PART II

KEY CONSIDERATIONS IN THE INTRODUCTION OF A MINIMUM WAGE

Chapter 8

Theoretical perspectives

1. Minimum wages: microeconomic considerations

A 1979 survey of economists working at universities, in government and in the business sector in the United States[1] showed that 90% of them generally agreed, or agreed with provisions[2], with the statement that 'A minimum wage increases unemployment among young and unskilled workers.' This is unsurprising, given the relatively simple textbook 'proof' of the effect of a minimum wage[3]. This standard proof has recently been supplemented by more sophisticated arguments that also include the deadweight losses that occur when the highest productivity firms cannot hire the lowest-wage workers and when firms with a high ability to evade minimum wages displace firms with a low ability, even though the latter may have higher productivity[4].

The minimum wage was, originally proposed as a part of broad labour market policy, aimed at increasing labour productivity and achieving stability. However, in recent times the emphasis has shifted to the use of the minimum wage to fight poverty[5]. In this regard, Deepak Lal[6] provides a comprehensive summary of the standard economists' argument against the minimum wage as a tool for poverty alleviation. From the perspective of the poor as a group, a minimum wage that is set above the market equilibrium wage reduces employment in the sectors where the minimum wage applies[7].

Some poor people gain higher wages, but the loss amongst those poor people who become unemployed could be greater. Obviously, unless those who are paid higher wages are from amongst the poor, there is a good chance that a minimum wage will merely benefit low wage earners from wealthier households (i.e. teenagers, second income earners). Further, those who lose their jobs will seek employment in other sectors where there are no minimum wages. This excess supply will depress wages in those industries as well[8].

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[1] Kearl, JR, CL Pope, GC Whiting and LT Wimmer, 1979. 'A confusion of economists?' *American Economic Review*, 69(2): 28-37
[2] Generally agreed: 68%; Agreed with provisions: 22%; Generally Disagree: 10%.
[3] Such textbook treatments are conventionally based on Stigler, G, 1946. 'The economics of minimum wage legislation.' *American Economic Review* 36, June
[4] For a recent statement see Palda, Filip, 2000. 'Some deadweight losses from the minimum wage: the cases of full and partial compliance'. *Labour Economics* 7: 751 - 783
[5] See Levin-Waldman, OM, 2001. *The case of the minimum wage: competing policy models.* New York, SUNY Series in Public Policy for an exposition for the reasons behind this shift in focus.
[6] Lal, D, 1995. *The minimum wage.* UCLA Department of Economics Working Paper No. 723. Los Angeles
[7] The important exception is where employers are strong enough to determine wages (i.e. they are in a monopsonistic position). As this argument is raised later, the comparative static analysis is repeated in Annexure 1.
[8] These findings are supported by Lang, K and S Kahn, 1998. 'The effect of minimum wage laws on the distribution of employment: theory and evidence'. *Journal of Public Economics* 69(1): 67-82 who

Nevertheless, there have always been dissenting theoretical voices. The theorists concentrated on issues such as the effects of different relative capital/labour ratios[9], the presence of dualism in developing countries[10], the case of trade between middle-income and rich countries[11] and the long-term positive growth effects occasioned by improved human capital[12].

Another strand of economics literature that cannot be ignored in this debate is found in the thinking of the institutional economists, largely but not exclusively associated with the University of Wisconsin at Madison. One of the key figures in this debate was John R Commons[13]. Institutional economists argued that the regulation of employment practices should not to be viewed as interfering with the efficient operation of the economy. Employers with unorganised work forces generally pay wages below the full social costs of labour, while legal measures could potentially force employers to pay wages at least equivalent to and more likely greater than the social costs of labour. If they were successful in doing so, the state, charitable institutions, and individual members of society would no longer need to subsidise low-paying producers by providing income or goods in kind to those earning wages below the social costs of labour. In the process the dynamic efficiency of firms would also be enhanced. As wages rise, managers are pushed to improve efficiency, thus lowering the effective cost of the rise in pay. At the same time, higher wages need not lead to lower employment. First, employers have a great deal of flexibility regarding wage levels. Firms faced with little competition could increase wages by sacrificing some of their high profits or by raising prices on their final products. Second, if increased productivity offsets increased labour costs, employers would have little inclination to reduce employment levels.

argue that, despite an increase in employment, increased competition from higher productivity workers makes lower productivity workers worse off.

[9] For example, if the sector covered by the minimum wage were more capital intensive than the rest of the economy, and if the demand for its goods were fairly elastic, a minimum wage would cause its employment and output levels to fall. Both capital and labour would move to the relatively less capital intensive parts of the economy. The added capital would make these sectors more capital intensive by definition, and thus wage rates would be higher (Johnson, HG, 1969. ‘Minimum wage laws: a general equilibrium analysis.’ *The Canadian Journal of Economics* 2(4))

[10] In this case a minimum wage can by definition only be set in the ‘formal’ economy. The extent of unemployment will then depend on the method of job search (Harris, JP and MP Todaro, 1970. ‘Migration, unemployment and development: a two-sector analysis.’ *American Economic Review* 60(1))

[11] Here it is argued that measures such as a minimum wage in a middle-income country may enhance welfare by moving it to a superior equilibrium (Rodrick, D, 1996. ‘Coordination failures and government policy: a model with applications to East Asia and Eastern Europe.’ *Journal of International Economics* 40(1-2): 1-22

[12] This model is very close to the human capital theory. It states that, in an overlapping generations model with endogenous growth, high minimum wages can have positive effects on the growth rate and welfare by increasing the proportion of skilled workers (e.g. Cahuc, P., and P Michel, 1993. ‘Minimum Wage, Unemployment and Growth’, *Actes du colloque international: Analyse économique des bas salaires et des effets du salaire minimum,* 30 Sept.- 1 Oct. 1993, Arles, France, pp. 167-199; and Acemoglu, Daron and Jörn-Steffen Pischke, 1999. ‘Minimum wages and on-the-job training.’ *NBER Working Papers 7184.* Cambridge, MA, National Bureau of Economic Research

[13] See Barbash, J, 1976. ‘The Legal Foundations of Capitalism and the Labor Problem’. *Journal of Economic Issues* 10(4): 799-810; and Barbash, J, 1989. ‘John R. Commons: Pioneer of Labor Economics’. *Monthly Labor Review* 112(5): 44-49

Assuming no negative employment effects, an increase in wages would increase the overall demand for goods and services in the economy, allowing companies to expand production and, perhaps, reach lower points on their long run average cost curves.

In summary, the theoretical effects of a minimum wage seem to be ambiguous. The notion that the introduction of a minimum wage that raises the wages of some workers would automatically reduce the employment prospects of that particular category of workers is far from a dominant view. The alternative models suggest that the link is not automatically negative, and might be positive. It might be negative in certain circumstances, though weak as the evidence suggests, and nil or positive in other contexts.

These ambiguous conclusions are also reflected in the available empirical evidence[14]. Here, however, an interesting historical pattern emerges. Virtually all of the empirical studies conducted during the 1970s found fairly strong negative employment effects, while those conducted during the 1980s mostly found weak negative effects. The only explanation that economists had for the popularity of minimum wages was ignorance among the public[15]. During the first part of the 1990s, however, a body of empirical work has been published that tests and confirms the theoretical prediction of a positive relationship between a minimum wage and employment[16], while the late 1990s have seen a resurgence of studies that show a negative relationship[17].

Four potential explanations for this empirical confusion can be found in the literature:

- **first,** Herren[18] has analysed the evolution of thinking amongst staff of the Council of Economic Advisors in the USA on two key labour economics propositions, one being the employment effects of a minimum wage[19]. The analysis shows that there are key differences between the analyses conducted during Democratic Administrations and those conducted during Republican Administrations. However, these differences have generally concerned

[14] Youcef Ghellab (1998). *Minimum Wages and Youth Unemployment.* Employment and Training Papers, 26. International Labour Office Geneva) provides an exhaustive summary of review articles on the employment effects of the minimum wage from around the world.

[15] An interesting footnote is the history of the editorial position of the New York Times on this issue. Before the 1970s the newspaper opposed minimum wages on technical grounds, then, during the 1970s and 1980s, favoured them, but largely on emotional grounds. By the 1990s the newspaper was opposed to the minimum wage on the basis of its negative economic implications (McKenzie, Richard B, 1994. *Times change: The minimum wage and The New York Times*. San Francisco: Pacific Research Institute for Public Policy). Thus, public ignorance cannot be blamed for the support for the Clinton Administrations' increase in the minimum wage in the 1990s.

[16] The two most important examples are Card, D and AB Krueger, 1994. 'Minimum wages and employment: a case study of the fast food industry in New Jersey and Pennsylvania.' *American Economic Review* 48(4) and Machin, S and A Manning, 1994. 'The effects of minimum wages on wage dispersion and employment: evidence from the UK Wage Councils.' *Industrial and Labour Relations Review* 47(2).

[17] See, for example, Partridge, MD and JS Partridge, 1999, 'Do Minimum Wage Hikes Reduce Employment? State-Level Evidence from the Low-Wage Retail Sector'. *Journal of Labor Research*; 20(3): 393-413

[18] Herren, RS, 1996. 'The Council of Economic Advisers: Selected Issues in Labor Economics'. *Journal of Economics*, 22(2): 49-55.

[19] The other is how changes in marginal tax rates affect aggregate labour supply.

differing interpretations of empirical findings and not differences in underlying economic theory

- **second,** the literature shows that, although the mode of implementation of a minimum wage differs between countries, most have implemented rather cumbersome processes for bringing about amendments. Thus, in most countries the real minimum wage was eroded by inflation during the 1970s and the 1980s. This could explain the weakened effect on employment found in the literature
- **third,** an important recent paper[20] examines the relationship between the stated goals of minimum wage policy and the actual wage rates that are implemented in the USA. The author rejects the hypothesis that actual minimum wage policy has been driven by a desire to achieve these goals and finds that a simple interest group model best explains the historical path of the minimum-wage rate
- **fourth,** empirical analysis shows that the institutional framework matters. For example, the effects of a minimum wage on youth unemployment seem to be related to specific labour market institutions, as the results of recent cross-country research[21] as well as a comparison of labour market institutions between the USA and France[22] show.

These conclusions are probably best summarised by Wood[23] who examined the rhetoric employed in arguments 'for' and 'against' national minimum wages in the UK hospitality industry. He found that a key aspect of the debate was the protagonists' reliance on economic studies, which for the most part demonstrate either a positive or a negative effect. He concludes that, much like the cumulative evidence from the economic research, such strategies are flawed, making moral predisposition rather than rational choice the only basis on which to argue about the desirability or otherwise of a national minimum wage.

Two other effects of a minimum wage that could be important for agriculture are the evidence that it compresses the distribution of wages in different earnings classes[24]; and the evidence that the disemployment effect is larger among small firms than among large firms[25]

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[20] Sobel, RS, 1999. 'Theory and Evidence on the Political Economy of the Minimum Wage'. *Journal of Political Economy*, 107(4): 761-85

[21] Neumark, David, 1999. 'A cross-national analysis of the effects of minimum wages on youth unemployment'. *NBER Working Paper 7299.* Cambridge, MA National Bureau of Economic Research

[22] See e.g. Abowd, John M, Francis Kramarz and David N Margolis, 1999. 'Minimum wages and employment in France and the United States'. *NBER Working Paper 6996.* Cambridge, MA National Bureau of Economic Research

[23] Wood, RC, 1997. 'Discussion paper. Rhetoric, reason and rationality: the national minimum wage debate and the UK hospitality industry'. *International Journal of Hospitality Management,* 16(4): 329-344

[24] Dickens R, S Machin and A Manning, 1999. 'The Effects of Minimum Wages on Employment: Theory and Evidence from Britain'. *Journal of Labor Economics* 17(1): 1-22

[25] See, e.g. Rama, Martin, 1996. 'The consequences of doubling the minimum wage: the case of Indonesia. World Bank Research Paper, Washington, DC, IBRD

2. Minimum wages: macroeconomic considerations

The literature on the macroeconomic effects of minimum wages is weak. None of the few published references in this genre explicitly measure the total employment effects of a minimum wage when the effects in the upstream and downstream industries are also accounted for. It is, however, logical that any increase in employment that results from a minimum wage will lead to a larger increase in total employment as the spending patterns of those who benefit directly from the minimum wage indirectly create new opportunities.

This has been modelled by Manning[26] who shows that in an efficiency wage model in which there is involuntary unemployment, a binding minimum wage may increase employment. A general equilibrium matching model is presented in which there is involuntary unemployment but wages are below market-clearing levels and raising wages can reduce unemployment. The empirical evidence on employment and wage determination is just as consistent with this model as with models in which wages are at or above market-clearing levels. Cubitt and Heap[27] also present a two period general equilibrium, model in which agents foresee how the second period outcome is determined by the investment decisions that they make in the first period, *inter alia* when there is a minimum wage in the second period. In equilibrium, this policy increases both types of investment. There is a range of values of the minimum wage at which the increases in investment are obtained without any reduction in period 2 employment.

Finally, Roberts *et al*[28] also study the impact of group interests in a general equilibrium model with a dual labour market where the union sector is characterised by two-stage bargaining whereas firms set wages in the non-union sector. Firms and unions of the union sector have a common interest in extending the minimum wage to the non-union sector, although the union sector does not seek to increase the non-union wage above the market-clearing wage. In fact, it is optimal for the union sector to impose a market-clearing wage on the non-union sector.

3. The implications for agriculture

The international literature on the impact of minimum wages in agriculture is also rather limited, yet it yields some important insights. The experience of the UK, for example, is instructive, as there was a period during the early 1990s when the agricultural sector alone was covered by a minimum wage. The modern origin of this minimum wage starts with its reintroduction in 1924. Empirical research shows that employment was reduced, and that the employment effect increased during the 1930s (i.e. the time of the Great Depression when farm profits were under severe pressure)[29].

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[26] Manning, A, 1994. *How do we know that real wages are too high?* London School of Economics Centre for Economic Performance Discussion Paper: 195.

[27] Cubitt, RP and SPH Heap, 1999. 'Minimum wage legislation, investment and human capital'. *Scottish Journal of Political Economy*, 46(2): 135-57.

[28] Roberts, MA, K Staehr and T Tranaes, 2000. 'Two-stage bargaining with coverage extension in a dual labour market.' *European Economic Review*, 44(1): 181-200.

[29] Gowers, R and TJ Hatton, 1994. *The Origins and Early Impact of the Minimum Wage in Agriculture.* Centre for Economic Policy Research, Discussion Paper: 1021

However, a later study in the UK showed that the average earnings of farm workers were consistently higher than the minimum wage. Econometric tests of the data show that the level of the minimum wage is ‘caused’ by the average wage. Thus, the Agricultural Wages Boards have been reactive, and minimum wages have had no impact on average earnings[30]. Yet it may have had a positive effect on total employment[31]and on the most vulnerable workers.. These authors show that, since the abolition of the Wages Councils in September 1993, agriculture is the only sector in the United Kingdom covered by any form of minimum wage legislation. They conclude, contrary to the previous paper, that the minimum wages set by the Agricultural Wages Boards are important determinants of the average level and distribution of earnings. They also conclude that there is no evidence that minimum wages have reduced the level of employment in agriculture, finding instead a weak positive effect on employment. In particular, the authors conclude ‘…they (minimum wages) have raised the pay of low paid workers without adversely affecting their employment. If the Agricultural Wages Boards were to (be abolished), low paid workers would be relatively worse off without enhancing their long-run employment prospects.’

