



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

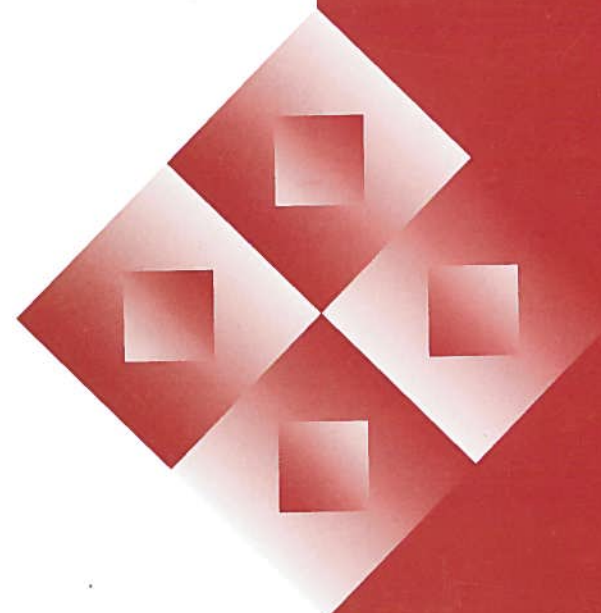
<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Stop per



AGREKON

Vol 40 Number/Nommer 1
March/Maart 2001



Published by the
Agricultural Economics
Association of South Africa

Gepubliseer deur die
Landbou-ekonomievereniging
van Suid-Afrika

THE SOCIAL BENEFITS OF LAND REDISTRIBUTION IN SOUTH AFRICA - CASE STUDIES

S. Bonti-Ankomah¹

This paper ascertains the feasibility of transferring land to potential beneficiary households. It looks at the cost and benefits of land transfer in three selected case studies in Mpumalanga. The results indicate that it is socially beneficial to transfer land in all the case studies. The net present values were all significant but sensitive to changes in product price, input prices and the discount rate. Although the analysis shows negative net present values for the state, the positive net present value for the potential beneficiaries and the rest of society far outweighs the cost to the state.

The paper concludes that transfer of land to potential beneficiaries in the three case studies will significantly reduce the level of poverty among the potential beneficiaries and improve their livelihoods. If it is in the interest of the state to alleviate poverty, particularly in rural areas, then land reform should be taken seriously.

1. INTRODUCTION

Although South Africa can be said to have achieved political freedom, it is yet to achieve economic freedom for all. Political freedom, however, cannot be sustainable if there is no economic emancipation for all. Economic development must, therefore, be taken seriously by the government.

Six years have passed since the first democratic election in South Africa, yet unemployment and inequality continue to be a problem yet to be resolved. The official unemployment rate increased from 18.8% in 1994 to 23.3% in 1999 (Statistics South Africa, 2000). The expanded unemployment rate¹ also jumped from 30% in 1994 to 34.4% in 1999.

Land redistribution continues to be the main, if not the most important instrument in alleviating poverty in rural areas where 75% of the South African poor are residing. The South African land reform programme was implemented just over six years ago to address the land question and to ensure a broader transformation aimed at altering the social and economic inequalities that have been created through a long history of dispossessions and racial discrimination. Land reform is mainly concerned with the skewed land distribution and

¹ Senior Agricultural Economist, National Institute for Economic Policy, Box 32848, Braamfontein 2017, South Africa

ownership system, where the minority of the population has freehold title to a greater proportion of the land, with the majority of the population having only usufruct rights to degraded and a small percentage of the land area.

Just under 1% of the total land available has so far been allocated to landless people through the land reform program, although the target was to redistribute 30% of the land within 5 years. Total land area transferred so far amounts to 696,346 hectares. This covers 38 388 beneficiary households.

Land reform involves some cost and this cost needs to be justified from a social point of view. This will add to evidence of the importance of land reform to transform rural societies. The main objective of this paper, therefore, is to ascertain the feasibility of transferring certain categories of land to potential beneficiaries.

2. METHODOLOGY AND ASSUMPTIONS

Three case studies were selected from the study. These are Klipspruit, Sulphursprings and Kransbank. Klipspruit and Kransbank are located in the Wakkerstroom magisterial district, with Sulphursprings in the Piet Retief magisterial district. These magisterial districts are located in Mpumalanga.

