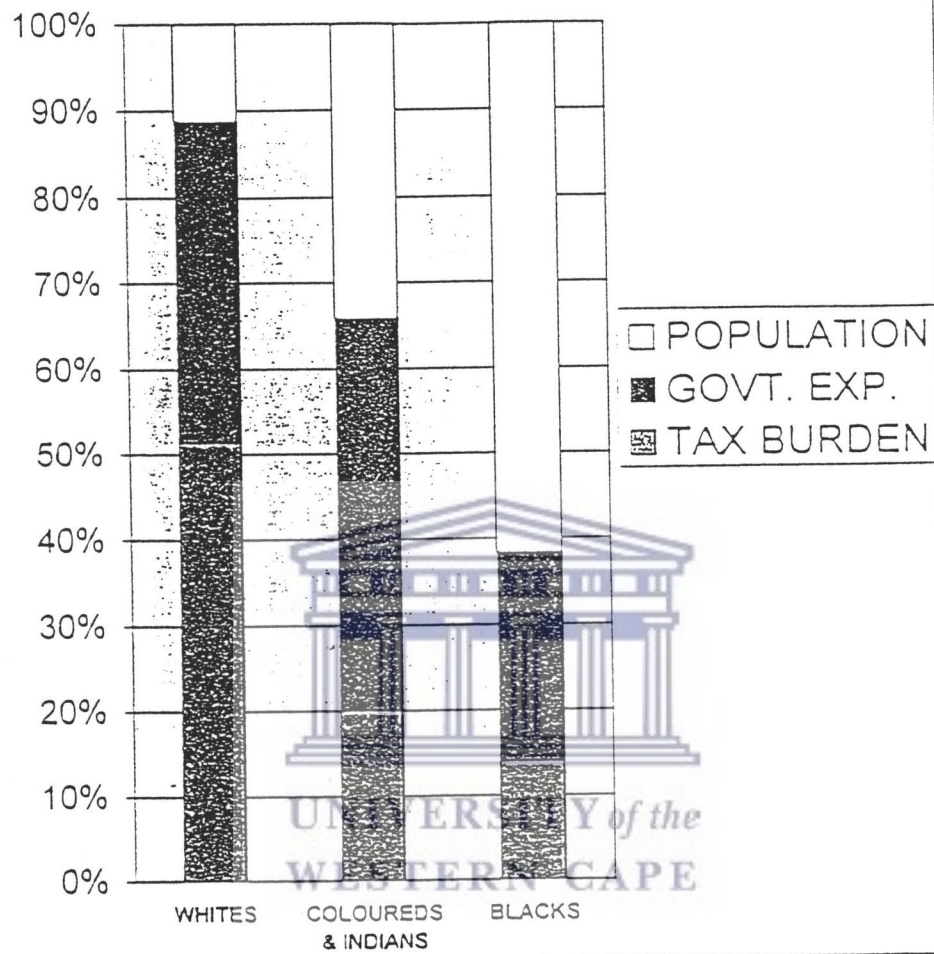


FIGURE FOUR

(Source:Mcgrath:1984)

As crude as these figures may seem, they reflect that the whites have contributed more than they have received from government expenditure, yet they have received more than what their numbers alone warrant. The important aspect of this data is the discriminatory aspects of previous governments' expenditure. The "problem" with this data is the measurement of the merits of certain spending, eg. defence and police etc. Just as poor whites could in the past claim their full share of public expenditure, irrespective of their tax contribution, so too should non-whites be able to claim their equal treatment by the state.

MONETARY ALLOCATION DURING THE APARTHEID ERA

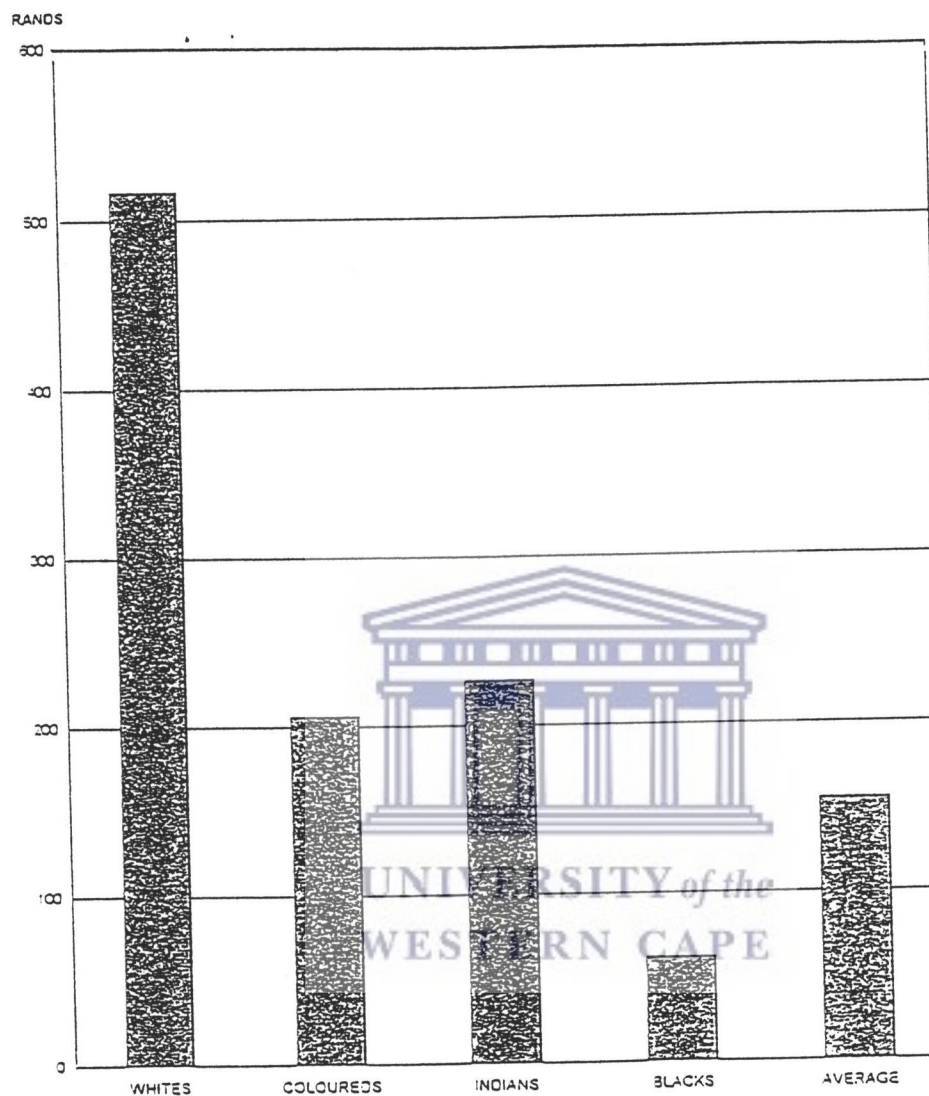
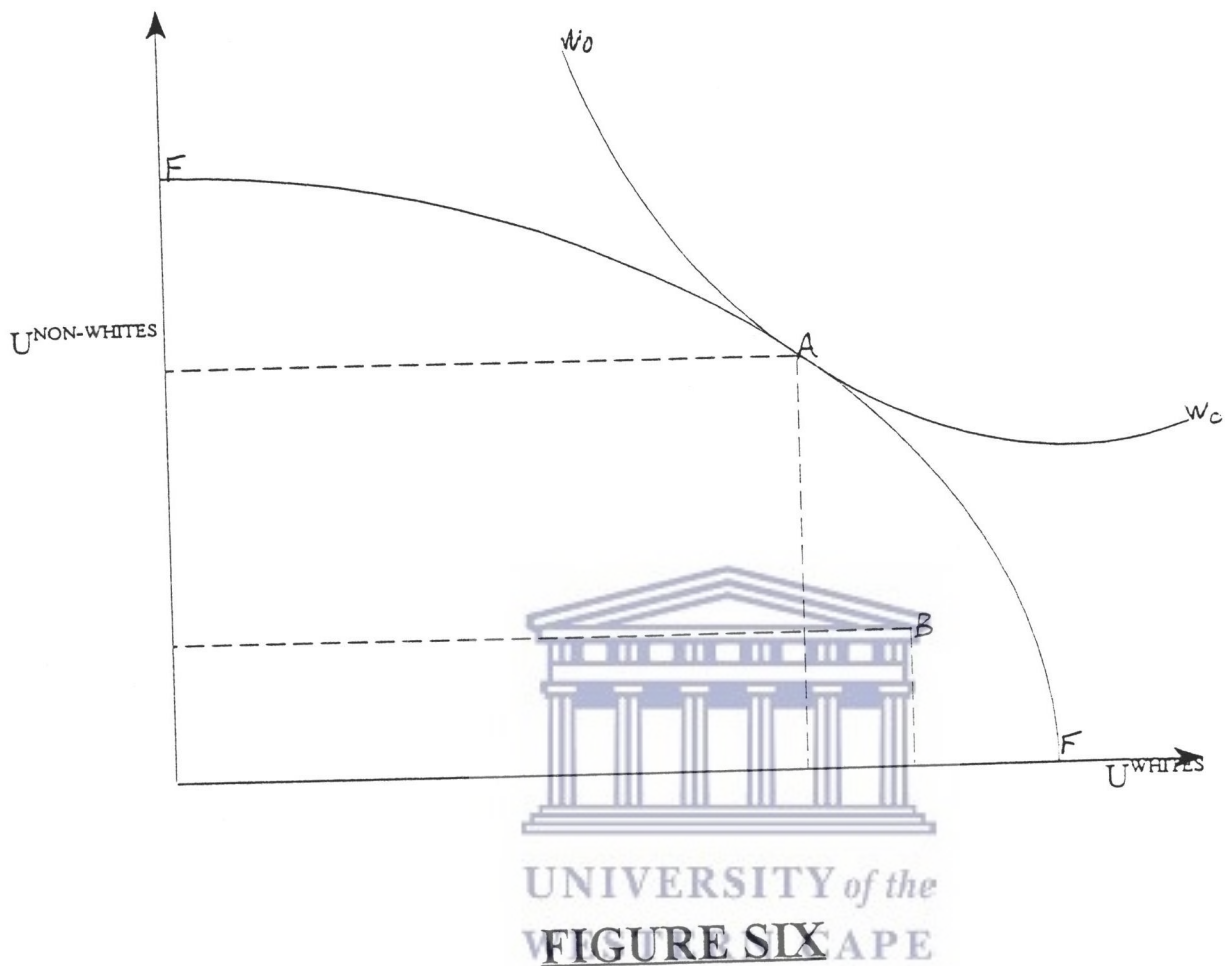


FIGURE FIVE

(Source:Mcgrath:1984)

There seems to be a reluctance by parties involved in the present political spectrum to accept the financial consequences that the above data reflects, i.e. the need to reduce white benefits so as to approach parity. Parity therefore requires not only an increase in non-white social spending, but also a reduction in expenditures on whites. White standards are set at a level far exceeding the resources of the country, if these levels were to be extended to the entire nation.