Two papers from the USA are also relevant to this debate. In the first, Perloff[32] shows, *inter alia* that wages in agriculture rise significantly with the number of hours worked per week, and that there are some large demographic differentials which lead to large earnings differentials. Thus, urban-rural wage and income gaps should not readily be used to justify government intervention in product markets and in the labour market (e.g. minimum wages). In the second, Kebede and Gan[33] evaluate the potential of vegetable production to enhance the declining farm income of limited resource farmers. One of the results is that, as vegetable production is labour intensive and sensitive to change in labour cost, an increase in the minimum wage might adversely affect the return from vegetable production for these vulnerable farmers.

India is one of the few countries with long experience in the implementation of a minimum wage. Much of the Indian literature is focused on implementation issues rather than on the impact on employment[34]. There seems to be a consensus that the minimum wage is one of the instruments required to alleviate poverty among farm workers (together with land reform, unionisation and other social security measures,

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[30] Tiffin, R and PJ Dawson, 1996. ‘Average Earnings, Minimum Wages and Granger-Causality in Agriculture in England and Wales’. *Oxford Bulletin of Economics and Statistics*, 58(3): 435-47

[31] Dickens, R, S Machin, A Manning, D Metcalf, J Wadsworth and S Woodland, 1995. ‘The Effect of Minimum Wages on UK Agriculture’. *Journal of Agricultural Economics* 46(1): 1-19.

[32] Perloff, JM, 1986. *Union and Demographic Wage, Hours and Earnings Differentials in the Agricultural Labor Market.* University of California at Berkeley Department of Agricultural and Resource Economics (CUDARE) Working Paper: 387, January 1986

[33] Kebede E and JB Gan, 1999. ‘The economic potential of vegetable production for limited resource farmers in south central Alabama.’ Journal of Agribusiness, 17(1): 63-75

[34] Recent examples include Parthasarathy, G, 1997. ‘Minimum Wages within Agriculture: A Review of Indian Experience.’ *Indian Journal of Labour Economics*, 40(4): 731-42; Srinivasan, MV, 1997. ‘Minimum Wages in Agriculture: An Analysis of Secondary and Village Survey Data.’ *Indian Journal of Labour Economics*, 40(4): 743-57 and Gill, SRS and VK Lohumi, 1997. ‘Administration of Minimum Wages in Agriculture: An Appraisal.’ *Indian Journal of Labour Economics*, 40(4): 759-69

etc.), largely because there is a close correlation between the caste system and agricultural labourers, with the majority of labourers belonging to Scheduled Castes[35].

Another interesting perspective is provided by evidence from Morocco[36]. Here a positive relationship is found between wheat production and the level of the agricultural minimum wage by applying a version of Stigler's monopsony model. The resulting econometric equation passes a large number of tests on Moroccan data over 1971-89. An increase in the minimum wage, where the productivity of the labourers depends on their consumption level and where wage incomes are shared among family members to fund consumption, entails a labour movement in favour of the dominant employer. The resulting positive impact on output is not rejected by econometric tests on the case of Morocco.

Finally, only one publication on the possible effect of a minimum wage in South African agriculture exists[37]. The authors conducted a survey in 1995 among 135 commercial farmers in KwaZulu-Natal to analyse labour remuneration and farmers' perceptions about the impact of labour legislation. Farm labour remuneration normally includes cash wages and payments in kind (such as rations, housing, land use rights and clothing). The study suggests that, all things being equal, farmers who pay relatively lower cash wages tend to provide more rations per worker and allocate more land use rights. Most respondents agreed that there is some need for labour legislation in agriculture, but the majority perceived the present legislation to be time-consuming and costly, and wanted the legislation to be less ambiguous, more flexible and less extensive. Labour legislation has increased transaction and wage costs in farming and could lead to the substitution of own machinery, contract machinery or contract labour for own labour. Survey respondents indicated that, if minimum wages were imposed, cash wages would be paid and perquisites would be charged for. If the minimum wage were set above present wages, labour would be replaced with machinery and contractors. Respondents would prefer an industrial council to determine minimum wages (if they are imposed), accounting for enterprise and regional differences.

4. Conclusions

There are at least five broad implications from this theoretical argument about the effect of minimum wages for the agricultural sector. **First,** the minimum wage cannot be opposed purely on the grounds of its adverse effects on employment. Theoretically, there will be a negative effect in the case of a free market without monopsony powers. However, the magnitude of the employment effect depends on the degree to which the wage is set above the equilibrium wage rate. When the minimum wage is set below the average rate in the industry, a minimum wage could compress the wide range of wage rates found in a sector, increasing the wages of the lowest-paid workers without increasing unemployment. **Second,** the empirical evidence on the poverty alleviating

[35] Thangaraj, M, 1995. 'Socio-economic conditions and problems of agricultural labourers.' *Social Change*, 25(4): 44-55

[36] Azam, J-P, 1997. 'Efficiency Wage and the Family: An Explanation for the Impact of the Agricultural Minimum Wage in Morocco.' *Kyklos*; 50(3): 369-82.

[37] Newman RA; Ortmann GF; Lyne MC, 1997. 'Farm labour remuneration, labour legislation and commercial farmers' perceptions in KwaZulu-Natal.' *Agrekon*, 36(1): 73-84

effects of a minimum wage is as ambiguous as the evidence on the employment effects. From a purely economic view, it is better to provide direct income transfers to the poor rather than to manipulate market prices (wages)[38]. Thus, the aim of a minimum wage should be clearly set out. Poverty is the result of low **incomes**, and the relationship between incomes and **wage rates** is not necessarily direct[39]. **Third,** the agricultural sector is diverse, and existing wage differentials can often be explained by differences in the number of hours worked rather than by different wage rates. **Fourth,** resource poor farmers are especially vulnerable to the cost of labour when they are engaged in labour intensive commodity production. **Fifth,** successful implementation may call for a decentralised system of wage determination (as in the UK). However, the experience in India, which also faces implementation capacity constraints, shows that simple implementation systems are preferable. This does not, however, negate the need for differential minimum wages in different regions or for different commodity production systems.

[38] Agricultural economists have generally argued in favour of income transfers to farmers rather than price supports as a mechanism of farm subsidies, yet politicians have, until recently, preferred the latter. Economists have turned to public choice theory to explain this paradox.

[39] Governments have likewise tried to manipulate the prices of agricultural commodities in order to achieve stability and to combat the relative poverty of farmers. The problem is that farmers need higher and more stable incomes, and there is no direct relationship between commodity prices and incomes.

Chapter nine

The South African agricultural economy

1. The policy environment

Deregulation and liberalisation have been a fact of life in the agricultural sector of South Africa since the 1980s. The story of this process in the period after the early 1980s has been well documented[40]. The main policy shifts experienced during the period up to 1994 included:

- deregulation of the marketing of agricultural products in terms of the Marketing Act, 1968 and other legislation. A major part of this exercise was the liberalisation of price controls over agricultural products
- changes in the fiscal treatment of agriculture, including the abolition of many of the tax breaks that favoured the sector, and a reduction in direct budgetary expenditure on the sector
- a start to the processes of land reform, reform of labour legislation, and trade policy reform, which included the tariffication of farm commodities as a precursor to compliance with the country's obligations under the Marrakech Agreement.

This decade-long process can be characterised as deregulation and liberalisation within the existing public sector institutional structure. The main role players involved in the sector: the Department of Agriculture, the Control Boards charged with responsibility for marketing of farm products, etc. remained in place despite the general relaxation of State intervention in the sector. The Government of National Unity (GNU), elected in 1994, ushered in a new era of policy changes across the entire range of government functions. In agriculture, however, at least some direct policy changes had to wait until 1996, i.e. until after the withdrawal of the National Party from the GNU. The most important policy initiatives taken subsequent to this time include:

- **institutional restructuring in the public sector.** This included the 'provincialisation' of the Department of Agriculture, a change in the relationship between the Department and farmer lobby groups[41], the establishment of the Agricultural Research Council in 1993, the restructuring of important statutory bodies with a development mandate in the rural areas generally such as the Development Bank of Southern Africa and the Land Bank, and the changes in the Marketing Act discussed below
- **the promulgation of the Marketing of Agricultural Products Act, No 47 of 1996.** This new Act represented a radical departure from the marketing regime to which farmers had become accustomed in the period since the 1930s. While

[40] See Vink, N, JF Kirsten and L Hobson. 'Agricultural and agribusiness sector policy in South Africa: A Review of the literature.' A Report for USAID. University of Stellenbosch, January 2000 for appropriate references.

[41] Until the 1990s the policy of the Department of Agriculture was to negotiate with one representative body of farmers, namely the South African Agricultural Union (SAAU, now known as Agriculture South Africa or Agri-SA).

far reaching, the deregulation that had taken place since the 1980s was piecemeal, uncoordinated, and accomplished within the framework of the old Marketing Act, with the result that any policy changes could easily be reversed. The new Act changed the way in which agricultural marketing policy would henceforth be managed in South Africa

- **trade policy reform.** The new South African government embarked on a process of trade policy reform that aimed to reverse decades of 'inward industrialisation' strategies. The distinguishing characteristic of the reform policy was a willingness to expose businesses in the country to tariffs that were often below the bound rates negotiated in the Uruguay Round of the GATT. Whereas agricultural trade had been managed through quantitative controls, the Marrakech Agreement called for the tariffication of all agricultural goods, and a phased reduction in the tariffs. South Africa also participated in the renegotiation of the Southern African Customs Union treaty, agreed to the new SADC trade protocol, and negotiated a free trade agreement with the EU. In all these cases, the country agreed in principle to liberalise agricultural trade further. Finally, the country gained membership of the Cairns Group, thus signalling its intention to unilaterally liberalise its trade regardless of the progress made by the developed countries in withdrawing farm support programmes
- **labour market reform.** While labour legislation governing working conditions, wage rates, etc. has progressively become applicable to the agricultural sector over a period of more than a decade, certain aspects of the land reform programme have also impacted on the manner in which labour is managed in the agricultural sector. Here specific mention should be made of the introduction of legislation that governs the occupational rights of workers who live on farms. Further labour market reform is also expected, especially with the application of the Basic Conditions of Employment Act to agriculture

The purpose of these policy reforms was to correct the injustices of past policy, principally through land reform, to get the agricultural sector on a less capital-intensive growth path and to enhance the international competitiveness of the sector. The impact of these reforms is discussed in the next three Sections. The discussion starts with an elaboration of the main trends in input use in the agricultural sector.

2. The resource base

2.1. Land

South Africa's natural potential for agricultural production, and the extent to which this potential is being exploited, is illustrated in **Tables 16 to 18** below. From these data it is evident that South Africa has a relatively poor natural resource base for crop and horticultural production. **Table 16** shows that, in terms of physical size, South Africa is second only to Angola in the region. However, Angola, Mozambique, Tanzania and Zambia have more arable land than South Africa. Less than 20% of South Africa's total agricultural land is potentially arable compared to Angola (25%), Mozambique (52%), Tanzania (51%) and Zambia (34%). In addition, South Africa's potential for expansion in crop and horticultural production is limited. South Africa already uses some 80% of its arable agricultural land, compared to Angola, Mozambique, Tanzania and Zambia, who all use less than 20% of their arable land at present.

South Africa's arable resources are also relatively poor. **Table 17** shows that half of our arable resource is of medium potential, and 78% of medium to low potential. The prime arable land is geographically concentrated. **Table 17** shows that 90% of the high potential arable land is found in two regions of the commercial farming areas, namely Mpumalanga and KwaZulu Natal. The medium potential land is more evenly distributed, with the Free State, Mpumalanga and North West Provinces jointly making up 62% of this category.

Table 16: Agricultural potential in the SADC states

Country[1]	Land area ('000 ha)	%[4]	Potentially arable land ('000 ha)	%[4]	Arable land used ('000 ha)	%[5]
Angola	124670	18,3	31500	18,7	3500	11,1
Botswana	58537	8,6	5330	3,2	1330	25,0
Lesotho	3035	0,5	861	0,5	361	42,0
Malawi	9408	1,4	3273	1,9	2273	69,0
Mozambique	78409	11,5	40409	24,0	3080	7,60
Namibia	82329	12,1	-	-	662	-
South Africa[2]	122320	17,8	13337	7,9	10615	80,0
Swaziland	1720	0,3	364	0,2	161	44,2
Tanzania	88604	13,0	45030	26,7	5030	11,2
Zambia	74071	10,8	24998	14,8	4998	20,0
Zimbabwe[3]	38667	5,7	3524	2,1	2524	71,6
Total	**681770**	**100**	**184346**	**100**	**37093**	**20,1**

Source: Adapted from Rwelamira and Kleynhans, 1997
Notes: [1] Excludes the former Zaire and the Seychelles, the newest members of SADC.
[2] South African data were taken from Abstract, 1997.
[3] Weiner *et al* report a lower land use pattern in the commercial (higher potential) areas. For Mashonaland they estimated that about 33% of the arable land was cropped in 1981-1.
[4] Country total as a percentage of regional total
[5] Arable land used as a percentage of potentially arable land per country.

Table17: Crop production potential in South Africa

Province[1]	High potential		Medium potential		Low potential		Total
	Hectares	%	Hectares	%	Hectares	%	Hectares
A: Western Cape	0	0	8 974 63	12,5	639 437	15,0	1 536 900
B: Northern Cape	0	0	0	0	331 109	7,8	331 109
C: Free State	0	0	2 133 106	29,6	1 219 906	28,7	2 255 906
D: Eastern Cape	283 521	8,8	387 958	5,4	376 297	8,8	1047 776
E: KwaZulu Natal	1 539 400	47,9	440 000	6,1	70 000	1,0	2 049 400
F: Mpumalanga	1 359 711	42,3	1 170 738	16,3	34 176	0,8	2 564 625
G: Northern Province	20 051	10,6	156 761	2,1	595 951	14,0	772 763
H: Gauteng	6 496	0,2	834 657	11,6	165 817	3,9	1006 970
J: North West	0	0	1 161 727	16,2	896 219	19,0	896 219
Total	**3 208 909**	**22,0**	**7 182 410**	**49,0**	**4 238 912**	**29,0**	**14 630 231**

Source: Soil and Irrigation Research Institute, 1986.
Notes: [1] These are the 'development regions' of the 1980s and not the modern provinces of South Africa. However, the borders correspond broadly. Data include 'commercial farming areas' only. There are an additional 2 413 414 hectares of arable land in the former homelands, bringing the total to some 17m hectares.

Finally, although there is a limited scope for horizontal expansion of crop and horticultural production in South Africa, some provinces use relatively fewer of their resources than others. At the one extreme, Table 18 shows that the Western Cape seems to have reached the limits of its horizontal expansion potential, while the Northern Province uses less than 50% of its available arable land. The growth potential for crops and horticultural products, however, depends on vertical as well as horizontal expansion. It is clear that there is considerable scope for vertical expansion in the commercial farming areas as well as the former homeland areas (Table 18). This is especially relevant for horticultural products, which are relatively less land using than either crop or livestock production. Nevertheless, one of the remaining anomalies in South African agriculture remains the fact that the country is a net importer of red meat, despite the relatively abundant grazing resources at our disposal.