These three localities¹ were selected because unutilized or state land was identified in the vicinity. These unutilized or state land were identified through direct community interviews, participatory rural appraisal (PRA) techniques and discussions with the Mpumalanga Departments of Land Affairs and Agriculture. The status of the identified portions of land was further verified through the Deeds office and in some cases, the landowners. Further information on the total land area and ownership for the selected cases were obtained from the Deeds office.

The demographic and socio-economic make-up of the selected communities as well as the existing livelihood systems were collected and analyzed through PRA techniques and personal interviews with the potential beneficiaries.

Cost benefit analysis was also used to establish the potential welfare effects of redistributing the identified parcels of land to the potential beneficiaries. Cost benefit analysis is based on the maxim that the value to be attributed to a good or bad at any point in time by any person is that value which is placed on it by the persons themselves at that point in time (Mishan, 1988).

The net present value (NPV) criterion was used for the cost benefit analysis. This is the most popular cost-benefit criterion because of its alleged superiority over the other criteria. The criterion is based on a procedure of reducing a stream of net benefits to a single value at one point in time. This is done by using some rate of discount to weigh the net benefits over time.

Cost benefit analysis involves the identification of potential benefits and costs, both intentional and unintentional. The identification and estimation of these benefits and costs are discussed below.

3. ESTIMATION OF DIRECT NET BENEFIT

This was generally estimated for each year as follows;

$$NFI = (Y * P) - C$$

Where

NFI = Direct Net Farm Income
Y = Output
P = Output Price
C = Production Cost

Farm output was determined by using the average yield in the Piet Retief area of the particular commodity in question. This assumes that yield is the same for all portions of land in the locality. It is also assumed that the average yield of the land will not be different from what it should be without land redistribution, on the premise that the land will be fully utilized by the community for productive purposes. The yield information was obtained from *Combud* (Crop Budgets) from the Mpumalanga Department of Agriculture.

Farm input costs are also obtained from the *Combud*. These include soil preparation cost, seeds and planting costs, fertilizer cost, weeds and pest control costs, labour cost, insurance cost, harvesting, packaging and transportation costs.

4. ESTIMATION OF INDIRECT BENEFITS AND COST

Indirect benefits and costs include environmental effects, net-off farm effects, nutrition effects, income risk effects, infrastructural cost and program cost.

4.1 Environmental effects

The major environmental costs of agricultural production are water erosion and soil compaction. Water erosion alone accounts for about 57% of the total cost due to degradation (McKenzie, 1994). Erosion leads to losses in productivity both through nutrient losses and most importantly through losses in water retention capacity.

McKenzie (1994) estimated annual deprivation in productivity of 1.35% and 3.6% for moderate and severe erosion. Aliber (1996) also stated that for commercial arable areas as a whole, 22% of the land is vulnerable to soil erosion and 9% to severe erosion. Since there is no specific regional information, these were applied to the three case studies under investigation. Also environmental cost can vary with crop type. However, no information is available currently on environmental degradation by crop type. It is, therefore, assumed that the percentages given above will be the same no matter the type of operation on the land. The annual cost due to water erosion was therefore estimated as follows:

$$AWC = 22\% * X(0.0135 * NFI) + 9\% * X(0.036 * NFI)$$

Where

AWC = Annual environmental cost due to water erosion
X = Farm Size (in hectares)
NFI = Direct Net Farm Income

McKenzie (1994) again estimated that soil compaction leads to a 45% reduction in net farm incomes. There is a 27% probability of soil compaction with a typical commercial agricultural technique and 19% with more labour-intensive techniques. A more labour-intensive technique is assumed in this paper. The environmental cost due to soil compaction was therefore estimated as follows:

$$ACC = 19\% * X(0.45 * NFI)$$

Where

ACC = Annual environmental cost due to soil compaction
NFI = Direct Net Farm Income
X = Farm size

4.2 Net off-farm effects

Net off-farm effects were estimated by using the multiplier² concept. Both production and consumption effects are expected if land is transferred to a group of people. A 10% increase in off-farm production linkage was assumed. This was based on the fact that the land under investigation is idle and bringing such land into production will increase the demand for inputs and related services and potentially increase employment and income of the input and service markets.

The consumption linkage was also assumed to increase by 20. This is based on the reasoning that increases in income as a result of land transfer will have a stronger effect on consumption than the production linkage. It was further assumed that consumption linkages will account for 80% with production linkages accounting for 20% of the net off-farm multiplier for the case studies³.