Figure 6 typifies the efficiency that existed during the Apartheid Era.



FF is the Welfare Frontier i.e. the maximum obtainable utility from the existing production resources and an optimal production mix. W_0 is one (of many) welfare indifference curves, reflecting the Social Welfare Function. We can clearly see the inefficiency position that South Africa use to occupy, we were well inside the FF (at point B), in favour of the White minority, when we should clearly have strived for a more equal allocation i.e. where the FF is tangent to the Social Welfare Function, at point A. This inefficiency can be directly linked to the state with regards to revenue allocation. This can be clearly seen in figures 4 & 5.

Part A was a literature review in order to sketch a very brief outline of the Apartheid State, its, policies and its' effects on the country and its' inhabitants. An important policy outcome was the wilfull neglect of " non-white " housing. Housing should therefore be one of the most important policies in the new democratic dispensation.

B] THE PRESENT SITUATION(1994-1998):

B1] BACKGROUND AND CONTEXT:

A massive backlog of housing estimated between 1,3 to 3 million units is coupled with the unique South African situation of a low-density urban sprawl, which is segregated from the high-density townships. The entire range of activities associated with housing must therefore reflect and reproduce the skewed patterns of housing provision. Inner city sprawl has been intensified by decentralisation and one-house-on-plot designs during the Apartheid era, which resulted in the various inefficiencies that we experience today.

The De Looer report (1992) perceives a need for 328 000 units annually, and also finds that 200 000 new houses per year would prove unaffordable given the funding available. It seems that the trade-off is between the cost of housing subsidies; the number of houses that can be built; their quality; and the number of households that are able to afford subsidised housing. With a higher subsidy, more housing is affordable or of higher quality, but fewer can be covered, otherwise larger government expenditure is involved.

Government policies reveal both the failure to supply and the skewness of supply to the top end of the market. The Industrial Development Trust (IDT) has tried to remedy the situation but was not very successful. Policy focus has also primarily been on funding at the expense of adequate consideration of the other crucial factors that are necessary for the ultimate delivery of housing. Making finance available does not guarantee that the impact will trickle down into the provision of adequate housing. A major obstacle in the housing industry, with regards to the elimination of the backlog, is the pursuit of gains, which in these circumstances can create bottlenecks. Landowners will speculate about the prices they can obtain for their land, contractors will inflate prices and operate at below full capacity or deliver sub-standard products.

The National Housing Forum (1992:2) observes:

What emerges is that the problem is not so much the availability of resources as to the availability of mechanisms to channel funds into development of a viable, and therefore sustainable, basis.

The ultimate objective of any housing policy in South Africa should be to allow the housing sector to contribute toward a well-functioning, non-racial, democratic society and economy. At the same time, policy-makers have to bear in mind the case-specific issues / problems inside South Africa, to ensure that their policies can be successfully implemented, and attempt to solve the problems facing the New Nation. If the Housing Sector is functioning well, the various positive spin-off effects will result in the various provinces functioning well, and thus the economy will be on the path to growth and stability (a kick-start scenario).

Housing and Construction is an important sector of the economy, and it is said to have a multiplier of at least two. Housing interacts with the Labour Market, Money Market and the Savings Rate. Access to jobs and ease of travel is dependant on mobility, cost and availability within the Labour Market. Mortgage Finance plays a crucial role in connection with mobilising and applying household savings. Housing is very closely linked to the availability of land and public intervention is inevitable, but the extent and form thereof is debateable.

Financing should not be the sole focus of consideration, there is an entire range of factors that determine the ultimate delivery of housing. Financing will not in itself ensure "appropriate" housing, as it fails to recognise the different motives and capabilities of those involved in the delivery of housing. We can't depend on a single policy instrument, such as a subsidy, to correct imbalances such as urban sprawl and the reconstruction of Apartheid initiated cities. We need to increase community participation, as they are going to be the beneficiaries of the housing schemes. Otherwise we will have a continuation of Apartheid along class lines, and the country will continue to be divided into the future (eg. U.S.A.).

A Model of the Housing Sector:

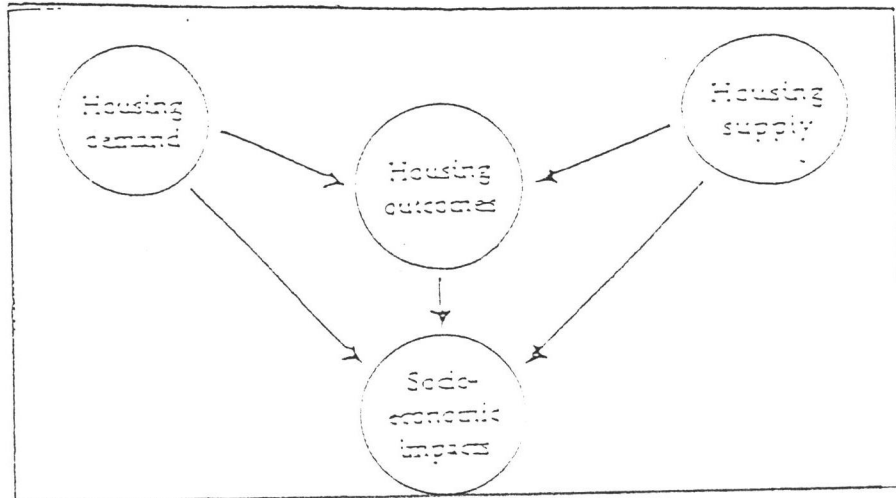


FIGURE SEVEN

Figure 7 is a reflection (in my opinion) of the interaction that will be required, for any housing project to be a success in South Africa. The Socio-economic factors will all have to be included and assessed if the housing projects are to be successful and sustainable.

Significantly the SAIRR (1993:214) reports:

When measured against other developing countries of comparable per capita income, South Africa has the highest proportion of consolidated assets of the banking sector devoted to residual mortgages (almost 40%). However, only 12% to 15% of such funds are allocated to Black township borrowers.

Thus there is an urgent need, in South Africa, for the redirection of mortgages towards Black housing programmes. This could also decrease the land prices in the White areas, and increase land prices in the Black areas, as the present value of existing White housing stock is reduced by the withdrawal of these mortgages. It is also important to remember that this is not a zero sum game, as an increase in money supply may just lead to inflation. Banks would also be happy to lend more as long as their default risk was not raised, and their administration costs are not excessively high. The increase in the demand for land would surely raise the price of land in high density areas.

The regional housing department of the Western Cape estimates that the backlog in housing for the region is between 160,000 to 180,000 units. This means that an average of 50,000 low cost housing units would have to be built per annum. Approximately 40,000 of these units will have to be built in the Cape Metropolitan area.

DISTRIBUTION OF INFORMAL HOUSING : 1990

AREA	TOTAL AFRICAN POPULATION	INFORMALLY HOUSED AFRICAN POPULATION	PROPORTION INFORMALLY HOUSED
Bloemfontein	470 100	160 000	34%
Cape Town	570 000	330 000	58%
Durban	2 600 000	1 800 000	69%
East London	342 300	105 000	31%
Port Elizabeth	580 000	320 000	55%
PWV	213 000	2 260 000	43%
Total	9 774 400	4 975 000	51%

TABLE TWO

(Source:SAIRR:1993)

We can clearly see from the table above that the "informal housing" issue is quite a severe problem. In the Western Cape alone there is a total of 58% of the African population i.e 330,000 who are informally housed, and this is based on data going back to 1990. The figures are even more rigorous today given the amount of urbanisation that has taken place. Coupled to this we also had the Democratic Elections of 1994.

B2] PROPERTY RIGHTS VS GOVERNMENT

INTERVENTION:

A property right is a bundle of characteristics that conveys certain powers to the owner of the right. We have both Private and Common property rights. Common property rights can't achieve an efficient allocation of resources without some sort of government intervention, or the creation of private property rights. In my analysis I will assume that an appropriate property right system has been established, i.e. land and factors of production ownership etc. are all clearly defined, and concentrate on the Environmental Externalities, i.e. the impacts that other people's decisions have on their surroundings and the environment in general. These impacts can be either positive or negative.

Besides property rights, we need government intervention, to overcome the effects of Market Failure and a very "racially" skewed Income distribution. We must turn to politics (social consensus) for the emergence of a Social Welfare Function. We could adopt one of two methods: 1) Historical Method, where you analyse the evolution of a sector over time and try to design policies that would improve the current situation; 2) Comparative Approach, analyse what is being done in other countries and try to design policies that would improve the situation domestically, if the scenarios are similar. I will be adopting a combination of these two methods.

We must also consider the four characteristics of Common Property Allocations:

- in the presence of sufficient demand, resources are over-exploited.
- scarcity rent is dissipated, no one appropriates the rent.
- net benefit received from the common property is zero.
- open access

There are various ways that the government can attempt to correct the production / consumption levels of common property in general :

- nationalisation i.e. a situation where the state purchases the land and builds homes on them, and rents it out to citizens that qualify for it.
- government-mediated negotiations: this is a situation where the state interacts and forms partnerships with the private sector in the supply of affordable housing.
- regulation: a similar situation to rent control etc.
- taxes and charges: the state can subsidize and / or charge cheaper rates for services and dues, eg. cheaper water supply, rates and taxes etc.

The government usually opts for the last two options, i.e. regulation and taxes & charges, largely because of political and economic considerations. A central premise of the afore-mentioned analysis is that without a vision of what we are supposed to do, of how it fits within the broader context of economic and social development, it is likely that discussions of housing policy reform will be too narrowly focussed and run the risk of failure.

In part A the role of the state is highlighted through transportation, income distribution, and linked to a Welfare Function in order to see how it impacts on the issue of housing in the Western Cape. In part B the issue of property rights is highlighted because the state can only initiate policies, that directly and / or indirectly impacts on housing, if the owners of the land have a legitimate claim to that land (eg. the issue of illegal squatting and the issue of public vs private land etc.).