Table 18: Land utilisation in South Africa, 1991

Province	Total farm land	Potentially arable land	%[1]	Arable land used	%[2]	Arable land in the former homelands	%[3]
Western Cape	11 466 956	1 600 537	14,0	1 776 858	111	-	111
Northern Cape	29 094 172	454 465	1,6	331 872	73	-	73
Free State	11 674 811	4 221 423	36,2	3 281 486	78	34 900	78
Eastern Cape	14 518 725	1 172 901	8,1	555 282	47	529 400	86
KwaZulu Natal	7 168 844	1 199 675	16,7	726 575	61	360 700	87
Mpumalanga	5 595 618	1 734 896	31,0	1 215 635	70	137 898	76
Northern Province	9 016 621	1 700 442	18,9	557 804	33	530 700	48
Gauteng	774 265	438 623	56,7	293 571	67	-	67
North West	9 628 749	3 360 459	34,9	1 876 903	56	951 975	78
Total	**98 938 761**	**15 883 421**	**16,1**	**10 615 986**	**67**	**2 545 573**	**80**

Notes: [1] Ratio of arable to total farming land per province
[2] Ratio of arable land used to potentially arable land in the province
[3] Ratio of arable land used to potentially arable land in the commercial farming areas of the province

2.2. Water[42]

South Africa's water resources are scarce and limited. The international benchmark for chronic water scarcity is 1 000 cubic meters per capita per year of renewable freshwater resources. South Africa, with an annual per capita availability of 1 200 m^3 per annum, is already close to this threshold. The following factors relating to South Africa's water situation are self-explanatory:

- low average annual rainfall: 497 mm compared to a world average of 860 mm.
- unevenly distributed rainfall: 65% of the country receives less than 500 mm of rain annually and 21 percent receives less than 200 mm
- rainfall variability: long-term cycles of 18 to 20 years have been demonstrated for the summer rainfall region
- average annual potential evaporation (between 1 100 mm and more than 3 000 mm) in excess of the annual rainfall
- very low conversion of rainfall to runoff (water that reaches our rivers).

[42] This section is based on Lombard, J, 1998. 'The physical-biological environment.' In Spies, PH (Ed.) *Agrifutura 1997/8.* University of Stellenbosch, Agrifutura Project

- as a consequence of the topography and rainfall distribution, the natural availability of water across the country is very unevenly distributed, with more than 60 percent of the river flow coming from only 20 percent of the land area. South Africa is also poorly endowed with groundwater as it is mainly underlain by hard rock formations that, although rich in minerals, do not contain any major groundwater aquifers
- of the total average annual surface runoff of 50 150 million m^3, about 20 045 million m^3 (40 %) is already being used. It is estimated that an additional 13 245 million m^3 per annum (26 %) could be available for use, mainly through the provision of further storage. The remaining 33 % represents water lost to evaporation as well as spillage of flood waters (in excess of what can be controlled by dams). Because of the highly variable nature of river flow and the infrequent occurrence of large floods, greater regulation to limit spillage is not economically viable, since much of the flood waters which may be stored will be lost to evaporation.

Most of the main metropolitan and industrial growth centres in South Africa developed around mineral deposits and harbour sites, and are thus remote from major river courses. Some of the irrigation developments are also located in sub-optimal regions, having been established when water was still relatively abundant. Most of the water drainage is in the eastern and south-eastern parts of the country, while the greatest need for water is in the central region and adjoining areas. In some parts the use of water already significantly exceeds the resource potential. Supply and needs have thus had to be balanced by intensive interbasin transfers of water. Total storage capacity of about 27 000 million m^3 has been created by the construction of large dams, holding more than half of the mean annual runoff for the country.

Table 19: Sectoral water utilisation for various regions in South Africa, 1996

Region	Urban, domestic	Mining, industrial	Irrigation, forestry	Environment	Total
	(million m^3 per annum)				
North	704	433	1 861	375	3 373
Eastern Inland	150	44	1 826	300	2 320
Eastern Coastal	508	589	2 217	2 290	5 604
Southern Coastal	137	41	1 350	240	1 768
South Western	351	105	1 570	370	2 396
Karoo	65	10	2 173	307	2 555
Central	256	376	1 347	50	2 029
South Africa	2 171	1 598	12 344	3 932	20 045
Proportion (%)	**10,83**	**7,97**	**61,58**	**19,62**	**100,00**

A sectoral breakdown of the total use of water is given in **Table 19.** Irrigation remains the dominant user/consumer of water. Much of the irrigation occurs in the drier parts of the country, such as the Orange basin, the Crocodile (Limpopo) basin, the lower Vaal basin, the Sundays/Fish basins and the Western Cape area. Afforestation, which uses large quantities of water before it reaches the streams or rivers (approximately 8 % of the total), is more dominant in the wetter, eastern parts of the country. The domestic and general urban use of water constitutes about 11 % of the total usage, which is larger in magnitude than the approximately 8 % currently used by mining and certain large industries outside municipal areas.

The relative importance of the various sectors is, however, expected to change. While irrigation and afforestation will remain the dominant user/consumer of freshwater, the urban and domestic sector will increase its share.

It is not only the quantity but also the quality of water that is a matter of concern in South Africa, largely due to salination and to a lesser extent to eutrophication and pollution by trace elements and micropollutants.

Effective management of water on all levels of decision-making is necessary to ensure sustainable development. The water law reform process was set in motion in 1995 and culminated in the promulgation of a new Water Act, No 36 of 1998. Some of the changes in the decision-making environment of agriculture stemming from the new proposals are as follows:

- higher priority for water used/consumed by humans and the environment. Depending on population growth, migration and technology, the absolute amount of water available for irrigation and industrial use/consumption will be limited in future - sooner rather than later for certain regions within South Africa
- the termination of the riparian principle of water rights and the proposed time-bound authorisation of water use will probably affect agricultural land values and possibly the pattern of crop production and land use in certain areas of South Africa. Depending on the length of the time-bound authorisation (permit), the effect will be seen in decision making on perennial crops, where a large capital investment is needed for an economic life span of between 20 to 30 years
- water quantity and quality are to a greater or lesser degree affected by land use practices (agricultural and non-agricultural). The need for an integrated approach to water and land management is thus obvious. The implementation of an integrated catchment management system will hopefully lead to greater efficiency and equitable water use/consumption
- irrigation is generally considered to be an inefficient user of water, and less than 50% of all irrigation water reaches the crop it is designed to water. Subsidisation of water is an international phenomenon, yet there are clear indications that the price of water in South Africa will be adjusted upwards to better reflect the cost of supply. This could have significant impacts on the economics of irrigation and the use of modern technology.
- greater international co-operation between Southern African countries could imply different sectoral water consumption/use patterns in future. A change in the allocation of water for irrigation in Southern Africa, based on the irrigation potential of land and the water use efficiency of crops, could even imply less water for irrigation in South Africa in the long run.

3 Capital and intermediate goods

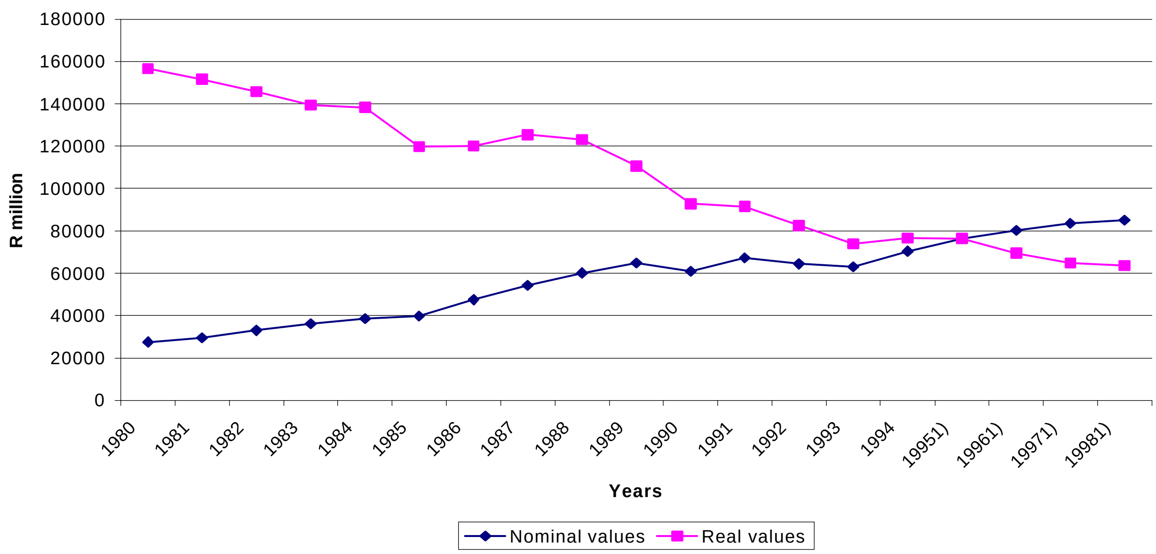
In the following discussion the major trends in the value of capital and intermediate goods used in South African agriculture are described. In this discussion two major input items (tractors in the case of capital goods and fertiliser in the case of intermediate goods) are analysed in greater detail for illustrative purposes.

3.1. Capital formation

Figure 35 below shows the trend in the total value of capital assets on commercial farms in South Africa. The graph shows that the value of these assets has declined consistently in real terms since 1960, i.e. that these values have increased at a lower rate than the rate of inflation.

This trend in capital use in South African agriculture can be illustrated with respect to the relationship between tractor use, tractor prices and the value of the capital stock in tractors in the country. **Figure 36** shows the growth rates in tractor prices for the period 1965 – 1999. It is evident that, while the rate of price increases declined after the period 1985 – 1989, there has been little relief for farmers. However, **Figure 37** shows how farmers reacted to the changes to farm profitability brought by deregulation and these price increases. The volume of sales of tractors reached a staggering 25 000 per year in 1981, which was roughly double the average annual sales between 1963 and 1981. Since then, sales have declined consistently, and have been less than 6000 per year since 1990[43].

Figure 35: Total value of capital assets on commercial farms in South Africa



[43] However, this does not seem to have resulted in a restructuring of the industry. In 1998 there were 27 different tractor suppliers in the market, providing a total of at least 319 different tractor models.

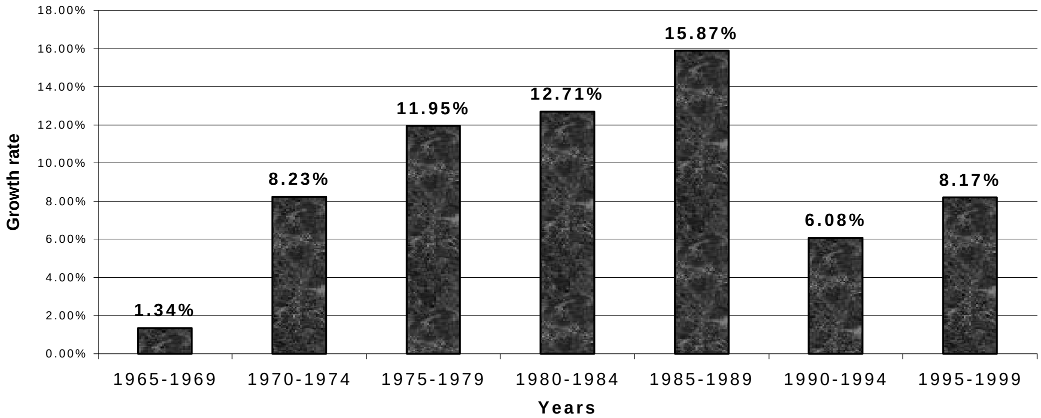
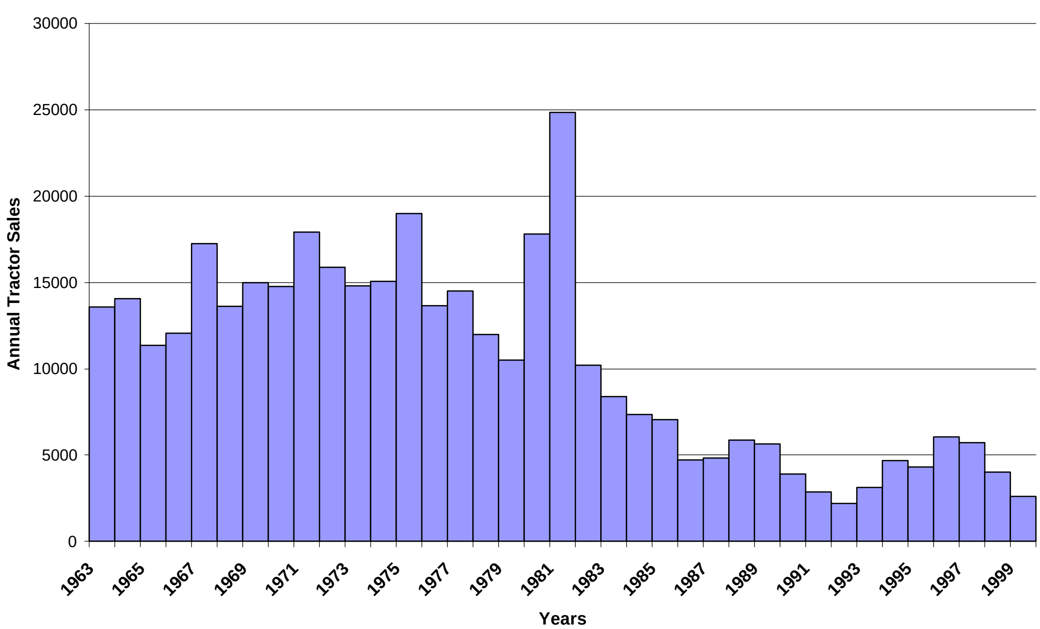


Figure 36: Growth in tractor prices, 1965 – 1999

Thus, farmers adapted by buying fewer new tractors. This was made possible by new technology (*inter alia* larger tractors[44]), by increasing the average age of the tractor fleet and by improved productivity of the existing fleet. It is also evident that, by keeping tractors for longer, the cost of maintenance would increase. **Figure 38** shows that the absolute number of tractors in use in agriculture declined by roughly half, from around 200 000 units in 1983 to some 90 000 units in 1999. **Figure 39** shows a similar trend in the number of harvesters and threshers in use in the sector. These numbers peaked at almost 40 000 in the early 1980s[45], while there are only some 12 000 in use at present.

Figure 37: Tractor sales in South Africa, 1963 - 1999



[44] Data from the South African Agricultural Machinery Association (SAAMA) show that the average size of tractors sold in South Africa remained relatively constant until 1992, mainly as a result of the protection afforded to Atlantis Diesel Engines under the import substitution programme. Atlantis Diesel sold mainly four cylinder engines. After this protection was lifted in 1993 the average size of tractors increased from 58,5kW to 70kW in 1997.

[45] This peak coincides with the bumper maize crop of 1981, and was not harmed by the tax regime that allowed farmers to write off capital purchases in the year of acquisition.

The impact of this reduction in the size of the tractor fleet on the structure and performance of the agricultural machinery sector bears noting, as it is illustrative of the backward linkages between agriculture and the input supply sectors. Data from the IDC show that the agricultural machinery subsector has strong ties with the rest of the world, with an import penetration of around 70% of the market, but also an export propensity of above 40%. Imports are mainly from the USA, Germany and France, and exports to Zimbabwe, Zambia, the USA, Brazil and Australia. Thus, while the industry has suffered from the decline in South African sales (domestic demand is expected to continue to decrease and imports to increase by more than 4% per year) it has succeeded in penetrating export markets, and exports are expected to increase at above 6% per year through 2001. The current tariff on imports is 0.6% as opposed to the bound rates under the GATT of 7.6%.