Based on information from the Reserve Bank, the multiplier was estimated as 1.6⁴. The total net off-farm multiplier was, therefore, estimated as follows:

$$(0.6 \times 0.2) \times 1.1 + (0.6 \times 0.8 \times 1.2) = 0.708$$

Net off-farm benefit per year was estimated as the product of the total net off-farm multiplier and the total net farm income.

4.3 Health and nutrition effects

Aliber (1996) has used the food parcel approach⁵ to estimate the potential health and nutrition benefits of land reform in South Africa. In this paper, however, a poverty reduction approach is used. In a study on poverty by May *et al* (1995), it was estimated that the amount required annually to wipe out poverty in South Africa in 1995 was R15.35 billion. This is about R20.5 billion in 2000 value. Based on the number of the poor in South Africa, the amount required to eliminate poverty per the poor annually was estimated at R951.6⁶ in the year 2000. Assuming five persons per household, this will translate into R4758 per household per year.

However, land reform cannot eliminate poverty completely. In a recent study to monitor the quality of life of land reform beneficiaries, it was concluded by May *et al* (2000) that land reform has potentially reduced the poverty rate by 1% in rural areas. It was, therefore, assumed that land reform will reduce the amount required to eradicate poverty by 1%. The cost saved to society as a result of land reform was thus estimated as R47.58⁷ per household per year

4.4 Benefits from reduced income variability

Based on empirical results of Rosenzweig and Wolpin (1993), Aliber (1996) calculated a conservative annual figure of R630 per household in 1996, as the total risk diffusion benefit from land reform in South Africa. This figure converted to year 2000 value was adopted for this study.

4.5 Infrastructure cost

Infrastructural cost for consideration is that for housing units, water, sanitation, roads and electricity. In cases where the community is not relocating, housing units, water, sanitation and electricity are not major issues. However, potential infrastructural cost associated with effective operation of the farm was included in the analysis. Using the infrastructural and service costs associated with a recommended level of service for a peri-urban area and assuming that a lower standard of infrastructure may be acceptable, half of the median required infrastructural cost was used in the analysis.

4.6 Programme management cost

Since the case studies are potential land reform projects, there is a potential management cost from the part of the government (Department of Land Affairs). Such costs include the planning and preparation cost and the travel and other associated expenses of Department of Land Affairs officials.

The planning and preparation cost was estimated at 9% of the potential settlement/land acquisition grant⁸. Other associated costs to the provincial Department of Land Affairs office were assumed to be 5% of the settlement/land acquisition grant. Programme cost is considered cost to government but neither a cost nor a benefit to society and the community.

5. DISCOUNT RATE AND TIME FRAME

A discount factor of 15% till infinity was assumed. The time frame assumed for the cost benefit analysis is 15 years. This is a conservative time period considering the fact that the land will continue to belong to the community for more than 15 years.

6. THE NET PRESENT VALUE

The net present value (NPV) was obtained by discounting⁹ direct net benefits and indirect net benefits of each year to the present and summing them up.

7. SENSITIVITY ANALYSIS

Because of uncertainty over time in input and output prices as well as the discount factor, different scenarios were developed to test and discuss the variations that may exist if current conditions change over time. These scenarios on input and output prices and the discount rate are summarized in Table 1 below.

Table 1: Summary of assumptions used for the cost benefit analysis

Variable	Baseline Scenario	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Discount factor	15%	15%	15%	15% in first year and 1% increases in subsequent years	15% in first year and 1% increases in subsequent years	15% in first year and 1% increases in subsequent years
Output and input prices	Current values throughout the period of analysis	10% increases of current values every year	10% decreases in current values every year	Current Values throughout the period of analysis	10% increases of current values every year	10% increases of current values every year
Time frame	15 years	15 years	15 years	15 years		15 years

8. DISTRIBUTIONAL ANALYSIS

Although the Net Present Value (NPV) may be positive, it does not imply that everybody benefits. In the distributional analysis, cost and benefits were allocated to the various stakeholders. There are basically three main stakeholders in the case studies namely, the potential beneficiaries, government, and other members of society

9. RESULTS

The surveys indicated that unemployment is quite high in the case study areas. It is higher than the national average and ranges from 47% in Klipspruit to 55% in Sulphursprings. The unemployment rate is higher among women than men in two of the case studies. It is as high as 75% among the females in Sulphursprings. Most of the employed are either self-employed or

farmworkers. All the communities mentioned capacity building, infrastructure development and credit facilities as the main requirements for improved livelihoods.