C] WHY IS THE FREE MARKET

INEFFICIENT IN THE HOUSING MARKET:

C1] EXTERNALITIES ARISING FROM THE PRESENT SITUATION :

There is a private demand and supply as well as a public demand and supply of houses. There are however also other effects of housing which affect the social welfare of this country. These effects are of at least two kinds :

- 1) When someone is buying a house, this reflects their private demand for housing. If the house is a new one, this adds some effects to their neighbours. A house is the base for a lot of other services. Water supply, electricity, sewerage etc, are all needed for the delivery of a permanent home. For the people living close to the family, this will result in less pollution (no squatting, as the plot is now built up, which also negates the negative impact of squatting), less risk of fires (no hazardous building materials and "heating", for fuel, methods). There is also a greater likelihood of less noise and more privacy for the surrounding community. These effects are called positive externalities, because they are enjoyed by someone, but the one who gets them did not make any effort to obtain this.
- 2) There are also other effects of better housing, which may be important to society, but not so visible for the neighbourhood. Crime and Health being the two most important effects. When the housing need is met then the basic needs of society are generally accepted to have been met. These needs are however needs which are not considered as part of the deal when a family buys a new house.

These gains are distributed to all those people staying in the Western Cape, as well as to society in general. Better health leads to a more active economic life, which leads to better income generating opportunities, and eventually to a reduction in the crime rate etc. These effects are the public goods effects, enjoyed by all, even those people who do not buy new houses.

A MODEL (THE "HASSAN" MODEL) WHICH INCORPORATES A NEGATIVE EXTERNALITY INTO THE UTILITY FUNCTIONS OF TWO INDIVIDUALS :

The core effect of housing, from the arguments above is that there is a positive externality effect from the consumption of housing to other consumers. This effect will however not be considered by individual families when they allocate their income for consumption. We can illustrate the effect in the simplest way by assuming two consumers (A and B) and a constant total supply of two goods, housing (X_1) and other goods, (X_2). We let the utility of consumer A be influenced by the consumption of housing, by consumer B, while consumer B has a utility which is only affected by his own consumption. If so we can find the social efficiency in consumption by maximising the utility of consumer A, for a constant level of utility of consumer B.

The Pareto Criterion to maximise the utility of individual A for a given utility of individual B, with a given externality created by individual B is :

$$\text{MAXIMISE } U^A \quad [\quad U^B = \hat{U}^B \quad]$$

$$U^A = U^A (X^A_1 , X^A_2 , X^A_3) \quad (1)$$

$$\text{where } U^A_1 > 0 , U^A_2 > 0 , U^A_3 > 0 \quad \text{or} \quad \partial U^A / \partial U^A_3 > 0$$

$$\text{and } X^A_3 = f (X^B_1) \quad \text{and} \quad f' > 0$$

$$\text{i.e. } X^A_3 - f (X^B_1) = 0$$

$$U^B = U^B (X^{B_1}, X^{B_2}) \quad (2)$$

subject to the following constraints :

$$a) X^0_1 = X^A_1 + X^B_1 \quad \Rightarrow \quad \partial X^A_1 = - \partial X^B_1$$

$$b) X^0_2 = X^A_2 + X^B_2 \quad \Rightarrow \quad \partial X^A_2 = - \partial X^B_2$$

Where X^0_1 and X^0_2 are the given total volume of the two commodities.

$$\mathcal{L} = U^A (X^A_1, X^A_2, X^A_3)$$

$$- \lambda_1 [U^B (X^{B_1}, X^{B_2}) - \hat{U}^B]$$

$$- \lambda_2 [X^A_3 - f (X^{B_1})]$$

$$- \lambda_3 [X^A_1 + X^B_1 - X^0_1]$$

$$- \lambda_4 [X^A_2 + X^B_2 - X^0_2] \quad (3)$$

$$\partial \mathcal{L} / \partial X^A_1 = \partial U^A / \partial X^A_1 - \lambda_3 = 0$$

$$\Rightarrow \lambda_3 = \partial U^A / \partial X^A_1 \quad (4)$$

$$\begin{aligned} \frac{\partial \mathcal{L}}{\partial X^A_2} &= \frac{\partial U^A}{\partial X^A_2} - \lambda_4 = 0 \\ \Rightarrow \lambda_4 &= \frac{\partial U^A}{\partial X^A_2} \end{aligned} \quad (5)$$

$$\begin{aligned} \frac{\partial \mathcal{L}}{\partial X^A_3} &= \frac{\partial U^A}{\partial X^A_3} - \lambda_2 = 0 \\ \Rightarrow \lambda_2 &= \frac{\partial U^A}{\partial X^A_3} \end{aligned} \quad (6)$$

$$\begin{aligned} \frac{\partial \mathcal{L}}{\partial X^B_1} &= -\lambda_1 \left(\frac{\partial U^B}{\partial X^B_1} \right) + \lambda_2 \left(\frac{\partial f}{\partial X^B_1} \right) \\ &\quad - \lambda_3 = 0 \end{aligned} \quad (7)$$

$$\frac{\partial \mathcal{L}}{\partial X^B_2} = -\lambda_1 \left(\frac{\partial U^B}{\partial X^B_2} \right) - \lambda_4 = 0 \quad (8)$$

substituting equations four & six into seven;

$$\begin{aligned} &-\lambda_1 \left(\frac{\partial U^B}{\partial X^B_1} \right) + \left(\frac{\partial U^A}{\partial X^A_3} \right) \left(\frac{\partial f}{\partial X^B_1} \right) \\ &- \left(\frac{\partial U^A}{\partial X^A_1} \right) = 0 \end{aligned} \quad (9)$$

substituting equation five into eight;

$$-\lambda_1 \left(\frac{\partial U^B}{\partial X^B_2} \right) - \left(\frac{\partial U^A}{\partial X^A_2} \right) = 0 \quad (10)$$

dividing equation nine by equation ten, gives us the necessary condition for a Pareto Optimum :

$$\begin{aligned}
 & \left(\frac{\partial U^B}{\partial X^{B_1}} \right) / \left(\frac{\partial U^B}{\partial X^{B_2}} \right) \\
 & = \left[- \left[\left(\frac{\partial U^A}{\partial X^{A_3}} \right) \left(\frac{\partial f}{\partial X^{B_1}} \right) \right] \right. \\
 & \quad \left. + \left(\frac{\partial U^A}{\partial X^{A_1}} \right) \right] / \left(\frac{\partial U^A}{\partial X^{A_2}} \right) \quad (11)
 \end{aligned}$$

Alternatively equation eleven can be rewritten as:

$$\begin{aligned}
 & \left(\frac{\partial U^B}{\partial X^{B_1}} \right) / \left(\frac{\partial U^B}{\partial X^{B_2}} \right) \\
 & = \left(\frac{\partial U^A}{\partial X^{A_1}} \right) / \left(\frac{\partial U^A}{\partial X^{A_2}} \right) \\
 & - \left[\left[\left(\frac{\partial U^A}{\partial X^{A_3}} \right) \left(\frac{\partial f}{\partial X^{B_1}} \right) \right] \right. \\
 & \quad \left. / \left(\frac{\partial U^A}{\partial X^{A_2}} \right) \right] \quad (12)
 \end{aligned}$$

Lines one & two of equation twelve is a reflection of the market solution, where we can clearly see that too much of X^{B_1} is being produced. The entire equation twelve is the Socially Efficient Solution, as lines three & four of equation twelve incorporates the negative externality imposed by individual B on individual A. Equation twelve can be simply stated as follows:

$$U^{A_1} / U^{B_1} = (U^{A_2} / U^{B_2}) - (f'_A / f'_B) \quad (13)$$

The market solution:

The market solution is well known from consumer theory, letting both individuals maximise their utility for a given income and prices:

$$U^{B_1} / U^{B_2} = U^{A_1} / U^{A_2}$$

We must adjust the market so that U^B_1 / U^B_2 gets smaller.

This implies that the Marginal Utility of X^B_1 must be decreased relative to that of X^B_2 , compared with the market solution. This implies that in the social optimum the quantity of X^B_1 is larger than in the market.

The social optimum:

$$\begin{array}{ccccccc}
 + & = & + & (-) & + & + & + \\
 U^B_1 / U^B_2 & = & U^A_1 / U^A_2 & - & U^A_3 & (f' / U^A_2) & \\
 + & = & + & (-) & + & & + \\
 + & = & + & & & & -
 \end{array}$$

The left hand side and the first term on the right hand side is the market solution, (both are positive), whereas the entire equation is the social optimum (this includes a negative term). This implies that the right hand side of the market optimum is larger than the social optimum. To obtain the social optimum the left hand side must therefore decrease, as a mix between X_1 and X_2 has changed. This implies that X^B_1 / X^B_2 must be larger, if so, U^B_1 / U^B_2 will decrease. Therefore consumer B must increase the consumption of X_1 relative to X_2 .

The external effects are those side effects from consumption and / or production activities on consumption and / or production activities on others, that the party responsible doesn't take into account when they interact in the market(Bohm, P:1987: 33). It must be emphasized that measurement difficulties are not sufficient reason for refraining from corrective action. Something must be done, even if we use arbitrary measures to enforce it.