Figure 38: The size of the tractor fleet in South Africa

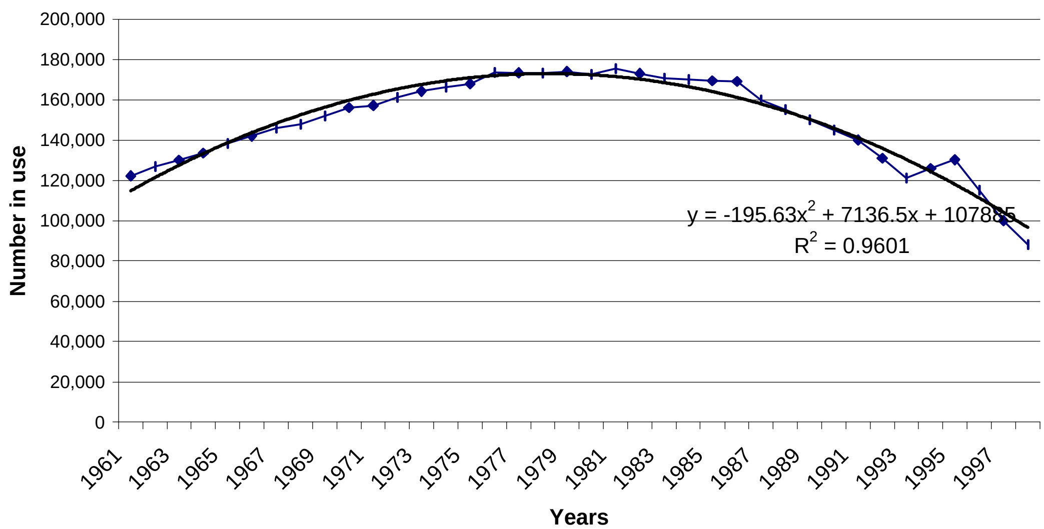
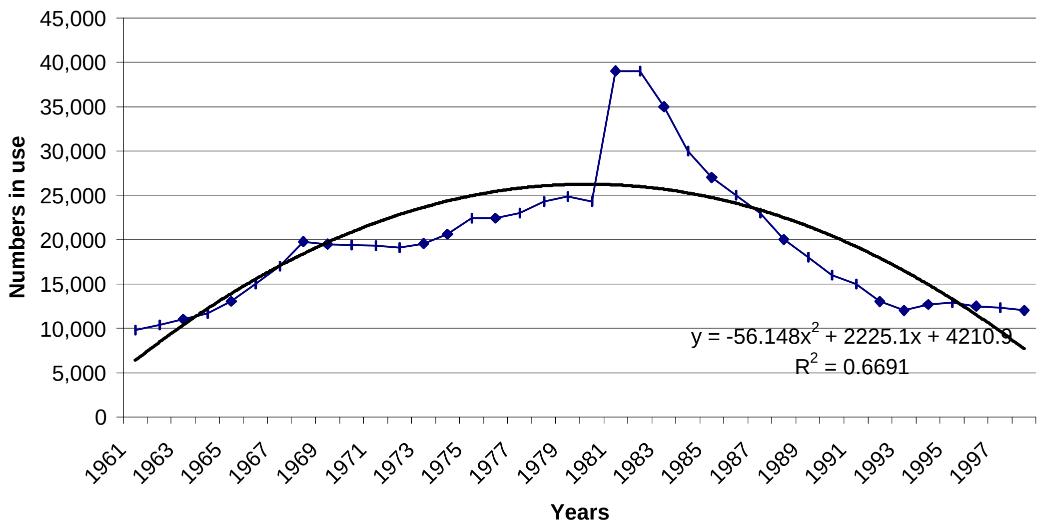


Figure 39: The number of harvesters and threshers in use, 1961 - 1998



One of the major reasons for the decline in the real value of all capital assets was the decline in the real value of land and fixed improvements. On the other hand, the gross value of machinery, implements, motor vehicles and tractors increased, at least since 1995, while the real value of livestock has also decreased after increasing in the early 1990s. The net result of these changes seems to be that total annual gross capital formation in agriculture, while still subject to considerable fluctuation, is at a lower average level now than in the period 1973 – 1983 (see Figure 40).

Figure 40: Total gross capital formation in agriculture

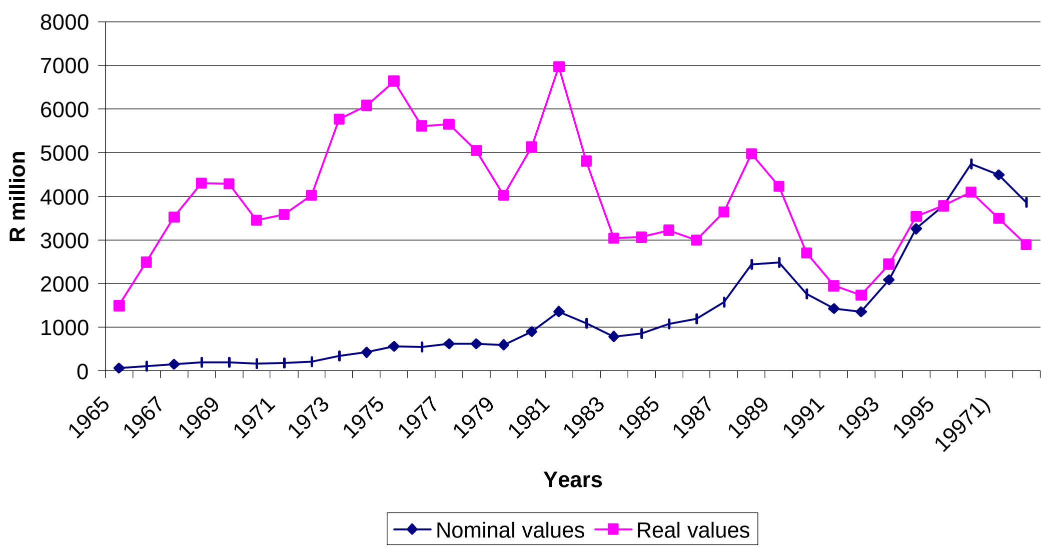
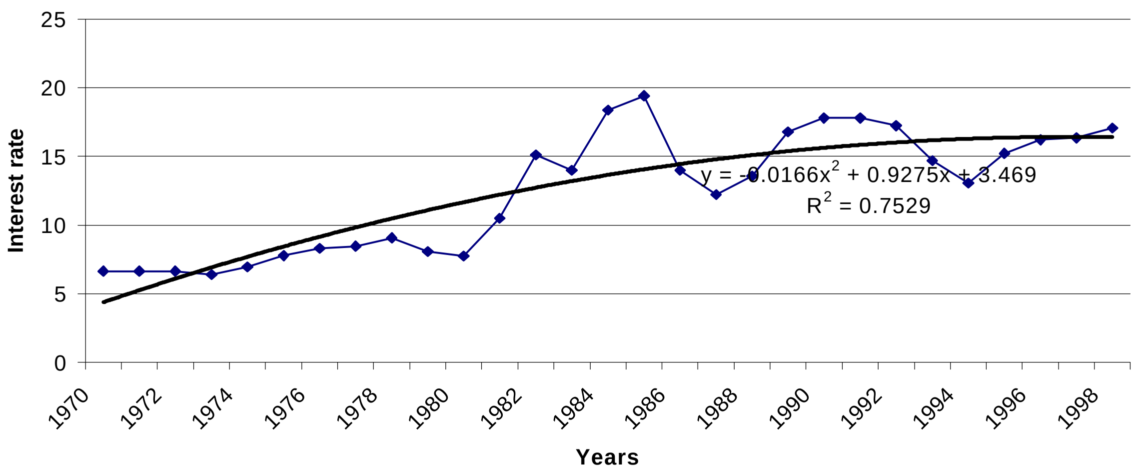


Figure 40 shows a part of the reason for this lower level of capital formation, namely the trends in interest rates since the early 1970s. Negative real interest rates were maintained through much of the 1970s, and again during the second half of the 1980s

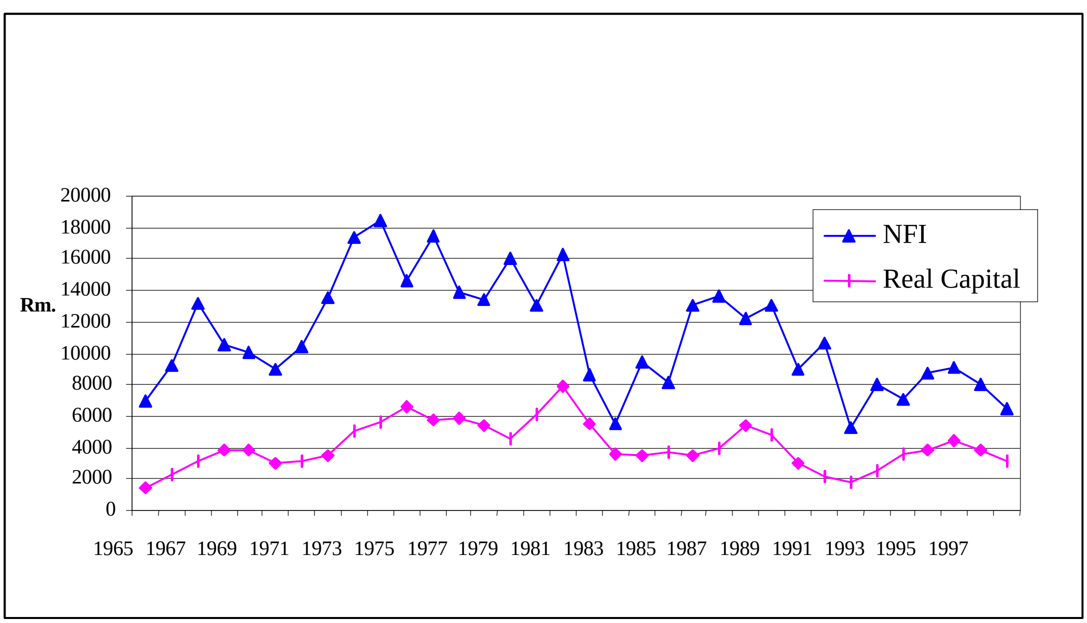
(1987 – 1989). **Figure 40** shows that the rate of capital formation increased considerably during these periods.

Figure 41: Annual weighted interest rate index: Land Bank



Finally, the relationship between the rate of growth in real gross capital formation and the rate of growth in Net Farm Income (NFI) as an indicator of profitability in the sector is shown in Figure 42 below. The relationship between these two trends is evident: changes in NFI growth track changes in gross capital formation, while both of these variables are at a lower level now than in the preceding decades. This confirms the point made above, namely that the profit rate and the general level of interest rates are more important determinants of the rate of capital formation than the prices of the capital items.

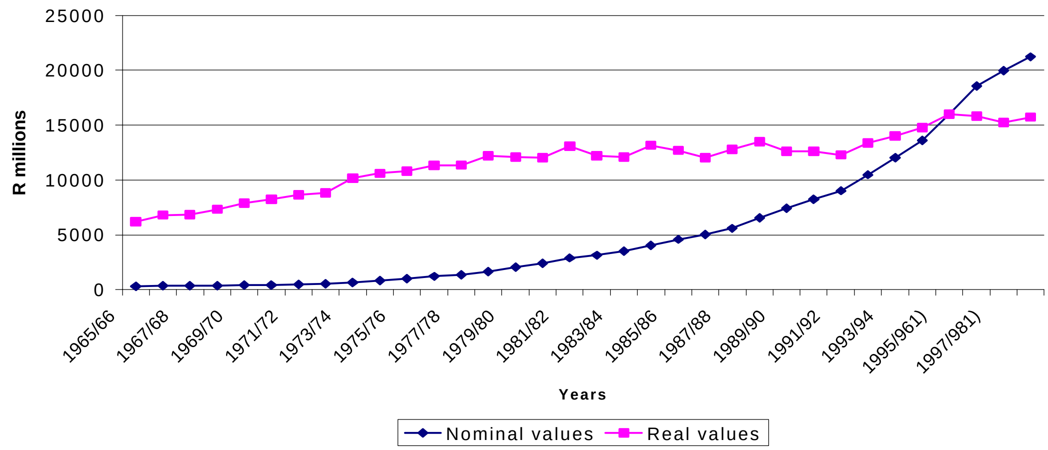
Figure 42: Real gross capital formation and Net Farm Income



3.2. The use of intermediate goods

While the real value of capital assets in commercial agriculture in South Africa has declined in recent years, the value of intermediate goods used has increased in real as well as nominal terms. The combined value of intermediate goods used is reflected in **Figure 43**. From this graph it is evident that the combined real value of intermediate goods has remained in the range of R10billion to R16billion for the past two decades, and that purchases of intermediate goods have been increasing since the beginning of the 1990s. However, this combined value hides considerable fluctuations in the rate of use of different types of intermediate goods.

Figure 43: Total value of all intermediate goods and services purchased



Trends in the use of intermediate goods can be illustrated with reference to the fertiliser subsector. **Figure 44** shows the changes in the prices of fertiliser used on South African farms for the past three decades, while **Figure 45** shows the growth rates in these prices. The latter shows how the rate of price inflation decreased with the general decline in the inflation rate since around 1990. Fertiliser prices rose at a relatively lower rate than the prices for other intermediate goods in this period. The net result is shown in **Figures 46** and **47**. Commercial farmers reacted to these changes by using less fertiliser. **Figure 46** shows that the value of fertiliser use declined from almost R3bn per year in the early 1980s to some R1,5billion annually in the late 1990s. This trend is confirmed in **Figure 47**, which shows that the unit sales of fertiliser have decreased from a level of above 1m tons per annum in the early 1980s to below 800 000 tons per annum since 1993.