Tables 2 and 3 below show the net present value estimates for the case studies.

Table 2: Net Present Value per Household for the three case studies (Rands)

	Klipspruit	Sulphursprings	Kransbank
Baseline Scenario	1,866	3,986	2,925
Scenario 2	6,646	11,570	13,954
Scenario 3	-531	183	-1,635
Scenario 4	-324	1,010	-1,050
Scenario 5	2,428	5,377	5,254
Scenario 6	-1,917	-1,578	-4,103

Table 3: Total Net Present Value for Different Stakeholders (R '000)

Stakeholders	Klipspruit	Sulphursprings	Kransbank
Potential Beneficiaries	668	452	735
Rest of Society	195	103	1,069
State	-721	-459	-1,570

The net present values were estimated to be R1866, R3986 and R2925 for Klipspruit, Sulphursprings and Kransbank, respectively. The benefit cost ratios were also 1.07, 1.10 and 1.12 for Klipspruit, Sulphursprings and Kransbank, respectively. These results indicate that, it is socially beneficial to transfer the land to the potential beneficiaries in all the three case studies. The benefit cost ratios are also greater than 1, indicating that the projects will more than break even.

The analysis shows that the net present values are very sensitive to changes in output prices, input prices and the discount rate. An increase in the output and input prices will increase the net present values significantly. Decreases in both output and input prices will also have the effect of reducing the net present values. An increase in the discount factor can also reduce the net present values.

The distributional analysis also shows that both the potential beneficiaries and the rest of society will benefit significantly from the transfer of land to the three communities analysed. Although the transfer is a cost to government in

all cases, this cost is more than offset by the benefits that can accrue to potential beneficiaries and the rest of society.

10. CONCLUSION

This paper has shown that land redistribution can go a long way in alleviating poverty in rural communities. In all the cases identified, the land is idle and its transfer should not take a long time. Furthermore, there are still portions of state-owned land that are lying idle and needs to be redistributed. The state should, therefore, make it a priority to redistribute unutilised state land as any delays in the process is an opportunity cost towards the fight against poverty in rural areas.

It is also recommended that land reform should come as a package to include additional finance and capacity building. Financial resources are needed to ensure that transferred land is utilised fully and efficiently. Without financial resources, potential beneficiaries will not be able to utilise the land effectively to realise the full benefits from the land. Furthermore, without proper management, the positive net present value cannot be realised and capacity building is therefore required for that purpose.

NOTES

1. In estimating expanded unemployment rate, Statistics South Africa has classified those who were not looking for work, those unwilling to accept a suitable job if it were offered to them within a week, and those who have not taken active steps to find a job in the past four weeks as not economically active
2. A locality is loosely defined as the area within about 10 km radius of the project community.
3. The multiplier estimates the size of the effect that an extra rand of income has on the local and regional economy.
4. This is based on international experiences, where it has been estimated that consumption linkages make up 80%-90% of the overall net off-farm multiplier in some developing countries (Haggblade et al, 1991).
5. The multiplier = $1/[1-(MPC-MPI)]$ where MPC is marginal propensity to consume and MPI is marginal propensity to import.
6. This approach uses the cost to government of delivering food parcels to poor communities, as the benefits or costs saved from health and nutrition effects from land reform or any other program.
7. This is the total amount required to eliminate poverty in year 2000 divided by the total number of poor people. This is equal to 1% of R4758.
8. The current land reform program budgets 9% of the settlement/land acquisition grant for planning and preparation.
9. Discounting involves dividing a given value by a discount factor.