SOCIAL VERSUS PRIVATE DEMAND

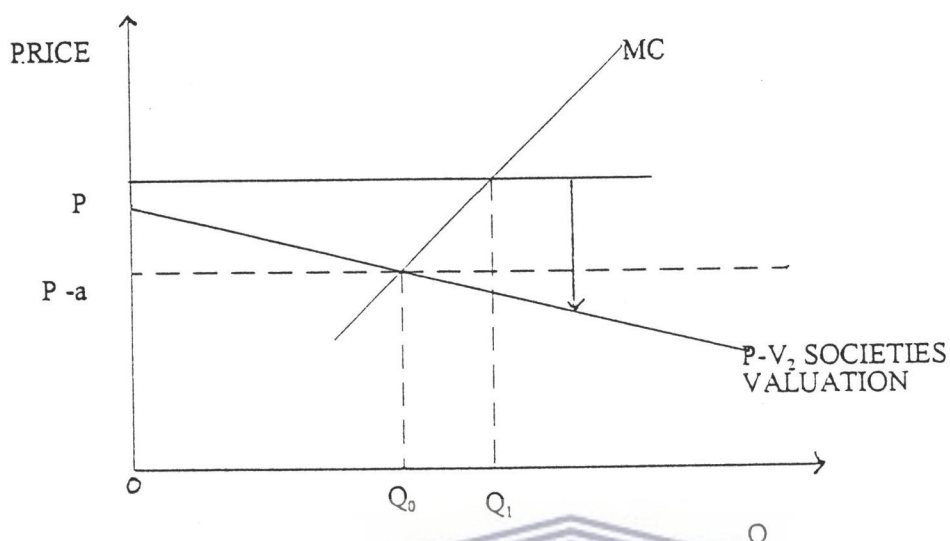


FIGURE EIGHT

(Source: P. Bohm: 33)

Figure eight is an example of an externality that arises from production. A negative externality (V_2) arises from the production of an amount of commodity, q . q_0 is the optimal desired production level, i.e. the position where society's total valuation of marginal changes in production is equal to the Marginal Cost (MC). But this is less than the private optimal level of production, i.e. q_1 . The state thus has to intervene to correct the production level (due to the existence of a negative externality) to its' optimum i.e. where $MC = P - V_2$ at q_0 .

As no such attention is paid in the market economy, to these effects which could be both positive and negative, the government must intervene (in such situations) with measures such as taxes and subsidies, because the Social instead of the Private Marginal Cost and Marginal Revenue should be equalised. In some instances social efficiency coincides with the more well-known concept of efficiency in a private enterprise, i.e. minimum costs, maximum profits, etc. But in other cases they don't coincide at all. Social efficiency involves an attempt to consider all individual evaluations of all consequences of economic acts (P. Bohm:1987:xii).

When maximising the Social Rate of Return (SRR) we can attain a Pareto efficient allocation of resources in the economy, i.e. no one can be made better-off in the economy without someone being made worse-off. A possible alternative to state intervention in the economy could be the establishment of private markets, to deal with this short-coming, by internalising the externality i.e. Coase Theorem (Baker,S: 1990).

The aim is to maximise social welfare,

$$W = f(U_1 ; \dots ; U_N)$$

The constraints that are faced by individuals are:

- 1) production
- 2) efficiency

For maximum social welfare, the maximum feasible set from production must be tangential to the social welfare function. For this to occur, we need efficiency in:

- 1) production and consumption.
- 2) distribution of goods and services.

In this mini-thesis, emphasis will be placed on production and allocative efficiency, as correcting this, will make the country better off, i.e. move us to the point of tangency.

THE NEGATIVE EFFECTS OF CONSUMPTION

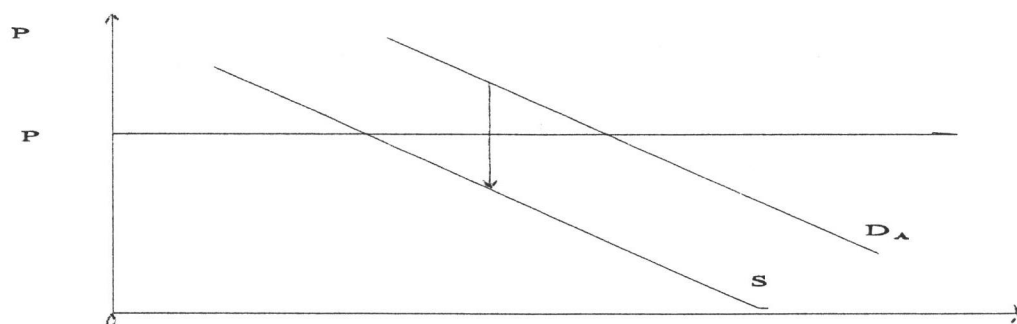


FIGURE NINE A's CONSUMPTION OF X

(Source: Bohm, P:30:2.6)

Figure 9 illustrates the case in which A's consumption of a commodity creates a negative externality i.e. the social valuation (S) of a marginal increment in A's consumption is less than A's valuation, i.e. the S curve lies below A's demand curve.

Formally we can state it as follows; parallel to the previous model.

$$U^A = U^A (X^A_1, X^A_2)$$

Where X_1 & X_2 are two goods consumed by individual A.

and

$$U^B = U^B (X^B_1, X^B_2, ZD)$$

Where X_1 & X_2 are goods consumed by individual B,
but ZD is a disutility incurred by B due to the actions of A.



i.e. $ZD = f (X^A_1)$

In this case there is a marginal disutility from an increase in ZD. As a result of inadequate housing supply, infrastructure and the urbanisation of large numbers of the population we presently have what is called "squatter settlements" or "informal housing". This is partly due to the open access to vacant land and a lack of property rights. There are various / numerous names for this phenomenon but a social-ill by any name remains a social-ill. Due to this phenomenon we have various negative externalities (both direct and indirect), eg. Pollution, Overcrowding, Deforestation, Crime etc.

The external effects from inadequate housing are mainly negative. The counterpart of this is that increased housing removes these negative externalities, and this constitutes the positive externality from housing. The negative external effects from inadequate housing is connected to different problems linked to the lack of housing.

Due to a lack of Electrification (it is also difficult to electrify when you lack formal housing), the people gather wood as a source of energy. What further intensifies the problem is the scale in which this occurs. We have severe deforestation, when people are moving even further away from their "homes" in their quest for wood(energy). The use of wood, coal and gas impacts on the environment i.e. Pollution, is even more severe when you consider the extent to which this occurs. It is quite peculiar when you consider that South Africa produces 60% of the electricity in Southern Africa, yet 50% of South Africans don't have access to this electricity. Electricity is probably the least polluting amongst all the different energy sources. Besides the environmental impacts, if society is "electrified" then it will act as a springboard for all the secondary industries that produce electrical and electrical associated goods and services. The prospects for production and growth are invaluable for the future of the economy, given the aims and the objectives of the R.D.P. Besides that people will not spend / loose time that could be spent productively, in the accumulation of wood.

Besides the afore-mentioned the inhabitants of these squatter settlements are farmers by heritage, and a small percentage of them still continue their farming practices in the urban areas, in some form or the other. Deforestation allows for the soil to be even further exposed, but besides this, others in society incur a disutility because of the non-existence of the forests. Thus coupled with deforestation we also have overgrazing. When it rains all the productive top soil is simply washed away. This soil, in turn, enters the river system as silt, and it stifles and kills all the water organisms in the river. We can thus clearly see that from the one activity (wood collecting) we have these various spin-off activities that result in reductions in Health levels, Vegetation Growth, Aesthetics etc. Electricity also pollutes, but to a lesser degree than other forms of energy sources, such as gas, oil and wood. 100,000 individual sources of burning is much worse than an Industrial Energy Production Site. The site is also easier to control and regulate with respect to its' level of pollution.

The areas that the people have moved into are also severely overpopulated. The scarcity of proper water supply and sanitation facilities further exacerbate the problem. The result is low health standards coupled with numerous health hazards and increasing intakes at hospitals. This has two direct economic effects; firstly, the States' total expenditure on health increases and, secondly, individuals within society have their economic ability / activities / time severely curtailed.

At the present rate of Rural Water Schemes supply, it will take approximately 20 to 30 years for at least 80% of the rural inhabitants to get access to water supply (Minister of Water Affairs when interviewed on T.V.). The same could be said of the urban water availability. Yet the availability of water is essential for good health, safety and comfort. It would also decrease female labour time spent on water collection, thereby freeing them for possible productive activity, and also make water more readily available to fulfill its role in the production process.

ESTIMATED COVERAGE IN RURAL AREAS

AREA	WATER SUPPLY		SANITATION	
	%	NUMBER	%	NUMBER
Gazankulu	95	712 500	20	150 000
Kangwane	75	262 500	20	70 000
Kwandebele	90	270 000	30	90 000
Kwazulu	25	875 000	10	350 000
Lebowa	50	1 250 000	10	250 000
Qwaqwa	90	270 000	20	60 000
Bophuthatswana	60	780 000	20	260 000
Ciskei	60	300 000	20	100 000
Transkei	25	625 000	10	250 000
Venda	80	320 000	10	40 000
S.A. Development Trust	60	120 000	10	20 000
Provincial Land	50	250 000	10	50 000
Commercial Farms	80	2 800 000	10	70 000
TOTAL	53	8 835 000	14	2 390 000

TABLE THREE

(Source: SAIRR: 1993)

Table 3 clearly reflects the lack of water supply to a large number of areas. It also reflects something more intriguing i.e. 53% have access to water but only 14% of them have some sort of sanitation facility or the other (including waterborne sanitation). This is another indication of the Apartheid philosophy i.e. that water is more important as an input for production instead of a direct consumption good, for the population in these areas.

The methods and materials used in the construction of these shacks, in the informal settlements, are prone to fires (as is often the case), which destroys all the peoples wealth and possessions, and results in the severe pollution of the atmosphere. Poverty also contributes to three urban problems in general:

- 1) there is an increase in crime because the poor have a very low opportunity cost of time.
- 2) fiscal problems increase when a large fraction of the low- income citizens are grouped together, eg. murder, rape, theft etc.
- 3) student achievement levels are low and they tend to pull down the achievement levels of others.

The poor are essentially trapped in a vicious cycle of poverty, without any hope of ever getting out of the trap. This eventually leads to a social behaviour, with its resulting negative externalities eg. health hazards etc. As mentioned previously commuting and time consumed commuting are also externalities that have to be internalised. There thus has to be a trade-off between prices of housing and commuting (costs and time). By this I infer that, because the poor are situated far from the city centre it is both time consuming and costly for them to travel to and from work, therefore their salaries and the prices of houses should reflect this, i.e. lower house prices and higher salaries. In South Africa we have this situation as opposed to the general international situation i.e. where the poor are situated close to the Central Business Districts.

Summing up, there are many arguments supporting the theory that the private demand for housing does not reflect the total social demand for housing. The situation is opposite to the one illustrated in diagram 9 on page 22: the social demand curve is to the left of the private demand curve due to the positive effects to the surrounding people from *new* housing. We can also stress that only *new* housing has this effect. If someone buys an already existing house there is only a redistributive effect of the already positive effects from this house.