Figure 44: Nominal price of fertiliser

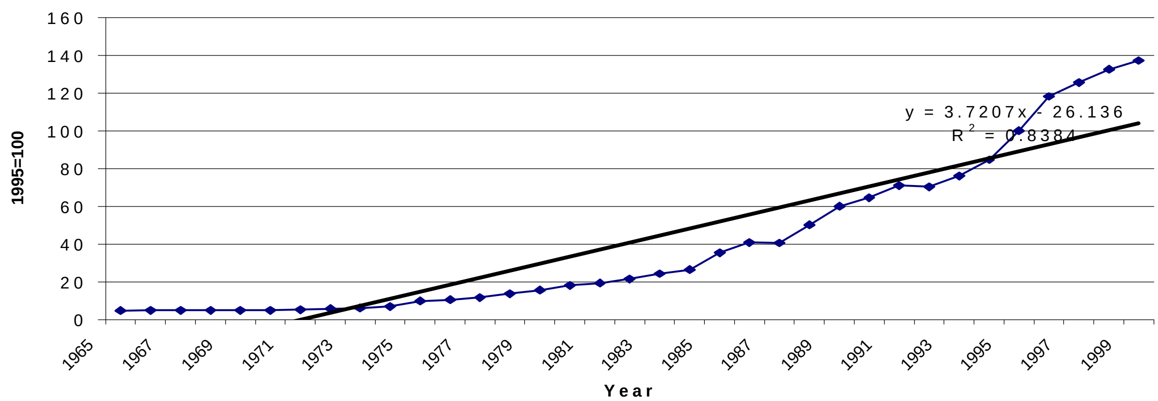


Figure 45: Rate of growth in fertiliser prices

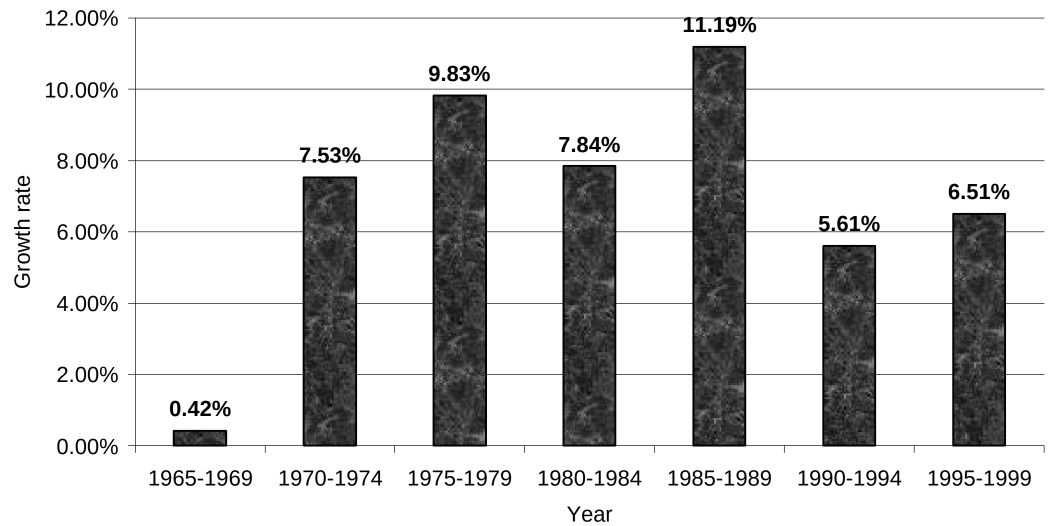


Figure 46: Value of fertiliser used

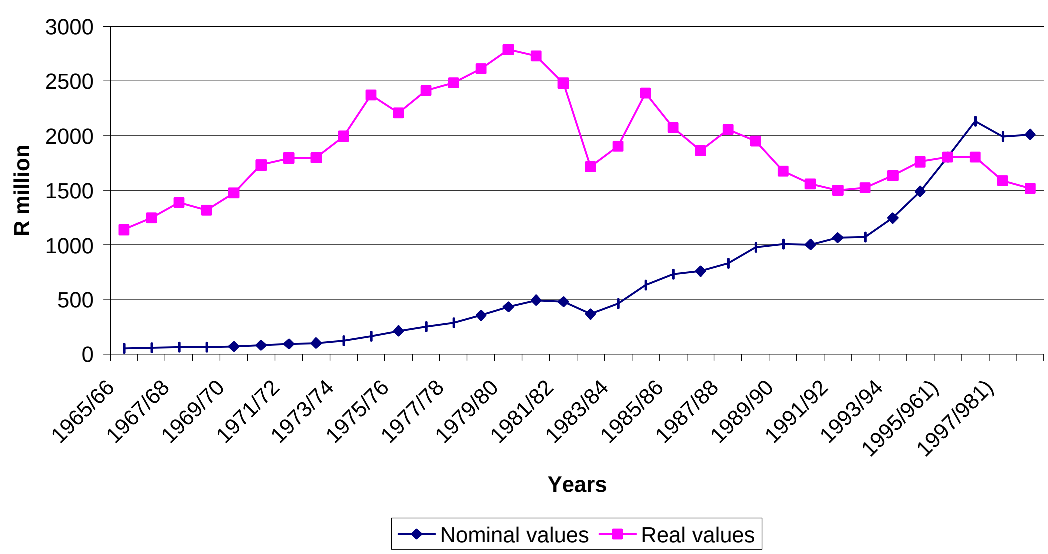
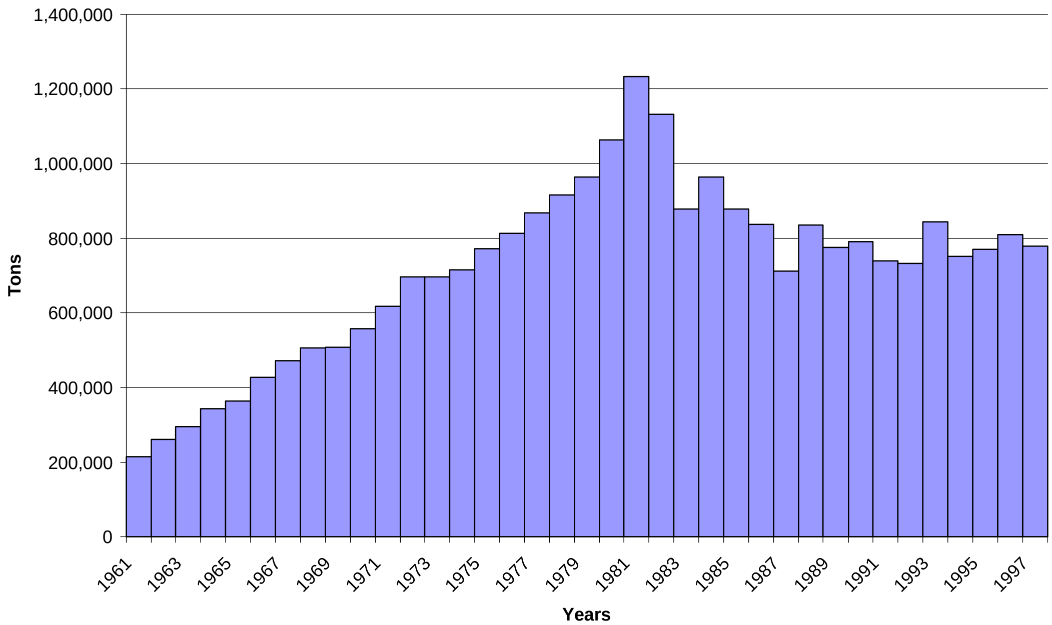


Figure 47: Unit sales of fertiliser, 1961 - 1997



The decline in fertiliser sales to the domestic agricultural sector has also forced fertiliser producers to look for export markets. The fertiliser and pesticides subsector reacted to the decline in domestic sales with a strong export drive in the first part of the 1990s, when exports increased by 26% per year, with exports making up a third of total industry sales[46]. The main export destinations were neighbouring countries, Australia, Asia and South America. The industry also imports about a fifth of requirements, with imports and exports used to cover peak demand for products in domestic and foreign markets. The weighted average import tariff for fertilisers and pesticides is currently 0,9% compared with the bound rate to the GATT of 11,4%.

Finally, **Figure 48** shows the relationship between the changes in real expenditure on intermediate goods over time, and farm profitability as measured by Net Farm Income. Here it is evident that farmers have continued to purchase production goods from the market despite a general decline in NFI. Nevertheless, the graph shows that purchases of intermediate goods and NFI tend to move in the same direction: increased profitability tends to be associated with greater purchases of intermediate goods.

[46] Data from the IDC.

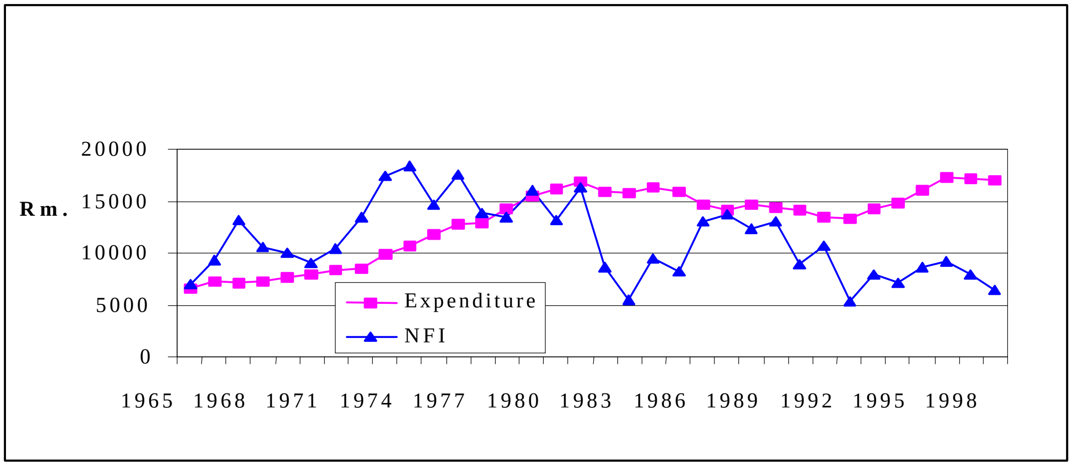
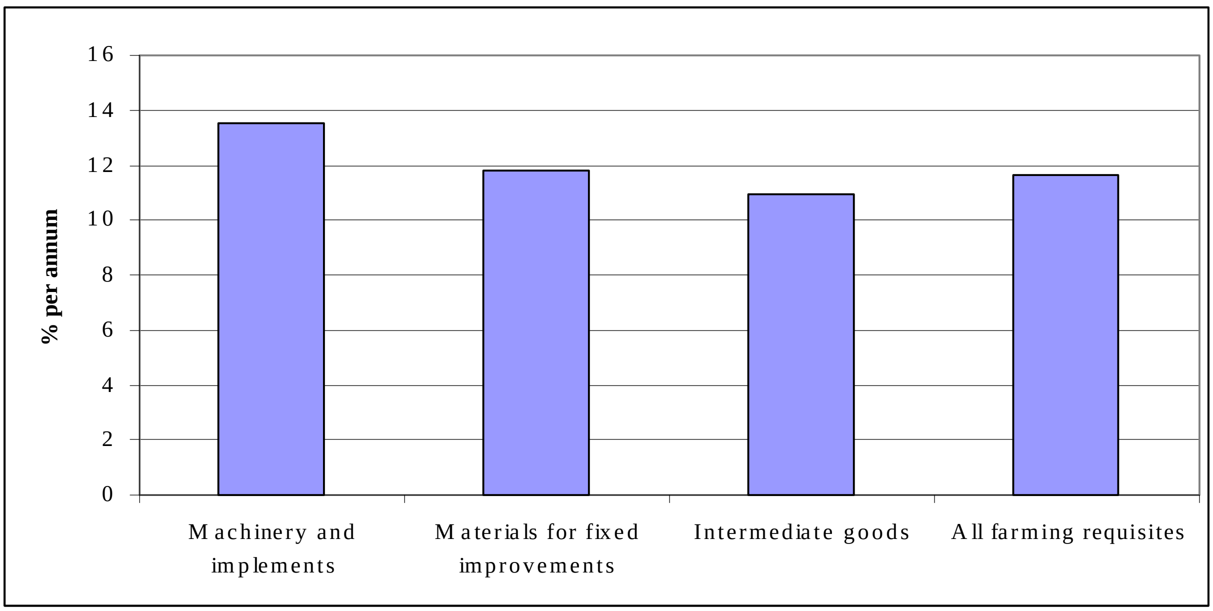


Figure 48: Real NFI and real expenditure on intermediate goods and services, 1965-1998

Figure 49: Relative growth in input prices, 1980 - 1999



The detailed description of input use in commercial agriculture in South Africa shows that the total capital stock has declined in value, largely as a result of the decline in the real value of land and fixed improvements, and that the real value of intermediate goods used in the sector has increased, over the past two decades. The relative rates of growth over the past two decades are shown in **Figure 49**.

4 Output

Table 20 shows the rates of growth for the three main categories of agricultural production, namely field crops (principally maize, wheat, sorghum and oilseeds, and mostly produced on dry land); horticulture (fruit and vegetables, mostly produced under irrigation); and livestock products. Total agricultural output has grown by an average of close to 2,5% per year since 1947. However, the rate of growth has slowed since 1980, largely because of the decline in field crop production since that time, and a more recent decline in growth rates for animal production. By contrast, growth in horticultural output has accelerated to almost five percent per year during the 1990s.

Table 20: Annual real growth in the gross value of production

	Field Crops	Horticulture	Animal production	Total
1947-1996	2,37	3,60	1,78	2,40
1947-1980	4,06	3,22	1,77	3,01
1980-1996	-1,02	4,37	1,78	1,15
1990-1996	-0,51	4,77	0,55	0,98

4.1. Field crop production

Table 21 shows that the yields for the major field crops have increased considerably since the middle of the Twentieth Century, and that this increasing trend continued in the period after liberalisation began. The trend was maintained despite the decline in the use of tractors and fertiliser and the increase in the value of intermediate inputs used, as shown in the previous section. Thus, crop farmers have adapted to higher prices by changing their production methods. However, these higher physical yields could have resulted from so-called 'cropping pattern effects' rather than higher productivity. The evidence on the area planted to the main field crops, shown in **Figure 50**, tends to support this conclusion. The decline in the area planted to maize and wheat could have been the result of a reallocation of production out of more marginal areas, thus causing an increase in industry average yields.

Table 21: Average crop yields, 1950-1999

	1950-1959	1960-1969	1970-1979	1980-1989	1990-1998
Maize	1,02	1,33	1,92	1,88	2,14
Wheat	0,60	0,64	0,93	1,24	1,68
Sorghum	1,02	0,84	1,72	1,68	2,08

The net result of these changes has been both improved productivity and lower gross value of production. To confirm this point, **Figure 51** shows the long-term trend in the physical volume of production of maize and wheat, the two major field crops in South Africa. It is evident that there has been no discernible change in the output trend over the past three to four decades. Thus, the decline in the gross value of production has been as a result of changing prices rather than a change in the volume of output.

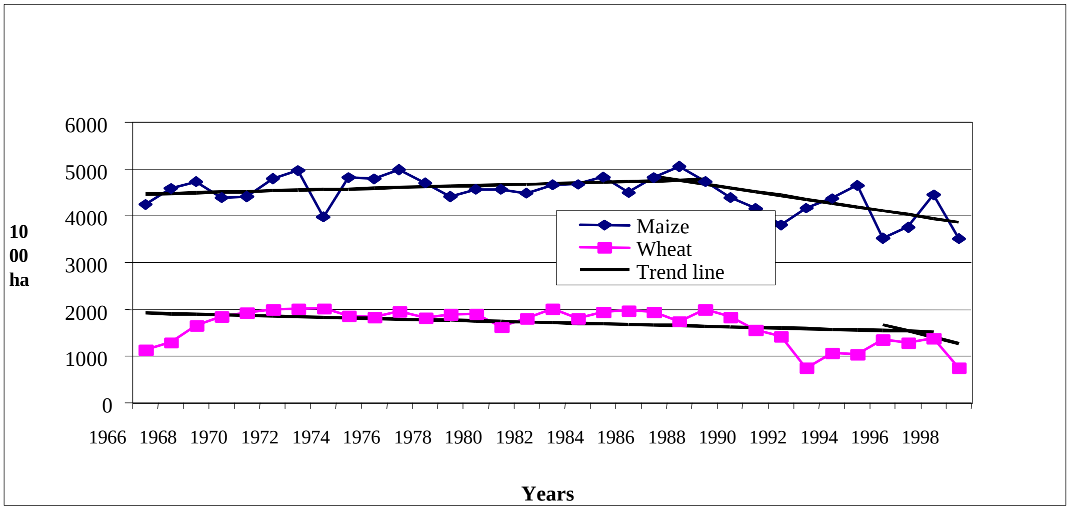
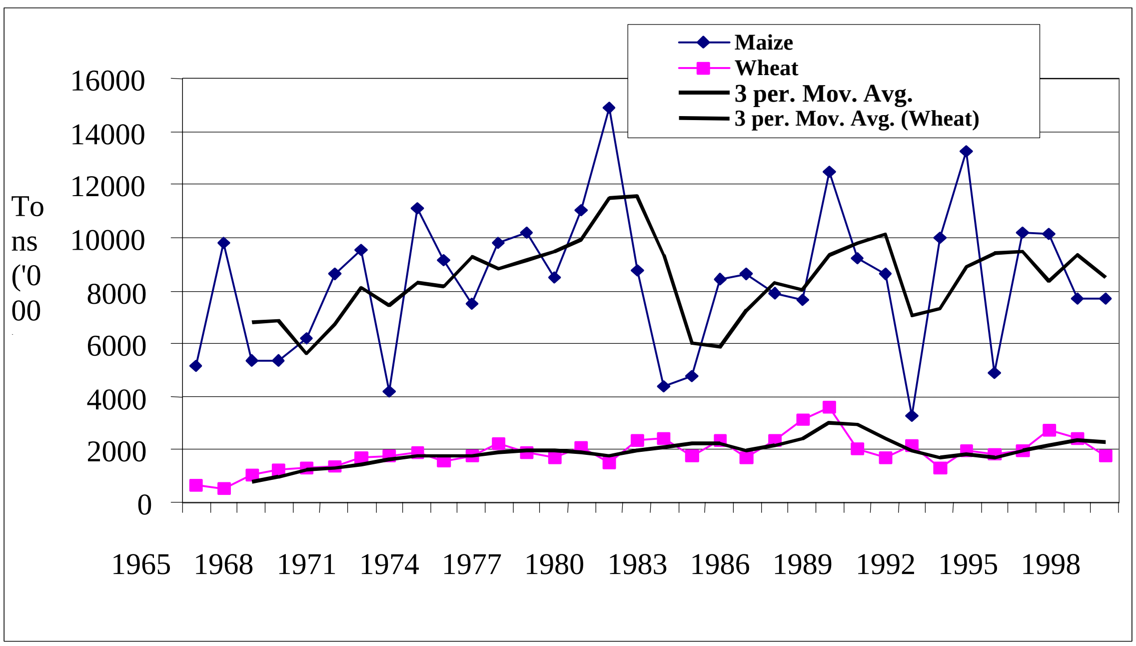


Figure 50: Area planted to maize and wheat, 1966 - 1998

Figure 51: The physical volume of maize and wheat production in South Africa



4.2. Export growth

The data in **Table 22** show the main trends in farm exports from South Africa. Agricultural exports have kept pace with the generally strong trend in export growth from the country. However, the 'commodity balance' has weakened, with agricultural imports growing faster than the exports of unprocessed agricultural products. Thus, the increase in exports has largely come from processed farm products, which now make up almost 60% of total agricultural exports, up from 51% 20 years ago. Agricultural imports have also increased from 2,6% of the total import portfolio of the country to 6,4%.