REFERENCES

- ALIBER, M. (1996). Benefit-cost analysis of land redistribution: Conceptual issues. In Johan van Zyl, Johan Kirsten and Hans Binswanger (eds.), *Agricultural Land Reform in South Africa: Policies, Markets and Mechanisms*, Cape Town:Oxford University Press (eds).
- BUILD ENVIRONMENT SUPPORT GROUP. (1999). *Towards the right to adequate housing*. Durban: University of Natal
- DALY, H.E. (1989). Towards a measure of sustainable social net national product. In J. Ahmad, S. El Serafy and E. Lutz (eds.), *Environmental Accounting for Sustainable Development*, Washington DC:World Bank.
- DEVARAJAN, S., SQUIRE, L. & SUTHIART-NARUEPUT, S. (1997). Beyond rate of return: reorienting project appraisal. *World Bank Research Observer* 12(1).
- ELLIS, R.D. (1993). Quantifying distributive justice: An approach to environmental and risk-related public policy. *Policy Science*, 26.
- GWATKIN, D.R., WILCOX J.R. & WRAY, H.D. (1980). Can health and nutrition intervention make a difference? *Overseas Development Council Monograph* No. 13. February 1980.
- HAGGBLADE, S., HAZEL, P. & BROWN, D.J. (1989). Farm-non-farm linkages in rural Sub-Saharan Africa. *World Development* 17(8):1173-1201.
- MCKENZIE, G., (1994). *Degradation of arable land resources: Policy options and considerations within the context of rural restructuring in South Africa*. LAPC Workshop on Natural Resource Management, Broederstroom, 7-9 October 1994.
- MAY, J., M. CARTER & D. POSEL, (1995). *The Composition and Persistence of Poverty in Rural South Africa: An Entitlements Approach*. Policy Paper 15, Land and Agricultural Policy Centre, Johannesburg
- MAY, J. et al., (2000). *Monitoring and evaluating the quality of life of land reform beneficiaries*. Technical Report Prepared for the Department of Land Affairs, Pretoria.
- MISHAN, E.J. (1988). *Cost benefit analysis*. London: Unwin Hyman.

MPUMALANGA DEPARTMENT OF AGRICULTURE. (1999). Conservation and environment. *COMBUD Budget of 1998/99*.

ROSENZWEIG, M.R. & WOLPIN, K. (1993). Credit market constraints, consumption smoothing, and the accumulation of durable production assets in low-income countries: Investments in bullocks in India. *Journal of Political Economy*, 101(2):223-244.

STATISTICS SOUTH AFRICA, (2000). *1999 October Household Surveys*, Pretoria

VAN ZYL, J., KIRSTEN, J.F. & SARTORIUS VON BACH, H.J. (1994). *Poverty, household food security and agricultural production: Evidence from South Africa's communal areas in a period of drought*. Pretoria: Department of Agricultural Economics, University of Pretoria.

TOWARDS INSTITUTIONAL ARRANGEMENTS TO ENSURE OPTIMAL ALLOCATION AND SECURITY OF SOUTH AFRICA'S WATER RESOURCES

E.F.Y. Gakpo¹, L.A. du Plessis¹ and M.F. Viljoen¹

The ever-increasing pressure on the nation's water resources challenges water management institutions to be constantly changing in order to serve the changing needs. The institutional development of the water industry had been characterised by restrictions and inequitable distribution hence inefficient use of water from a total welfare perspective. The current institutional arrangement since the new democratic dispensation makes ample provisions to correct the deficiencies of the past. Despite the progress, water allocation is still supply-side dominated, the Minister holds the power, decision support and management tools are lacking or inadequate to help the proposed CMAs and WUAs to allocate water optimally and efficiently. In an effort to close this gap, an alternative institutional framework, Capacity Sharing (CS), to augment the current institutional arrangement is therefore proposed to address such issues. A strategy to drive water allocation through efficient pricing hence achieving water security under CS is suggested.

1. INTRODUCTION

Fresh water is one of the most essential natural resources for the survival of human and other living species. Variability in quantity and quality makes the usable forms of water to be scarce and hence a valuable commodity. Despite the limitations in the amount of usable water on the planet, there has been a nine-fold increase in per capita consumption of water worldwide since 1900, arising from changing technologies, and changing personal habits (Commission on Sustainable Development, 1997; Postel and Sandra 1992;). The continuous growth in the world population further increases demand at least in societies that do not adjust their water consumption patterns to current realities (Dellapenna, 1997). Global climatic change is equally likely to add considerable stress onto existing legal regimes as water management systems struggle to adapt to the altered precipitation and flow patterns. Many existing legal regimes according to Brans *et al* (1997), already feel stress as they struggle to respond to the increasing and changing demands for water without unduly destabilising the existing expectations expressed in the investment in water use facilities. The South African scene is not different. Geographically the country is an arid region and on the verge of water stress.

¹ Department of Agricultural Economics, University of the Orange Free State, P.O. Box 339, Bloemfontein 9300.