It is quite obvious, from the aforementioned, that increasing the supply of houses is imperative. The market cannot achieve this alone because of the various inefficiencies that exist in the market. The supply is too low as social demand is much higher than private demand (refer to diagram 9 on page 22). Alternatively stated, the supply curve for housing must shift outwards i.e. to the right and / or the demand curve for housing must shift outwards i.e. to the right, in order to increase the quantity of houses supplied. One way to achieve this objective is to subsidise housing (discussed in part D). It would firstly rid society of squatter camps (which are the source of the externalities), increase productive labour time and increase economic opportunities of the previously disenfranchised. Secondly, in general, it would have a large number of positive spin-off effects that are beneficial to growth and stability in the South African economy.

C 2] PUBLIC GOODS:

David Hume (Sandmo,A:1989) said that there are some tasks that are unprofitable to perform for any single individual, yet profitable for society as a whole, which therefore could be performed through collective action. Paul Samuelson (Sandmo,A:1989) posed, and partly solved the central problems in the normative theory of public expenditure:

- 1) How can one define analytical goods that are consumed collectively?
- 2) What is the optimal allocation of resources to the production of these aforementioned goods?

THE SAMUELSON MODEL:

The objective of this model is to derive conditions for the optimal resource allocation in an economy in which there are both public and private goods. The nature of these goods are defined by the equations which give the relationship between individual and aggregate consumption.

For private goods, the total quantity consumed is the summation of all the individual quantities consumed, i.e.

$$X_j = \sum_{i=1}^I X^i_j, \quad (j = 0, \dots, J) \quad (1)$$

where the superscript refers to individuals and the subscript to commodities.

For public goods, the relationship is one of equality between individual and total consumption, i.e.

$$X_k = X^i_k, \quad (i = 1, \dots, I; k = J+1, \dots, J+1) \quad (2)$$

Individual utility functions (preferences) are then defined over the quantities that they consume of both the public and the private goods. The utility of individual i is:

$$\begin{aligned} U^i &= U^i(X^i_0, \dots, X^i_j; X^i_{j+1}, \dots, X^i_{j+k}) \\ &= U^i(X^i_0, \dots, X^i_j; X_{j+1}, \dots, X_{j+k}) \quad (i = 1, \dots, I) \end{aligned} \quad (3)$$

Equation 2 implies that the consumption benefits of any one individual depends on the total availability of the good, and it does not depend on the benefits enjoyed by others, i.e. non-rivalry in consumption (one of the properties of public goods). We look at the consumption side and assume that the conditions for efficient production are satisfied, such that the production possibilities for the economy can be summarised in the Transformation or Production Possibility Equation,

$$F(X_0, \dots, X_j; X_{j+1}, \dots, X_{j+k}) = 0 \quad (4)$$

The solution for the utility maximisation of these two individuals can be shown graphically in a two-dimensional case i.e. figure 10.

UTILITY MAXIMISATION

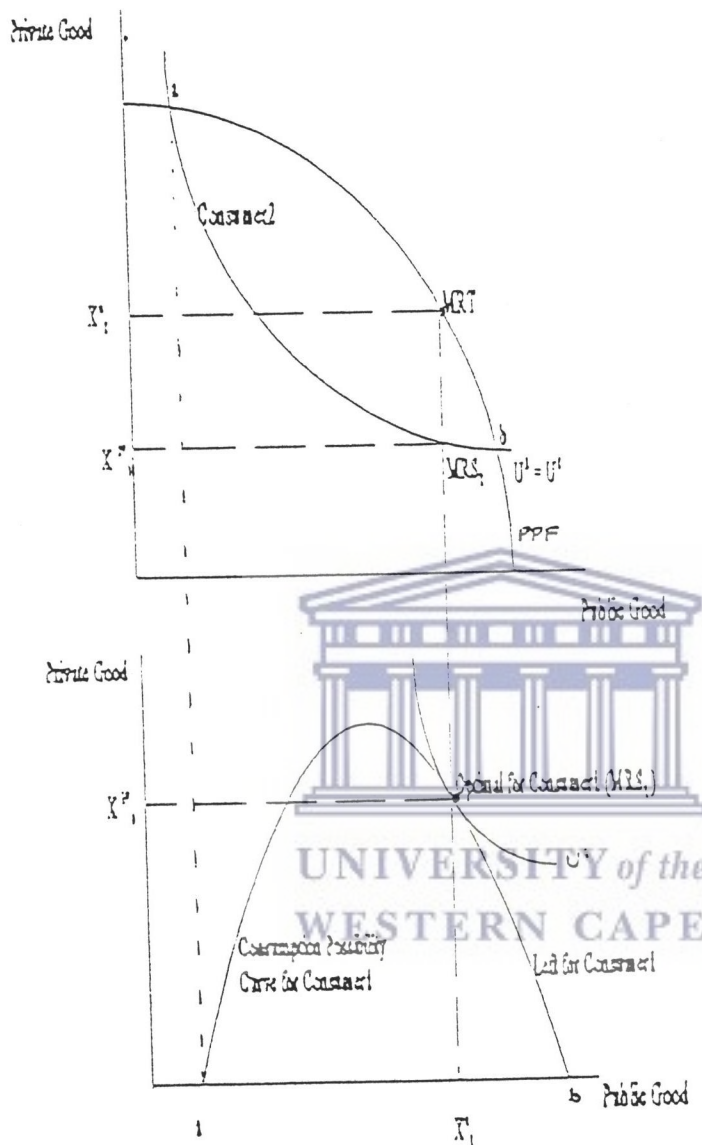


FIGURE TEN

(Source: Sandmo, A: 1989)

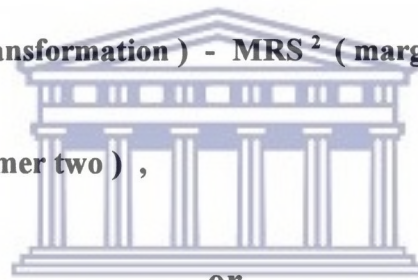
Referring to diagram 10; there are two consumers and two goods (one public and one private). The upper panel depicts a Production Possibility Frontier (PPF), as well as an indifference curve corresponding to a fixed level of utility, for consumer two. Since these curves intersect, there is obviously a range of allocations which satisfies the two constraints. In the lower panel, curve ab shows the consumption possibilities for consumer one, and points a & b correspond to the points of intersection of the PPF and the indifference curve in the upper panel.

For any point on U^2 between a and b, both individuals consume the same amount of the public good, while the level of consumption of the private good, for consumer one, is the vertical difference between the PPF and consumer two's indifference curve. The best allocation for individual one is therefore the point of tangency of his indifference curve and his consumption possibility curve, in the lower panel. The optimum supply of the public good is thus x_1^* and consumer one's consumption of the private good is $x_0^{1*} - x_0^{2*}$ and consumer two's consumption of the private good is x_0^{2*} .

The slope of the consumption possibility curve must equal the difference of the slopes of the two curves from which it is derived. At the point of tangency ;

$$\mathbf{MRS^1 (marginal rate of substitution of consumer one) = MRT}$$

$$\mathbf{(marginal rate of transformation) - MRS^2 (marginal rate of substitution of consumer two) ,}$$



or

UNIVERSITY of the

WESTERN CAPE

$$\mathbf{MRS^1 + MRS^2 = MRT}$$

This condition can be rewritten (where subscripts denote partial derivatives) as:

$$U^1_1 / U^1_0 + U^2_1 / U^2_0 = F_1 / F_0 \quad (5)$$

i.e. the sum of the MRS should be equal to the MRT between public and private goods. Since the private good can be taken as a numeraire commodity, the sum of the marginal willingness to pay for the public good should be equal to the marginal cost of production. An extra unit of supply benefits both consumers simultaneously, therefore the marginal total benefit equals the sum of the marginal benefits accruing to all consumers.

To extend the analysis to more than two consumers, simply means that we have to add more terms to the left-hand side of equation five. An increase in public goods simply requires the introduction of similar conditions for every good. For any given number of public goods, the allocation of private goods should be Pareto Optimum relative to this, so that the usual marginal conditions must hold, namely;

$$U^i_j / U^i_0 = F_j / F_0, \quad (i = 1, \dots, I ; j = 1, \dots, J) \quad (6)$$

$$\sum_{i=1}^I U^i_k / U^i_0 = F_k / F_0, \quad (k = J+1, \dots, J+K) \quad (7)$$

Many consumption goods may be classified as public goods and turn out to have important elements of "privateness", eg. a public good like a national park can't really be enjoyed without expenditure on private goods like hiking equipment etc. In the theory there is no presumption that the benefit an individual derives from a public good is independent of his consumption of private goods. A way to do this is to use the Consumption Technology Approach, that assumes that some goods like road trips and nature hikes are intrinsically private, but are produced by the individual by means of private and public goods inputs. Some benefits derived from public goods may depend on the consumption of it by others eg. crowded roads or a congested national park. The advantage of the consumption technology approach to the theory of public goods lies not in greater generality, but in a formulation which captures in a more intuitive fashion, a natural way of thinking about public goods. This type of situation is typical for housing. Houses are private, but the use of them add to the public goods effect, eg. if all of us have houses, then this improves public health in the area, which is a public good.

A resource allocation is pareto efficient if no one can be made better off without making someone else worse off. In the private market this occurs when the individual's marginal rate of substitution is equal to the marginal rate of transformation. In contrast, pure public goods are efficiently supplied when the sum of the marginal rates of substitution (over all individuals) is equal to the marginal rate of transformation (Stiglitz: 1988).

The MRT tells us how much of the private good must be given up to get one more unit of the public good. The MRS of private goods for public goods tells us how much of the private good each individual is willing to give up to get one more unit of the public good. For efficiency, the total amount individuals are willing to give up (the sum of the MRS) must equal the amount that they have to give up (MRT). The problem however, is that housing possesses dimensions of both public and private goods.

C3] PUBLIC BADS:

In the market we have too little consumption of public goods. Each consumer acts according to $MRS = MRT$, and overlooks the benefits of their actions on others. For public bads, too much is produced. Each consumer assesses only their own disutility, and the effects on others are ignored. It is the inverse of Public Goods. In the Public Goods model we have marginal utility and in Public Bads we have marginal disutility, and the indifference curves are inversed.

A TABULATION OF THE VARIOUS EXTERNALITIES RESULTING FROM THE LACK OF HOUSING :

ACTIVITY	EXTERNALITY	PUBLIC GOOD	PUBLIC BAD
POLLUTION	*		*
DEFORESTATION			*
OVERCROWDING	*		*
CRIME	*		*
THE LACK OF TRANSPORT			*
HEALTH HAZARDS	*		*
FIRE	*		*

We previously mentioned / discussed all the above-mentioned externalities / public bads. The table is used to differentiate between an externality and a public bad, as different policies have to be adopted for these.