Table 22: Trends in South Africa's agricultural exports, 1994 - 1998

	1980	1990	1998
Exports Total South African exports	19 915,4	60 770,0	156 184,2
Total agricultural exports	2 052,5	5 289,8	13 394,1
Unprocessed farm exports (Rmillion)	1 008,9	2 378,7	5 741,6
Processed farm exports (Rmillion)	1 043,6	2 911,1	7 652,5
Processed exports/total agricultural exports	51	55	57
Agricultural exports as % of total exports	10,3	8,7	8,6
Imports Total SA imports (Rmillion	14 381,3	44 141,5	146 805,1
Agricultural imports (Rmillion)	369,2	2 203,3	9 345,2
Agricultural imports/total imports (%)	2,6	5,0	64

Field crops are not conventionally grown in South Africa for the export market. One of the legacies of the Control Board era was the use of the export market as a way of clearing the domestic market in an attempt to maintain higher price levels. This is confirmed by the data in **Table 23**, which shows the variability in exports of field crops such as maize and sugar. **Table 23** also shows the rapid growth in fruit exports, across the full range of deciduous, citrus, and canned fruit. While exports of subtropical fruit have historically been much smaller, the table also shows the strong recent growth in the exports of avocados.

Table 23: Major South African agricultural export categories (Rm), 1994 – 1998

	1994	1995	1996	1997	1998
Total horticultural exports	2 623,0	3 121,4	3 027,7	3 843,1	4 757,5
Horticulture as % of agriculture	32,8	38,9	26,0	31,4	35,5
Fresh deciduous, table grapes	1 035,2	1 412,6	1 141,3	1 646,7	2 028,1
Preserved fruit and jam	768,0	918,1	1 104,4	1 190,7	1 236,3
Citrus fruit	763,8	722,2	696,6	910,7	1 385,0
Avocados	56,0	76,9	57,3	90,6	184,5
Wool	321,7	325,3	366,6	369,1	387,3
Hides and skins	272,4	350,1	477,7	468,0	455,5
Maize	1 696,7	642,2	1 715,7	1 226,6	980,1
Cane sugar	434,0	545,7	1 320,1	1 187,7	1 738,1
Wine	246,7	332,9	797,6	799,6	992,2

5 The profitability of agriculture

When the prices of farm inputs change the profitability of the agricultural sector also changes. In the longer term farmers adapt to such changes by either decreasing their level of input use, by increasing output from a constant level of input use or by some combination of these. In each case, productivity has been increased. In this section, historical trends in factor productivity are analysed first. This is followed by an analysis of the flexibility in input substitution in the sector, and finally by an analysis of the existence of scale economies. In all three cases the long-term trends are elucidated to show the interaction between policy and competitiveness in the sector.

5.1. Growth in Total Factor Productivity[47]

Any dynamic analysis of the effects of an increase in input prices has to account for the fact that farmers will react to profit pressures in a number of different ways. **Table 24** shows that real gross annual capital formation, which was fairly stagnant in the period from 1980, has increased at a higher rate since 1990. Thus, farmers have reacted positively to political changes, greater access to international markets and to positive real interest rates since the beginning of the decade (the table also shows that this has been accompanied by a decline in employment in the sector).

Table 24: Growth in employment and capital formation 1947-1996

	Total No of farm employees	Real Gross Capital Formation
1947-1996	0.160471	2.005
1947-1980	1.155652	2.654999
1980-1996	-1.86128	0.677346
1990-1996	-4.22271	7.785498

The physical yields that were reported in **Table 21** are merely a partial measure of productivity. The Total Factor Productivity (TFP) ratio provides a more comprehensive measure of productivity growth in agriculture. The trend in TFP growth for commercial agriculture in South Africa is shown in **Table 25** and **Figure 52**.

Table 25: Trends in TFP, 1947 - 1996

	Terms of Trade[1]	TFP	Net Farm Income
1960-1980	-0,18	2,05	4,03
1980-1990	-2,58	0,96	-3,73
1980-1996	-1,80	1,19	-2,23
1990-1996	-0,91	1,56	0,32
1960-1996	-1,01	1,66	1,20

A number of important conclusions can be drawn from the data presented in **Table 25**:

- the domestic terms of trade for intermediate and capital goods for commercial farmers were negative throughout the period 1960-1996, thus the input prices they paid were rising faster than the output prices they received throughout the period
- the rate at which the domestic terms of trade turned against commercial farmers worsened during the first phase of deregulation (roughly from 1980), and improved subsequently, but still at a far higher rate than during the period 1960 – 1980
- the terms of trade measure only the rate of changes in the prices of intermediate and capital goods relative to the rate of change in output prices. Total Factor Productivity measures the relative rate of growth in the value of all inputs (including land and labour) and outputs (i.e. it accounts for the volume of inputs and outputs as well as the prices). The data show that TFP growth slowed during the first phase of deregulation, then increased again thereafter

[47] An index that measures the total value of agricultural outputs divided by the total value of agricultural inputs.

- during the period 1980 – 1990, when inflation rates in South Africa had reached their peak and TFP growth was at its weakest, Net Farm Income growth was negative (i.e. commercial farmers' profit margins grew thinner every year) (see also **Figure 53**). However, by 1990 TFP growth had recovered sufficiently to cause a positive annual growth in Net Farm Income in the period up to 1996.

Figure 52: TFP growth, 1947 - 1996

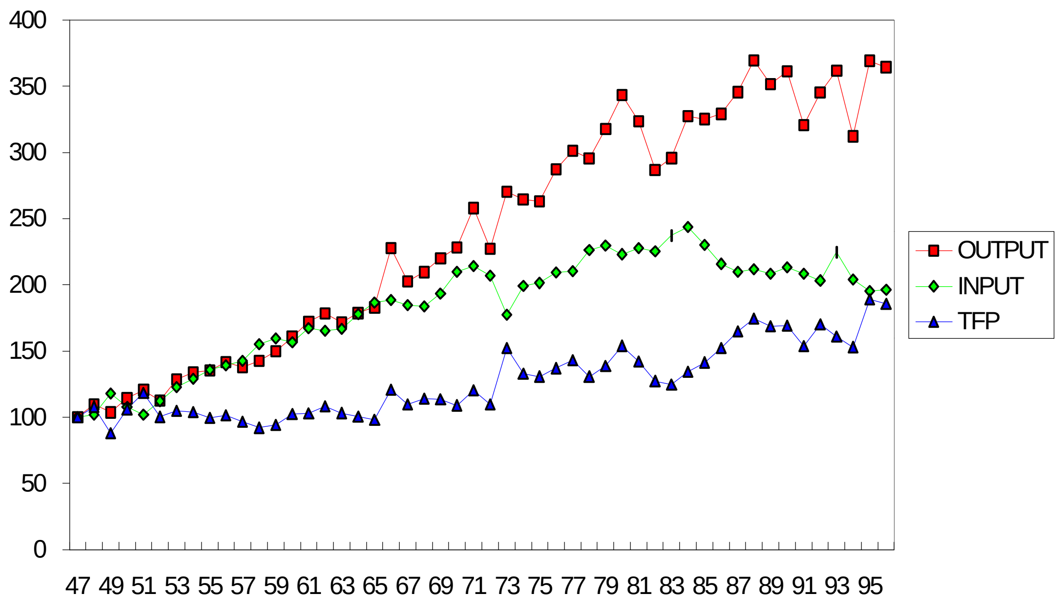
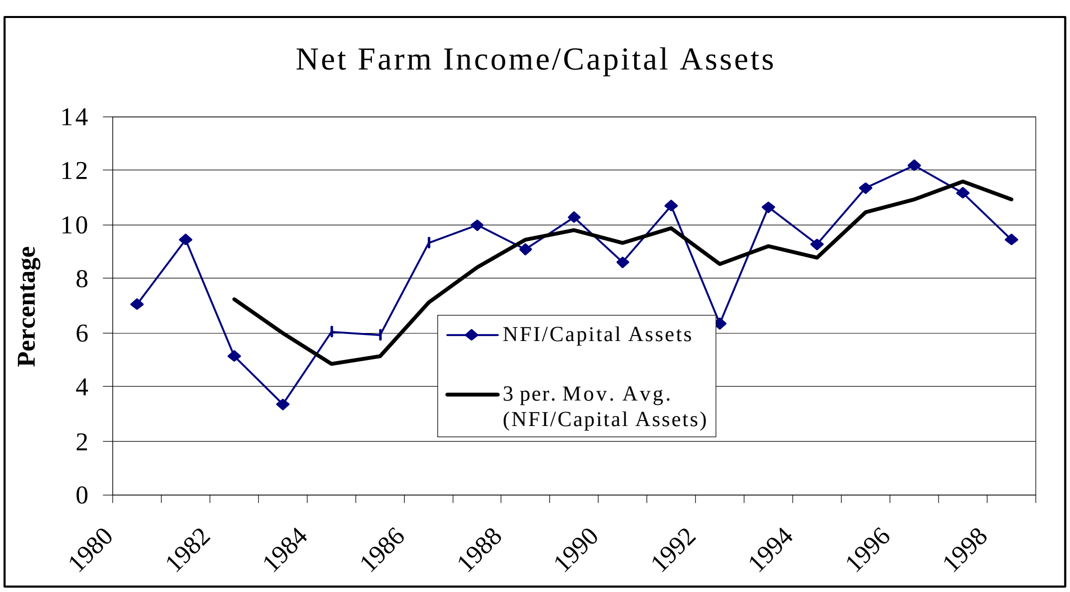


Figure 52 supports these data. In this graph, the input index includes land and labour, thus input use shows a steady decline from the 1980s, while output has increased from a low point in the drought years of the early 1980s. The result is a relatively high rate of TFP growth since the beginning of the era of deregulation.

Figure 53:Ratio of real Net Farm Income to the real value of capital assets, 1980 -1999



While Net Farm Income has declined over the past year, Figure 53 shows that the trend in the ratio of real Net Farm Income to the real value of capital assets has been increasing since the mid-1980s,

5.2. Elasticity of input substitution

The TFP results reported above measure the extent to which farmers have reacted to the cost-price squeeze. It is clear that one of the principle solutions was to change not only the volume of inputs used, but also the particular input mix. Thus, their ability to adopt new modes of production depends on their ability to substitute inputs in reaction to relative price changes. Some years ago research showed that farmers' ability to substitute inputs was severely constrained by state intervention in the sector, but that this had improved as a result of the first stages of deregulation during the 1980s[48]. The tables below show these trends, updated to the present[49].

Table 26: Elasticities of substitution between input pairs

	Capital	Labour	Intermediate goods	Land
1970 – 1973				
Capital	-1,0933	1,2628	0,2654	0,1776
Labour		-2,0651	-0,7927	-1,6747
Intermediate goods			-0,5080	0,5512
Land				7,4453
1994 - 1998				
Capital	-1,7567	1,3670	0,2697	0,3900
Labour		-2,4619	-0,0292	-1,1572
Intermediate goods			-0,4943	0,5149
Land				0,9274

The data in **Table 26** shows the elasticity of substitution between input pairs in South African agriculture between 1970 – 1973 and 1994 – 1998. When the sign of the elasticity is positive, the two inputs are substitutes. Thus, for example, the Table shows that if the price of labour increases, the use capital will increase and *vice versa*. When the sign of the elasticity is negative, the two inputs are complements. Thus, the Table shows that if the price of labour increases, the use of both intermediate goods and of land will decrease. The following comparisons can be made between the two periods 1970 – 1973 and 1994 – 1998:

- the ability of farmers to react to changes in the price of an input by using less of that input has generally improved, as shown by the own price elasticities. For example, as the price of capital (i.e. the interest rate) increases, so less capital is used. The data show that the elasticity of substitution for capital declined from –1.0933 to –1.7567, and for labour from –2.0651 to –2,4619

[48] Both articles from *Development Southern Africa* (Van Zyl and Groenewald, Vol. 5 No 1; and Sartorius von Bach and van Zyl, Vol 8 No 3).

[49] The calculations were provided by D Poonyth, University of Pretoria. All averages have been subjected to various statistical tests such as the Wald test and the Log Likelihood Test. All parameters reported are statistically significant.

between the periods 1970 – 1973 and 1994 – 1998. Land provides an interesting exception, where price increases lead to increased sales, possibly in the expectation of further increases. The extent of this reaction has, however, tempered considerably since the early 1970s, as can be seen from the decline in the elasticity from 7.4453 to 0.9274

- the elasticity of substitution between capital and labour has increased from 1,2628 to 1,3670, thus farmers' ability to substitute capital for labour has improved, albeit marginally
- the degree of complementarity between labour and intermediate goods has dropped from –0,8 to –0,03. The conclusion is that, where labour and intermediate goods used to be complementary, there is now very little connection between them. Thus, farmers' flexibility has improved
- there has been almost no change in the substitutability between capital and intermediate goods, and between land and intermediate goods.

Thus, there is some evidence of improved flexibility in input substitution in South African agriculture. This result is confirmed by the data in **Table 27**, which show the shadow elasticities of substitution between input pairs, i.e. the percentage adjustment in input ratios to changes in factor price ratios. The following observations can be made:

- the extent of the adjustment between capital and labour has increased, albeit only slightly, from 0,6592 to 0,6608 (the change from 1982 – 1985 to 1994 – 1998 was larger, namely from 0,5228 to 0,6608)
- the substitutability between capital and land has increased considerably, from –0,1027 (i.e. they were relatively weak substitutes) to 0,6148 (i.e. they have become relatively strong complements)
- the complementarity between capital and intermediate goods has improved from 0,3865 to 0,4249
- land and intermediate goods have also switched from being weak substitutes (-0,0596) to being relatively strong complements (0,3718).

Table 27: Shadow elasticities of substitution

	Capital	Labour	Land	Intermediate goods
1970 – 1973				
Capital	0	0,6592	-0,1027	0,3865
Labour		0	0,3644	0,3530
Land			0	-0,0596
Intermediate goods				0
1994 - 1998				
Capital	0	0,6608	0,6148	0,4249
Labour		0	0,3762	0,2809
Land			0	0,3718
Intermediate goods				0

While these results point to increased flexibility in input substitution, they have to be interpreted with care, as there is an evident factor bias toward capital intensity in South African agriculture. The extent of this bias, and the way in which it has changed over time, is discussed in the next section.

5.3. Economies of scale

There has been much debate on the extent of scale economies in South African agriculture. To estimate the extent to which they exist, it is necessary to measure per commodity for relatively homogeneous production systems, and to adjust for resource quality. The data reported in **Table 28** cover the entire agricultural sector and have, obviously, not been adjusted for land quality. The only valid conclusion that can be drawn from this table is, therefore, the trend in scale economies over time. In this respect, the data show relatively unambiguously that scale economies in South African agriculture have declined continuously since 1970.