When it is so, the market price, or the market demand does not reflect the social demand for housing. In Bohms' way, this makes a too low market quantity of this good. We have to add the effects from positive externalities as a positive shift in the demand curve. Then we must consider the public goods effects i.e. by vertical aggregation of the demand curves (excluding the private demand for housing). The market will not supply the socially efficient quantity of new houses. This can be demonstrated by the following diagram.

SOCIAL DEMAND FOR HOUSING

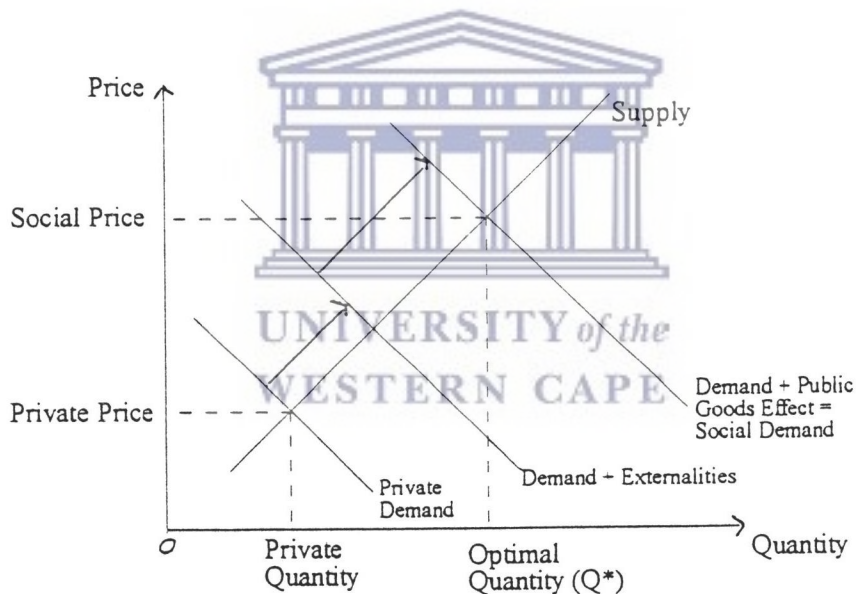



FIGURE ELEVEN

From the above diagram we can clearly see that the private supply of housing is well below the socially optimum supply of housing. The state must intervene in the market to reach Q^* , the social optimum quantity. There is the possibility that new formal sector housing provision might impose negative externalities too. If one accepts the existence of pecuniary externalities, then there is the crowding out effect to consider, ie. will the private provision of housing be reduced by government involvement in the housing sector. The rate of urbanisation might increase and congestion might become a feature of towns as a result.

C4] INCOME DISTRIBUTION & LACK OF

MARKETS:



The highly skewed income distribution in South Africa (Gini-coefficient of 0,6) and the lack of markets are two other important factors that contribute to market failure and strengthens the case for government intervention in South Africa. These are crucial issues that have a severe impact on the efficient running of the market. I just touch the surface of these issues because it is beyond the scope of my paper. These arguments further strengthens the case for government intervention in the housing market to remove the backlog of houses in the Western Cape and South Africa in general.

SUMMING UP:

The arguments from the above sections all support the contention that the private market will not produce the social optimal quantity of housing. The positive external effects from housing, the public goods effect, and the skewed income distribution all support the contention that the private market will supply a too small quantity of housing. Hence there is a need for some public policy intervention to obtain more housing. My argument above is based on the lack of social efficiency from the private market. There is of course also important political arguments for increased housing, based on it's effects for the well-being of the low-income groups. However, my analysis adds to this contention as the market is further inefficient as it ignores the external effects and the public goods nature of some of these effects.

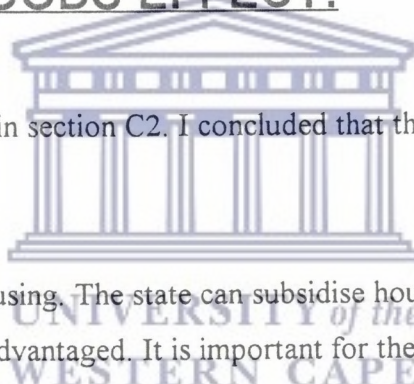
D] EVALUATION OF POLICY MEASURES

AFFECTING HOUSING:

From the previous sections we can clearly see that the free market and its corresponding mechanisms are inefficient, in the sense that it is not holistic in its approach. It therefore does not correspond with the desirable social outcome. It is imperative that we incorporate the externalities that arise from the provision of housing to attain a desirable social outcome.

1) THE PUBLIC GOODS EFFECT:

I discussed this effect previously in section C2. I concluded that there is a need to increase housing beyond the market supply.



1. This argument is limited to housing. The state can subsidise housing loans, the plots or build and rent out housing units to the disadvantaged. It is important for the state to link it to the use of houses, it must not be possible to take financial advantage of the aforementioned measures, example: do not make it possible to resell, as the profits from the sale could possibly be used elsewhere and not necessarily for the purchase of a new house. We must therefore secure that the subsidy is used for the purpose it was initiated for in the first place. The subsidising of housing must be linked to living in the house. If not then the subsidies are taken away.

2) In section C1 I argued that a negative externality arises from the use of firewood. It is extremely difficult to tax deforestation, therefore the state must subsidise the alternative i.e. other sources of energy. Eskom has an excess of surplus energy, yet a large number of the inhabitants do not have electricity. The state in conjunction with Eskom, must ensure that an Outreach Programme reaches fruition. The state can also increase the use of other environmental friendly sources of energy by enforcing a ban on deforestation.

Because it is difficult to enforce a ban, and it is easier than a tax, the state must therefore subsidise electricity (or electrical products). However, a precondition to access the electricity grid is formal housing. Hence, a housing programme will indirectly support less use of firewood, because it connects more families to the electricity grid.

Subsidising is the only viable option because the poor are mainly affected. There will be an income effect if the state introduces a tax on fuelwood because they will be taxing the poor. Thus subsidising would be the most efficient alternative. The subsidisation of housing will have environmental benefits.

NET EFFECT OF A SUBSIDY

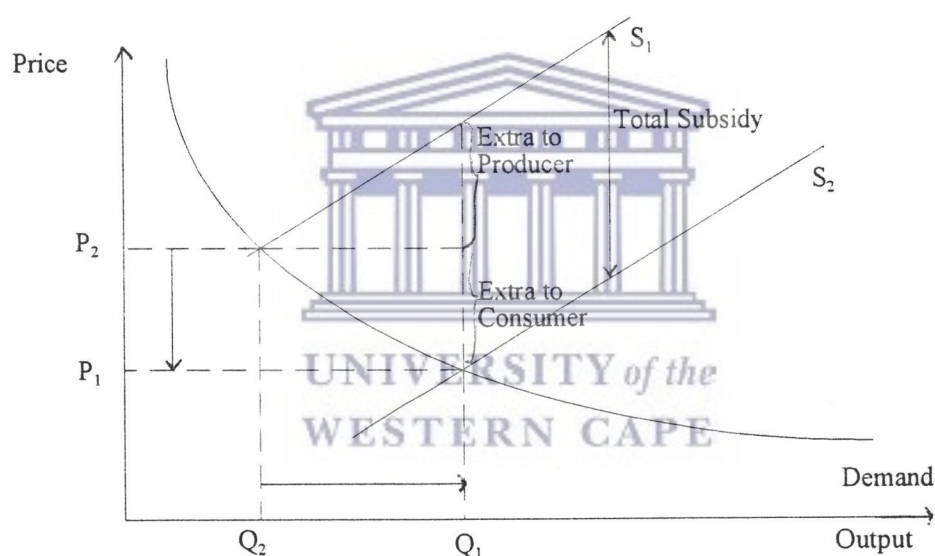


FIGURE TWELVE

With the implementation of a subsidy, supply increased from S_1 to S_2 , with gains accruing to both the producer and the consumer. The net effect of the subsidy is a price reduction from P_2 to P_1 , and Q (output of housing) increases, from Q_2 to Q_1 .

A subsidy is not necessarily good because of its' welfare effects, but the government would have reached its' objective ie. from a point of cost, a subsidy may not be a good thing but the governments objective of increasing the supply of housing would be achieved.

2) EXTERNALITIES

DO WE TAX OR FINE PEOPLE FOR WASTE?

We have to create a comprehensive system for waste removal and include incentives for delivery. Since there is no chance to let the polluter pay, (the polluters are generally poor and this will have a negative effect on the income the economy), the state must pay the polluter not to pollute. Hartwick discusses the issue whether there is a right to pollute or not. If there is a right to pollute then you must be paid not to pollute. The idea is a close substitute to the externality which you can tax or subsidise.

A person must be prevented from impacting on another decision whether you tax or pay (subsidise) them, to prevent them from a particular undesirable activity.

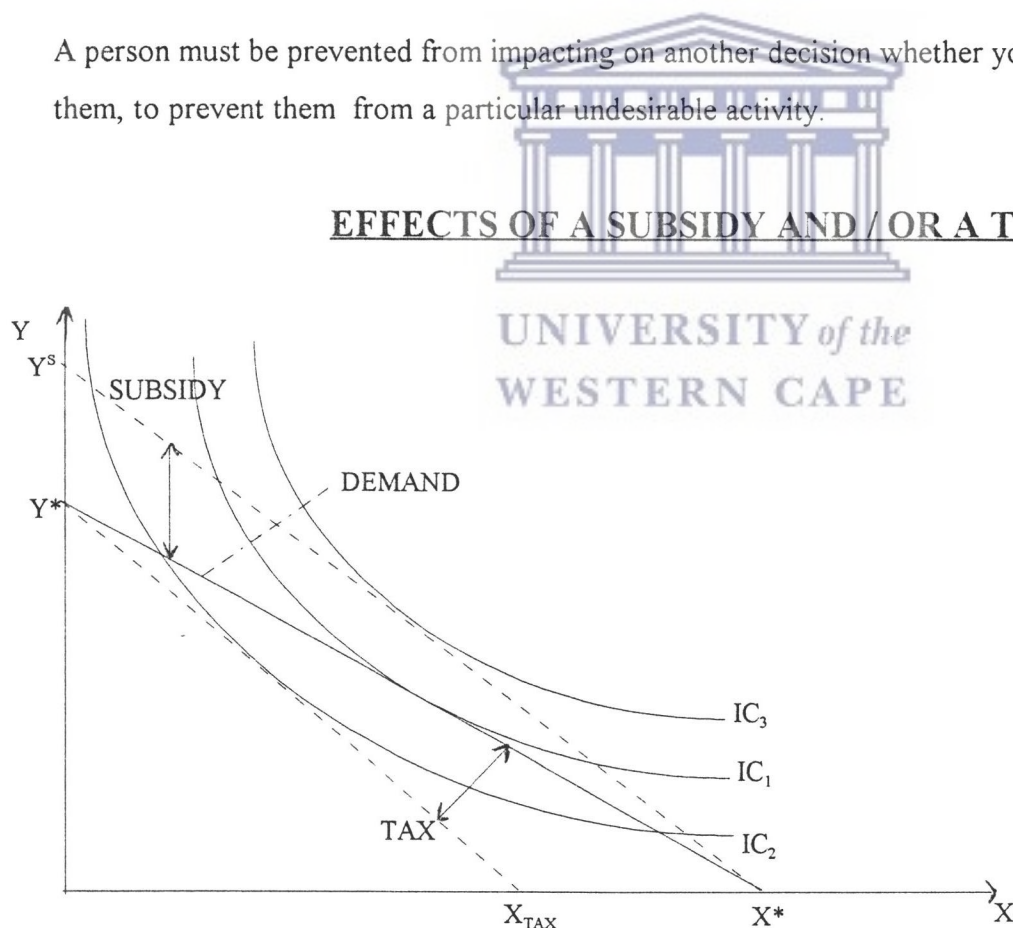


FIGURE THIRTEEN

(Source: Hartwick & Olliwiler: 1986)

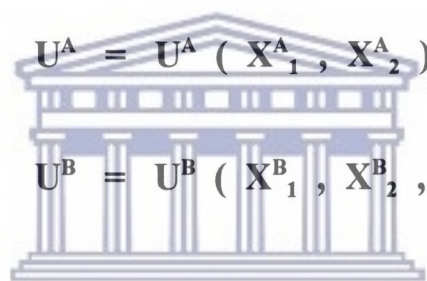
In figure thirteen, if you tax X, it implies that there will be less of X.

If you subsidise Y, it implies there will be more of Y.

This implies that families are not worse-off, but simply that they have switched to a new preferred (better) option. We initially were at Indifference Curve one, with a tax we move to IC2 and with a subsidy we move to IC3.

A person must be prevented from impacting on another persons' decision. The state can tax or pay them to prevent them from a particular undesirable activity. This was previously discussed in Section C.

Example :


$$U^A = U^A (X^A_1 , X^A_2)$$
$$U^B = U^B (X^B_1 , X^B_2 , X^A_1)$$

Individual A's activity impacts on individual B's activity. Therefore A has to be prevented from impacting on B's utility. If there is no way for the polluter to pay, the state must pay the polluter not to pollute. Certain activities must be subsidised to prevent pollution by the poor, example: subsidising electrical equipment to avoid deforestation and fire. It must be made easier to switch to electricity. Electricity and electrical equipment are expensive and people generally lack cash, which will result in them switching to their previous methods. A possible way around this is the "new" electricity cards and boxes, that are already installed in certain areas. The state and / or Eskom could own the stoves and the ovens etc. in these houses. Sanitation and water supply are both public and private goods. But the state must ensure both, it's accessibility and the availability to the poor.

It is quite obvious from the above that state and / or private sector involvement is required in order to reap the benefits from housing. Furthermore subsidies (in all its' forms) are better suited than taxes to attain these aforementioned goals, as the problem mainly affects the poorer sector of society.

KEY RECOMMENDATIONS:

There are a number of problems associated with the housing programme in South Africa viz:

- 1) A continual commitment to owner-occupation and a reliance upon market forces. What is also very disturbing is the alliance that was formed, on the afore-mentioned basis, between the Development Bank of South Africa, the Independent Development Trust, the South African Housing Trust and the Urban Foundation. This is very disturbing because the members of the afore-mentioned union have their roots deeply embedded in capitalism and the market system. Their decisions / proposals would therefore most probably be profit instead of welfare driven. I have previously demonstrated in section C1 that a competitive market supplies too few houses, due to the fact that they neglect the positive externalities from housing.
- 2) Current proposals exclude an entire range of essential institutional reforms. A number of these essentials have been abandoned to the vagaries of the market forces.
- 3) No provision is made for the housing of the poorest households, for whom even subsidised provision is too expensive.

The main recommendation is to use measures that make the provision of housing cheaper. A solution to the aforementioned can be found in the states' provision of rented housing. The state can:

- build itself;
- guarantee loans;
- subsidise or charge rental at market prices.
- make mortgages cheaper, thereby increasing demand.
- the state must implement some form of checks and balances to prevent abuse, we can look at the pitfalls with the current R150 00 mortgage guarantee scheme as a guide.

The subsidy must be linked to the use of housing to prevent windfall gains. This need not necessarily imply owner-occupation, we could construct for rental with ownership being transferred after a certain period (normally 25 to 30 years), with the proviso that all rents, lights, rates, and water have been paid.

REACHING OPTIMUM : BY INCREASING DEMAND AND / OR SUPPLY.

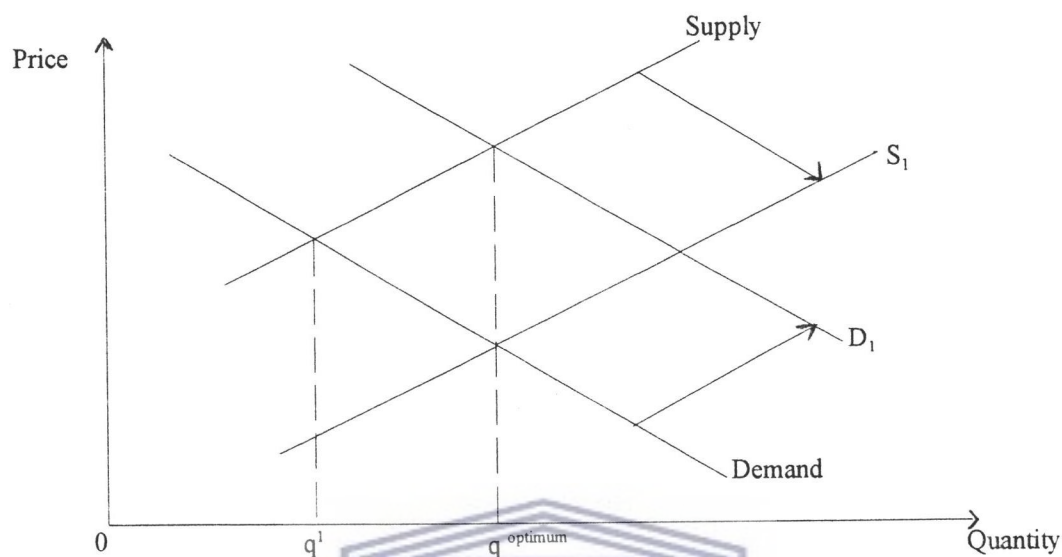


FIGURE FOURTEEN

q_1 is the equilibrium position if the market was left to market forces alone. q_{optimum} is the equilibrium position after the government intervenes in the market, i.e. by increasing demand to D_1 or by increasing supply to S_1 . q_{optimum} is obviously the preferred position.

All this does not preclude a more market orientated stance in the future. As the World Bank, (1993:12), puts it:

The task facing South Africa is similar to that of the reconstruction of post-war Europe, or the unification of Germany in the 1990's. In both South Africa's and in the cases, it may be argued that a short-term reduction in gross inequities is required for medium to long-term economic growth to reach it's potential, in an equitable manner. Therefore, a strategy for a significant transfer of resources during the critical transition period should be considered. This strategy would require policy instruments that would necessarily be appropriate for the medium and long-term vertical and horizontal balance. (MY EMPHASIS)

State delivery of rented accommodation need not be at the expense of existing forms of provision, but the former must not be allowed to obstruct the deletion of the housing backlog, for any realistic chance of meeting the housing needs of those who need it most.

The state intervention must not only address market imperfections but also the inequitable distribution of gains accruing from these developments. The state must ensure that the pursuit of these does not prove to be an obstacle in the provision of housing, and this includes the government objective of Black Empowerment.

Under the circumstances it would be futile to offer a "master plan" for the provision of housing, as economic and political circumstances differ from province to province and region to region. Implementation is therefore upon institutional reform and capacity building, where priorities are chosen politically in the light of economic circumstances. There will be the inevitable trade-offs with other expenditure programmes and between the "houseless" people. It is of utmost importance to ensure genuine and effective community participation in the provision of housing, rather than the superimposition of pre-conceived schemes through, or upon, the community.

Currently there are over 390 000 hectares of vacant land or developable land in the six major metropolitan regions of South Africa. 70 000 hectares of this is held by arms of the state. For a backlog of 1,8 million housing units, it has been estimated that 65 000 hectares of building land would be required (Merg Report: 1993). It would thus appear that there is no obstacle to the provision of sufficient land for the housing programme, as this land is situated in areas where it is needed. There are however obstacles to the financing of some of these costs.

In terms of building material, the two major physical inputs are cement and bricks. The cement industry operated at 71% of its capacity during the 1980's and at 59% in 1991. If they increase their capacity to 85% then 350 000 housing units can be accommodated. But the major problem in the cement industry is that there are just three companies monopolizing the sector. They have been involved in price-fixing and market sharing, resulting in monopoly prices for cement and its related products. This has to be regulated by the state to ensure that prices of these goods reflect the cost of production, and thereby ensuring that there are no bottle-necks in the housing programme. When

only three companies are involved there normally emerges a situation where no free competition exists. Some form of oligopolistic behaviour would occur, and this has to be handled by the government to avoid a loss of efficiency. The cement cartels argue that it was regionally based and effectively kept prices down by reducing advertising and transport costs.

In the brick industry there are more limited economies of scale and less concentration. A housing programme of 350 000 units would raise the capacity from its present range by between 50 and 60% to 65%. There is also scope in this industry for small-scale plants which as yet has not been exploited. But regulation, (in both industries), is necessary to ensure adequate distribution and reasonable prices.

There are also a number of dangers with regard to building firms which have to be monitored by the state viz:

- 1) Inflated tenders.
- 2) Use of casual labour leading to dismissal and a skeleton permanent workforce (exploitation and Union problems).