This result is confirmed by the data in **Table 29**, which shows the bias in input shares in the agricultural sector in South Africa. From these data it is evident that the bias has been capital using and labour, land and intermediate good saving. At average factor shares for the entire period, the bias of technological change has been capital using at + 0,193 annually, and labour, land and intermediate good saving at –0,0139 %, -0,0227 %, and –0,1598 % respectively.

The bias toward capital using has decreased at times, but never on a sustained basis. For example, the extent of the bias decreased after the early 1980s when simultaneous financial market deregulation and the withdrawal of overt interest rate subsidies from agriculture resulted in positive real rates of interest. However, the advent of negative real rates of interest in the economy at large during 1987 – 1989 resulted, as expected, in an increase in the bias toward capital intensity.

Table 28: Scale economies in South African agriculture

Year	Scale economies	Year	Scale economies
1970	0,9417	1985	0,8280
1971	0,9347	1986	0,8432
1972	0,9335	1987	0,8387
1973	0,9245	1988	0,8246
1974	0,9138	1989	0,8110
1975	0,9044	1990	0,8048
1976	0,8971	1991	0,8056
1977	0,8913	1992	0,8051
1978	0,8879	1993	0,8094
1979	0,8888	1994	0,8116
1980	0,8843	1995	0,7998
1981	0,8636	1996	0,7935
1982	0,8442	1997	0,7903
1983	0,8451	1998	0.7848
1984	0.8301		

A similar increase in the bias is found in the early 1990s, when interest rate subsidies were targeted to agriculture as part of the drought assistance schemes that were introduced during that time. The factor bias toward capital using increased from 0,1797 in 1992 to 0,2174 in 1994, after which it again started a slow decline.

The bias toward labour saving (i.e. towards decreased employment in agriculture) is also unambiguous throughout the period, but has changed in magnitude over time. Here the data predictably show almost the same inflexion points as the capital-using bias. For example, the bias decreased in the early 1980s (from –0,0169 in 1983 to –0,0134 in 1989) as the effects of the first phase of deregulation of the sector were felt. However, the bias toward labour shedding increased again after the reintroduction of negative real interest rates to farmers in the form of drought relief subsidies.

Finally, the data also reveal the change in factor shares in favour of the use of intermediate goods that was brought about by the increase in exports, especially from the horticultural sector, after 1990. The bias toward the saving of intermediate goods decreased from –0,1762 in 1991 to –0,1318 in 1998.

The analysis in this section shows that the agricultural sector has become more efficient and more flexible as a result of the processes of deregulation that have taken place. Not only has the productivity of the sector increased, but so has the ability of farmers to adjust production processes to changing relative prices. However, the results also show that there are remaining inefficiencies in the system. The most important of these seems to be a persistent bias toward the use of capital that is unwarranted in terms of the factor proportions available to farmers. Nevertheless, it is also important from a policy perspective to establish the extent to which the input (and output) prices to which farmers are reacting are still distorted by market imperfections or by government intervention.

6 Policy distortions in South African agriculture

Farmers make decisions on what to produce and on what inputs to use in production on the basis of the relative prices of different product combinations, of different input combinations and of different input-output combinations. If, for example, farmers are following production practices that result in a level of capital intensity that is not warranted by the availability of labour relative to (scarce) capital, it is because the price of capital and/or of labour has been distorted by perceptions on government policy or by some inherent imperfection in the market. Thus, policy makers need to be aware of the extent of these distortions.

Table 29: The bias in technological change in South African agriculture

ear	**Capital**	Labour	**Land**	**Intermediate goods**
1970	0,1667	-0,0110	-0,0363	-0,1897
1971	0,1550	-0,0121	-0,0354	-0,1931
1972	0,1628	-0,0117	-0,0309	-0,1924
1973	0,2201	-0,0103	-0,0297	-0,1595
1974	0,1931	-0,0110	-0,0324	-0,1663
1975	0,1935	-0,0118	-0,0344	-0,1570
1976	0,1955	-0,0118	-0,0342	-0,1553
1977	0,1965	-0,0119	-0,0334	-0,1548
1978	0,1959	-0,0156	-0,0167	-0,1657
1979	0,2014	-0,0161	-0,0199	-0,1496
1980	0,1923	-0,0167	-0,0208	-0,1503
1981	0,1891	-0,0166	-0,0215	-0,1513
1982	0,1719	-0,0169	-0,0197	-0,1694
1983	0,1611	-0,0169	-0,0195	-0,1826
1984	0,1856	-0,0149	-0,0191	-0,1690
1985	0,2045	-0,0145	-0,0184	-0,1594

1986	0,1993	-0,0143	-0,0188	-0,1627
1987	0,2017	-0,0140	-0,0190	-0,1622
1988	0,2134	-0,0139	-0,0181	-0,1587
1989	0,1987	-0,0134	-0,0197	-0,1662
1990	0,1863	-0,0138	-0,0197	-0,1737
1991	0,1811	-0,0139	-0,0200	-0,1762
1992	0,1797	-0,0139	-0,0206	-0,1756
1993	0,2115	-0,0138	-0,0227	-0,1483
1994	0,2174	-0,0137	-0,0229	-0,1454
1995	0,2132	-0,0144	-0,0241	-0,1422
1996	0,2117	-0,0153	-0,0255	-0,1372
1997	0,2086	-0,0161	-0,0261	-0,1344
1998	0,2060	-0,0170	-0,0268	-0,1318
1970 - 1998	**0,1930**	**-0,0139**	**-0,0227**	**-0,1598**

Table 30 shows the magnitude of state intervention in South African agriculture, measured in terms of the Producer Support Estimate (PSE) calculation as prescribed by the OECD. While a partial measure of government intervention, it has the advantage of allowing cross-country comparisons, as the application of the method is monitored internationally.

Table 30: Total domestic support to South African agriculture (PSE)

	1990/1	1991/2	1992/3	1993/4	1995/6	1996/7	1997/8
Total PSE (Rbillionn)	2 848	3 904	7 499	4 119	0,536	3,574	1,351
Percentage PSE	13,69	16,74	31,04	14,50	2,28	8,87	2,72

The increase in PSE in 1992/3 was the result of the final pay-off of drought-related subsidies that were granted during the previous decade. The updated PSEs show **(see Table 31)** that the degree of subsidisation for South African agriculture has reached levels that are lower than those for Australia, and comparable with New Zealand, traditionally the lowest agricultural subsidisers in the world. The conclusion that can be drawn from these data is that the output prices that South African farmers receive are market prices, i.e. that they are relatively undistorted by government intervention. This much can be expected after the extensive deregulation of agricultural marketing that has taken place.

Table 31: Global comparison between % PSEs

Country	% PSE
Iceland	68,9
Japan	63,2
EU	45,3
USA	21,6
Czech Republic	17,5
Mexico	16,7
Canada	16,1
Hungary	11,8
Australia	6,8
South Africa	2,7
New Zealand	0,8

7 Policy implications

The main policy implications of the analysis in this report can be summarised as follows:

- economic competitiveness is determined by the degree to which a network of factors and participants can be deployed behind a common goal, namely to penetrate specific domestic and/or international markets. While the conditions in the different components of the supply chain, such as the use of inputs in agricultural production, are important, they cannot determine competitiveness on their own. **Thus, this analysis can do no more than describe the contribution to competitiveness of conditions in farm input markets**
- South African agricultural markets have been extensively deregulated, and farmers face competition in both their domestic and in foreign markets. **Macro-level analyses show that the sector as a whole has benefited from this process; however, there have been winners and losers in the process**
- one of the more important effects of deregulation has been the shift in factor shares used to produce agricultural output in the country. **The share of labour and capital has declined, and the share of intermediate goods has increased** as production has shifted away from field crops to more intensive horticultural production
- the 'cost-price squeeze' is a familiar phenomenon to South African farmers. When output prices increase at a slower rate than the price of farm requisites, as has been the case in South Africa throughout the past five decades, farm profits are squeezed. Nevertheless, **farm profits are determined not only by the relative prices of inputs and outputs, but also by the value of inputs used and outputs produced.** Thus, the quantities of inputs used and of outputs produced are as important as the prices
- **the total capital stock used in commercial agriculture in South Africa has declined in value**, largely as a result of the decline in the real value of land and fixed improvements, and **the real value of intermediate goods used in the sector has increased**, over the past two decades.
- during the period 1980 – 1990, when inflation rates in South Africa had reached their peak and TFP growth was at its weakest, Net Farm Income growth was negative (i.e. commercial farmers' profit margins grew thinner every year). However, **by 1990 TFP growth had recovered sufficiently to cause a positive annual growth in Net Farm Income** in the period up to 1996
- field crop producers have reacted to the price signals engendered by deregulation by reducing the area of land planted and switching to higher quality land, which has resulted in higher average industry yields; and by reducing the amount of capital and intermediate goods used in production. The net result has been both improved productivity and lower gross value of production. As there has been no discernible change in output trends, **the decline in the gross value of production has been as a result of changing prices rather than a change in the volume of output.**
- **there is strong evidence of improved flexibility in input substitution in South African agriculture.** The extent of the adjustment between capital and labour has increased, the substitutability between capital and land has increased, the complementarity between capital and intermediate goods has

improved and land and intermediate goods have switched from being weak substitutes to being relatively strong complements

- **there is an evident bias toward capital using technology in South African agriculture**. At average factor shares for the entire period, the bias of technological change has been capital using, and labour, land and intermediate good saving

- farmers make decisions on what to produce and on what inputs to use in production on the basis of the relative prices of different product combinations, of different input combinations and of different input-output combinations. Thus **the bias towards capital intensity is probably policy-induced.** Various analyses show that policy distortions are strongest in field crop production in the commercial farming sector and in capital-intensive production in the former homelands.

Chapter Ten

Farmer and worker perceptions

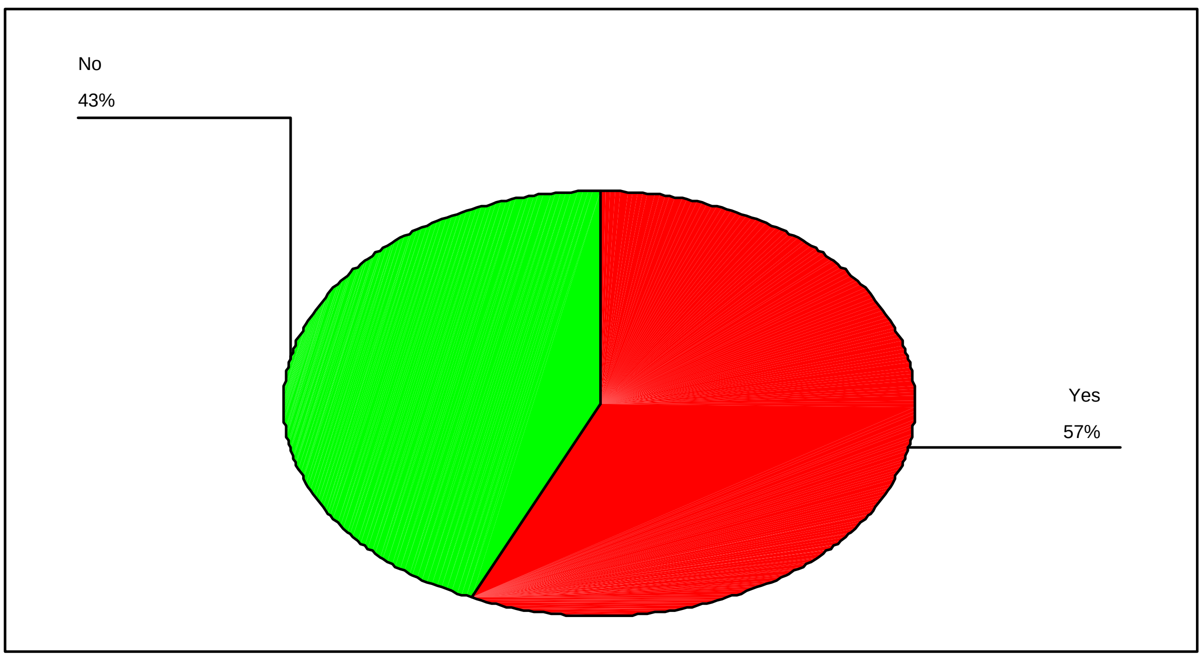
1. Expected changes in the size, organisation and composition of the labour force

The primary research by the CRLS also focused on labour trends from the employers' and the employees' perspective. The topics covered were whether the permanent labour force is of an optimal size, how it has changed over the past three years, the employment of temporary labour, labour contracting, farm finances and absenteeism rates.

Optimality of the labour force

Employers were asked to assess whether the size of their permanent labour force was optimal and if not, to state whether they were currently employing 'too many' or 'too few' permanent workers relative to the type and scale of production in which they were engaged.

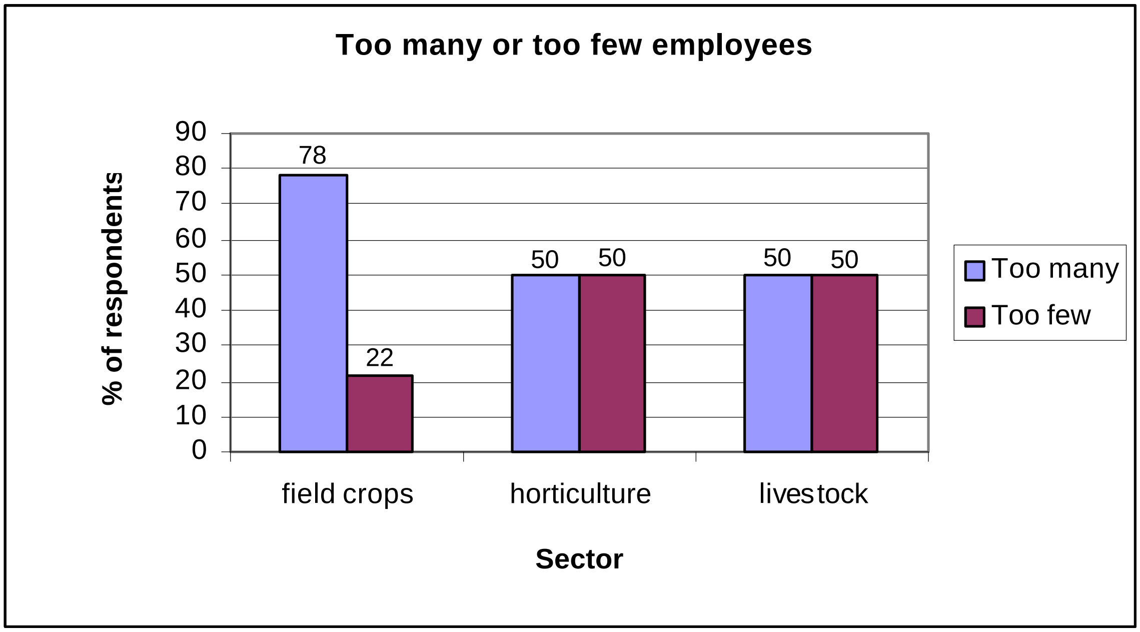
Figure 54: Whether the labour force is optimal



All respondents answered this question, with 57% saying that their labour force was of an optimal size **(see Figure 54.).** This does not appear to be differentiated across the sector – approximately 55% of employers in each subsector said that their labour force is optimal.

Of those who said their labour force size was sub-optimal, 62% reported that they had 'too many' permanent workers. A breakdown by subsector **(see Figure 55**) shows that half of the employers in the horticulture and livestock sectors indicated that they employ too few permanent workers. However, more than three quarters of the field crop employers said that they currently employ too many permanent employees for the type and scale of production in which they are currently engaged.