These factors tend to increase cost.



There are four main areas for policy intervention:

- 1) A policy for subsidised cost for housing on the financial side eg. mortgages with low interest etc.
- 2) A policy for added public supply of housing. The government shifts the supply curve to the right, by means of government production, and run the risk of crowding out.
- 3) A supply side policy for infrastructure (land, roads, sewage, water, etc,) which makes housing cheaper.
- 4) A policy for market control, to ensure no monopolistic competition will exist in the housing supply sector, and that we have a competitive market.

se that this is not an argument for housing for the poor, but it adds to that
en if there was adequate housing for the poor, there are sound environmental reasons
for a government policy to increase housing.

I stated in section D that subsidies, to increase the supply of housing, is the most effective / efficient measure for the government (from a social welfare perspective). It is therefore imperative to stress this argument in section E as well. To develop land, to support the building industry, and to organise the supply side (infrastructure, planning, etc.), will all shift the supply curve to the right ie. increase supply. On the demand side different kinds of subsidies, like access to mortgages with low interest rates, lower prices for water, sewage and renovation will make it easier for people to move in. From my point of view this will add to demand, but it must not replace the private incentive for housing. It is important to remember that there must be some private costs as well, to secure the maintenance of the houses.

F] CONCLUSION:



UNIVERSITY of the

WESTERN CAPE

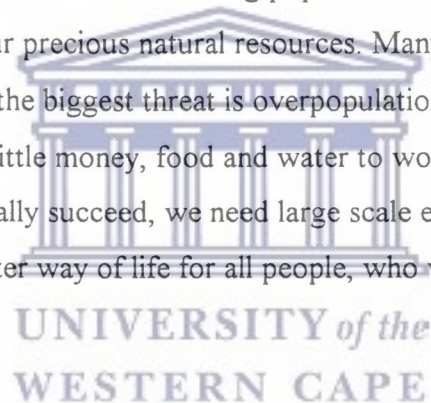
The environment is now a matter of grave concern to everyone including the developing countries. The degradation of the environment can no longer be ignored and urgent solutions must be found. Unfortunately, many developed countries seem intent on laying the blame of the world's environmental problems on the developing countries. Yet, by any measure, it is developed countries which have most assaulted our environment. Nuclear testing, excessive use of fossil fuels, private transportation, release of Chloro Fluoro Carbons into the atmosphere, massive wastage of paper, toxic chemical disposal, all these and many more are the direct result of the lifestyle of the rich.

Poverty, of course, contributes towards environmental decline, (as demonstrated in the previous section), but it is only because the poor can not help themselves. If they are denied the few resources they have, they are going to become poorer and would cause further environmental degradation. We must all share the burden of keeping our environment liveable. But the sharing must be fair and in accordance with the means at the disposal of each of us. They must not be made to pay for the past and present sins of the rich.

The need to protect the environment should be viewed in a balanced perspective and due emphasis be accorded to promoting economic growth and sustainable development, including the eradication of poverty, meeting the basic needs such as housing and enhancing the quality of life.

The responsibility of ensuring a better environment should be equally shared, (both nationally and internationally), and the ability of developing countries to respond should be taken into account. Those who are involved in policy planning and decision-making at high levels, whether in Government, the Corporate Sector and other areas where decisions have far reaching implications, can appreciate that it is better to carefully consider all the alternatives first before making seriously considered decisions, than to rush headlong into decisions, only to regret them later.

All human activity has an impact on the environment. In the modern South Africa, the land is under extreme pressure from the needs of an ever increasing population and everybody must share in the responsibility of taking care of our precious natural resources. Many things contribute to land degradation in South Africa, but the biggest threat is overpopulation and poverty. It is not possible to expect people who have very little money, food and water to worry about conserving our land. Therefore, for conservation to really succeed, we need large scale economic development which can provide jobs and a better way of life for all people, who will then be able to share and care for our land.



But economic development itself can bring about environmental damage. Insensitive heavy industry can cause air and water pollution, bad agricultural practice can destroy wetlands and cause soil erosion, and mining if not conducted with care and concern can leave unsightly scars on the landscape. It is most important therefore to find ways to achieve essential economic development with all the advantages this brings without sacrificing a healthy environment. After the land has released its riches from which we all benefit, we are morally bound to restore it for future generations.

It is quite evident from the aforementioned analysis that the issue of the environment must be included as a variable in the Housing Equation. But more apparent is the fact that the lack of housing has numerous negative effects on economic activity, the economy and the environment. Including the environment as a variable in the Housing Equation, further increases the need to eliminate the housing backlog.

" in democracies the poor have more sovereign power than the men of property ; for they are more numerous and the decisions of the majority prevail. "

[Aristotle, The Politics]



UNIVERSITY *of the*
WESTERN CAPE

BIBLIOGRAPHY:

ANC, 1992. *PROCEEDINGS OF THE ANC NATIONAL ELECTRIFICATION CONFERENCE*, UNIVERSITY OF CAPE TOWN, FEB, BELLVILLE:CDS

BAKER,S. & ELLIOT,C. 1990. *THE PROBLEM OF SOCIAL COST, RONALD COARSE IN READINGS IN PUBLIC SECTOR ECONOMICS*, D.H. HEATH & CO, CANADA

BOHM, P. 1987. *SOCIAL EFFICIENCY, A CONCISE INTRODUCTION TO WELFARE ECONOMICS*, SECOND EDITION, MACMILLAN EDUCATION LTD, LONDON.

CENTRAL STATISTICAL SERVICES, (CSS), 1992a. *SOUTH AFRICAN STATISTICS*, PRETORIA

CENTRAL STATISTICAL SERVICES, (CSS), 1992b. *SOUTH AFRICAN LABOUR STATISTICS*, PRETORIA

CHRISTOPHER, A.J. 1994. *THE ATLAS OF APARTHEID*, ROUTLEDGE INC, NEW YORK.

DE LOOR,J. 1992. *REPORT PREPARED BY THE TASK GROUP ON NATIONAL HOUSING POLICY AND STRATEGY*, RP79, PRETORIA:GOVERNMENT PRINTER

ECKERT, J. IN VAN DER BERG,S. 1991 . *SOCIAL REFORM AND THE REALITY OF SOCIAL EXPENDITURES*, U.W.C. PAPER, CAPE TOWN.

FOLMER, H. & VAN IERLAND, E. 1989. *VALUATION METHODS AND POLICY MAKING IN ENVIRONMENTAL ECONOMICS*, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM.

HARTWICK, JM & OLEWILER, N.D. 1986. *THE ECONOMICS OF NATURAL RESOURCE USE*, HARPER & ROW, PUBLISHERS, NEW YORK.

MAASDORP, G. 1988. *THE ROLE OF THE STATE IN THE ECONOMY*, SOUTH AFRICAN INSTITUTE OF INTERNATIONAL AFFAIRS, BRAAMFONTEIN, SOUTH AFRICA.

MANAGING S.A.'S ENVIRONMENTAL RESOURCES: A POSSIBLE NEW APPROACH, NOVEMBER 1993, DEPARTMENT OF ENVIRONMENT AFFAIRS.

MCGRATH, M.D. 1984. *TRENDS IN THE DISTRIBUTION OF PERSONEL INCOMES IN SOUTH AFRICA*, (UNPUBLISHED CONTRIBUTION TO THE HSRC'S INVESTIGATION INTO INTERGROUP RELATIONS), DURBAN.

MERG REPORT. 1993. *MAKING DEMOCRACY WORK, A FRAMEWORK FOR MACROECONOMIC POLICY IN SOUTH AFRICA*, OXFORD UNIVERSITY PRESS, CAPE TOWN.

NATIONAL HOUSING FORUM, 1992a. *END-USER FINANCE AND SUBSIDIES - EXECUTIVE SUMMARY OF CONSULTANTS REPORTS'*, WORKING GROUP 2, DEC.

NATIONAL HOUSING FORUM, 1992b. *HOUSING TYPES AND DELIVERY SYSTEMS - EXECUTIVE SUMMARY OF CONSULTANTS REPORTS'*, WORKING GROUP 3, DEC.

NATIONAL HOUSING FORUM, 1993. *LAND AND SERVICES - EXECUTIVE SUMMARY OF CONSULTANTS REPORTS'*, WORKING GROUP 1, MAY.

O'SULLIVAN, A. 1993. *URBAN ECONOMICS*, SECOND EDITION, R.R.DONNELLEY & SONS COMPANY, BOSTON USA.

PEARCE, D.W. & TURNER, R.K. 1990 . *ECONOMICS OF NATURAL RESOURCES AND THE ENVIRONMENT*, BPCC WHEATONS LTD, GREAT BRITAIN.

S.A.I.R.R. 1993. *A READING PAPER, AN ANNUAL SURVEY*, AUDEN HOUSE, JOHANNESBURG.

S.A.I.R.R. 1993. *RACE RELATIONS SURVEY*, JOHANNESBURG.

SANDMO, A. 1989 . *PUBLIC GOODS*, IN THE NEW PALGRAVE: ALLOCATION, INFORMATION AND MARKETS, MACMILLAN, LONDON.

SHIMA, O. IN VAN DER BERG, S. 1991. *SOCIAL REFORM AND THE REALITY OF SOCIAL EXPENDITURES*, U.W.C. PAPER, CAPE TOWN.

STRUCTURE OF THE S. A. ECONOMY, BARRIERS TO SOLVING THE HOUSING CRISIS, BY ABSA BANK.

STIGLITZ, J.E. 1988 . *ECONOMICS OF THE PUBLIC SECTOR*, SECOND EDITION, W.W NORTON & COMPANY, NEW YORK.

TIETENBERG, T. 1992. *ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS*, SCOTT, FORESMAN AND COMPANY, ILLINOIS USA.

VAN DER BERG, S. 1989 . *LONG TERM ECONOMIC TRENDS AND DEVELOPEMENT PROSPECTS IN SOUTH AFRICA*, U.W.C. PAPER, CAPE TOWN.

VAN DER BERG, S. 1991a . *REDIRECTING GOVERNMENT EXPENDITURE*, U.W.C. PAPER, CAPE TOWN.

VAN DER BERG, S. 1991b . *SOCIAL REFORM AND THE REALITY OF SOCIAL EXPENDITURES*, U.W.C. PAPER, CAPE TOWN.



UNIVERSITY *of the*
WESTERN CAPE