Figure 55: Too many or too few employees by subsector



The most common reason cited by farmers for their **employment of more workers** than would be 'optimal' was a sense of obligation and responsibility towards workers and their families. Farmers therefore commented as follows.

Eployment of more workers

- "Because the rate of unemployment is too high and I want to help them." – grain and vegetable farmer, Free State
- "The families have been here for generations and their adult children have difficulty finding work." – grain farmer, Free State
- "I can't afford them, but still, I cannot just chase them away." – grain farmer, Northern Province
- "Retrenchment is not an option due to national unemployment. The workers have lived here all their lives." – pineapple farmer, Eastern Cape

A second most frequent reason why the size of the labour force was greater than necessary was a change in the operational requirements of production, and therefore the demand for labour on the farm.

- "We have mechanised a lot and I can get by with a smaller labour force." – vegetable farmer, Western Cape

- "Because I needed them to take care of my livestock but now I have sold most of it" – sheep and grain farmer, Free State

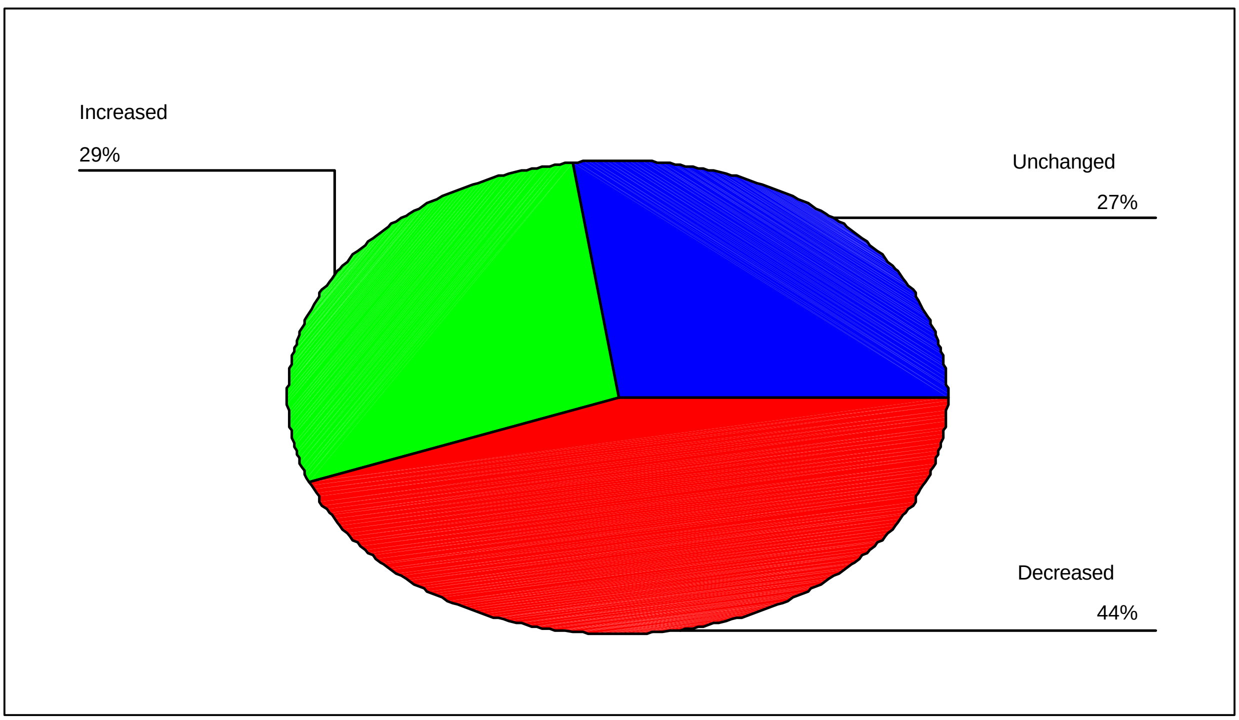
A less common theme referred to by farmers was that the seasonality of labour demand allowed for a greater proportion of temporary labour. On the other hand, among those farmers who reported that their labour force was smaller than the optimal size, almost all cited a lack of financial resources as the prime reason. In some cases, this was coupled with comments on the quality of labour, including the level of productivity among those employees already employed, the costs involved in training new employees, and the cost of labour relative to declining commodity prices.

Quality of labour

- "I decreased the labour force for financial reasons. I can fetch more from town but it's not the same." – vegetable farmer, Western Cape
- "I am not able to afford a higher wage bill at the current low banana price." – banana farmer, KwaZulu-Natal
- "People come here knowing almost nothing; after a few years of experience they leave for other jobs." –citrus farmer, Gauteng

Employers were also asked to provide information on the current size of their permanent labour force and to specify how many permanent employees they had employed in 1999, 1998 and 1997.

Figure 56: Changes in the size of the permanent labour force since 1997



Less than half of the employers reported that the permanent labour force on their farms is smaller now than it was three years ago, 29% said it had increased, and 27% said it was unchanged **(see Figure 56).** Comparing responses on whether the labour force is optimal and whether it has increased or decreased over the past three years, it appears that 27 of the 62 employers are set to retrench workers or freeze positions regardless of the introduction of a minimum wage.

2. Temporary labour

The employment of employees on a temporary basis is a major strategy by which employers in agriculture cope with the seasonal fluctuations in labour demand. Employers were asked to calculate their total level of employment of temporary labour over the past year by considering the periods in which they had employed people on a temporary basis, and the number of people employed during these periods. The results are estimates in many cases but nevertheless indicate a high level of dependency on temporary labour to supplement permanent labour during periods of peak demand – planting and harvesting in the field crop sector, planting, harvesting and pruning in horticulture, shearing in livestock production.

About half of the employers said that they employ less than 5 000 person days of temporary labour per year, while 17% employed none. A few large enterprises employ enormous numbers of temporary employees during peak periods – the maximum person days employed on a single farm was 234 925. The average number of temporary person days employed was 13 638.

2.1. Labour contracting

Temporary labour is a key feature of labour regimes in South African agriculture. Increasingly, though, it appears that farmers are choosing to remove themselves from direct employment relationships with temporary employees by working through labour contractors to source both temporary and permanent labour.

Eleven of the 62 employers reported that they use labour contractors to source temporary labour during peak seasons. Most of these were large enterprises with high, and fluctuating, labour demand. It is beyond the scope of this study to conclude whether or not labour contracting is increasing[50]. It is, however, clear that employers in agriculture are making use of labour contractors or labour brokers and that this is seen as an option whereby employers are able to avoid the 'hassle factor' of labour as well as, possibly, to circumvent labour regulations.

The issue of labour contracting emerged again in discussion on what employers would do if a minimum wage increases their wage bill. Resorting to the use of labour contractors, however, does not appear to be motivated entirely by a need to cut costs: the rates charged by contractors have been increasing rapidly in some areas.

[50] For further information on labour contracting in agriculture, see Centre for Rural Legal Studies (2001): Briefing Paper on Labour Contracting in Agriculture; CRLS; Stellenbosch and Centre for Rural Legal Studies (2001): Research Report on Labour Contracting in the Western Cape; CRLS; forthcoming.

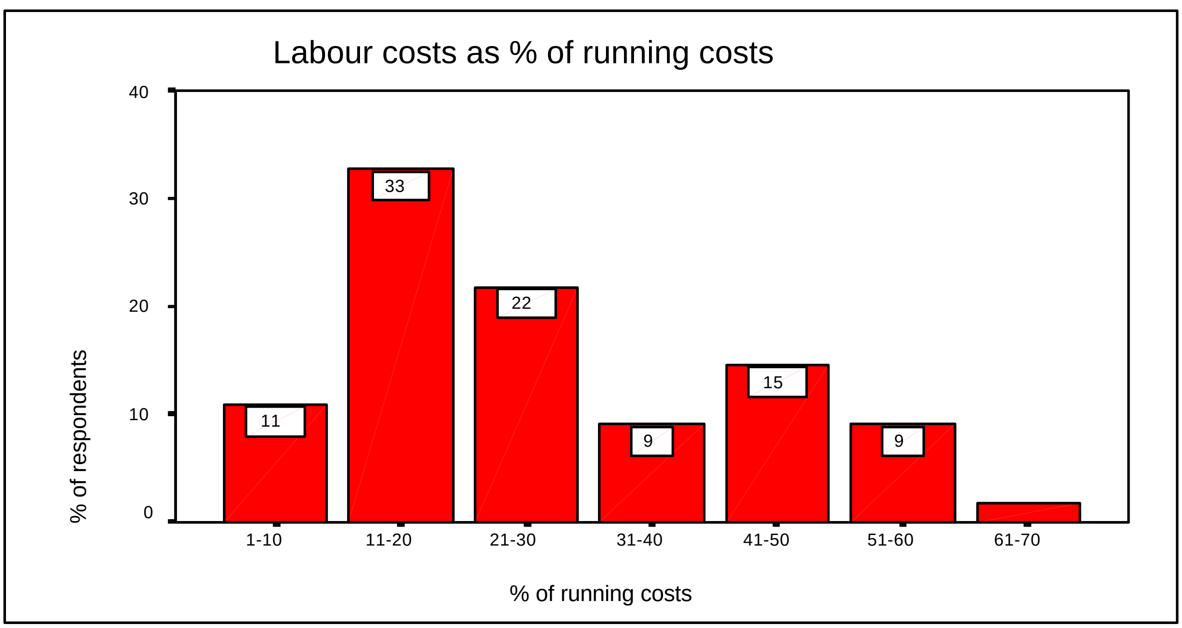
From the employees' perspective, labour contracting means decreased job security, as evident in the following comments.

- "People lose their jobs here. Every year the company employs a lot of new people." – 39 year old man, Mpumalanga
- "Other people were forced to take retirement packages before they became 60 and after the permanent jobs were cancelled. Now we work permanently but under contractors. This reduced our salaries." – 32 year old woman, Mpumalanga

Employers were asked to disclose information regarding the finances of their farm enterprises. A number of employers refused to do so, even though it was clarified prior to the interview that this information was required in order for the farm to be used as a case study.

The spread of labour costs as a percentage of running costs is illustrated in **Figure 57** below. Here one can see that the total labour costs of 66% of employers account for 30% or less of total running costs. Only 10% of respondents reported that labour accounts for more than half of their running costs and this despite the good representation of labour intensive farms, particularly in the horticultural sector, in the sample. Even within the small sample it seems that labour costs form a relatively small portion of running costs in the livestock sector, and a more substantial proportion of running costs for field crops and horticultural enterprises.

Figure 57: Labour costs as a percentage of running costs



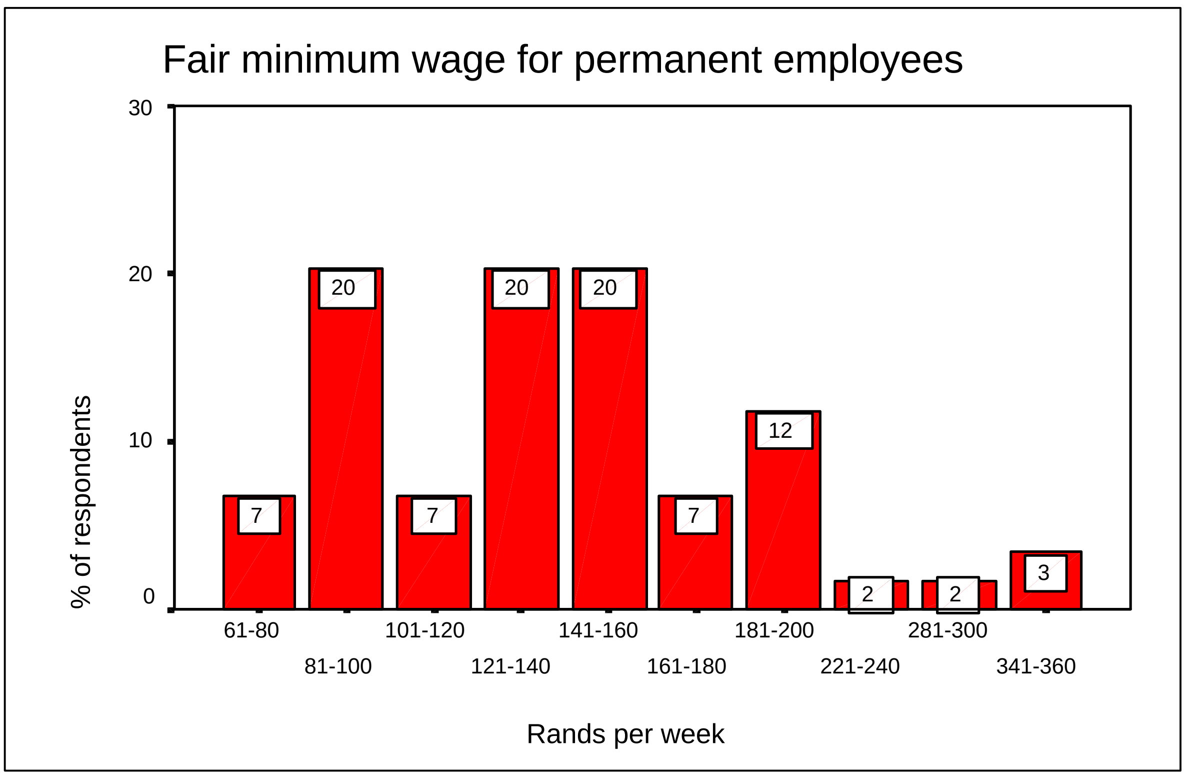
Employers were asked to state what they would consider to be a ‘fair minimum wage for permanent workers who are general workers’ as well as what would be a ‘fair minimum wage for temporary workers’.

3. Employers: minimum wage for permanent workers

Three employers refused to answer this question. Among those who did answer, many found it difficult to cite a figure, either because they did not agree with the principle of instituting a minimum wage, or because what would be ‘fair’ would depend on the level of payment in kind. We asked employers to cite a minimum wage that would be ‘fair’ given the current level of payment in kind they offer.

This was a leading question to employers: even those who did not agree with the introduction of a minimum wage cited a minimum wage (weekly for permanent and daily for temporary workers). The responses are given in **Figure 58**.

Figure 58: Fair minimum wage per week for general workers (according to employers)



The average response from employers was R144,97 a week (R579,88 per month), the minimum R63,00 per week (R252,00 per month) and the maximum R350,00 a week or R1400,00 per month. The most frequently mentioned figure was R100,00 a week.

A staggering 43 out of 62 employers cited a ‘fair minimum wage’ for permanent general employees that was higher than the lowest wage that they currently pay. In other words, 43 employers appeared to indicate that the lowest wages that they pay at present are not ‘fair’ and that, if a minimum is imposed, it would need to be high enough to force them to increase wages, thereby affecting their labour costs.

The average fair minimum wage for temporary employees, cited by employers, was R24,36 per day (R487,20 per month), although the median wage suggested was lower (56% of respondents put it at less than R20 per day). The lowest level mentioned was R10 a day and the highest was R50 a day.

3.1. Minimum wage and labour costs

Employers were asked if their labour costs would increase, or remain unaffected, if a minimum wage were set at intervals above R20,00 per day (or R400,00 per month). The results are shown in **Figures 59 and 60.**

Nearly three quarters – 73% - of the respondents said that their labour costs would be unaffected by a minimum wage of R20,00 a day, applicable to all workers. Less than half of the employers – 34% - said that they would be unaffected by a minimum wage of R30,00 a day. These results indicate that the point at which half the employers in our sample perceive that they would be affected, and half unaffected, by a minimum wage is in the region of R25,00 a day or R500 per month.

Figure 59: Effect on labour costs of a hypothetical minimum wage of R20,00 a day

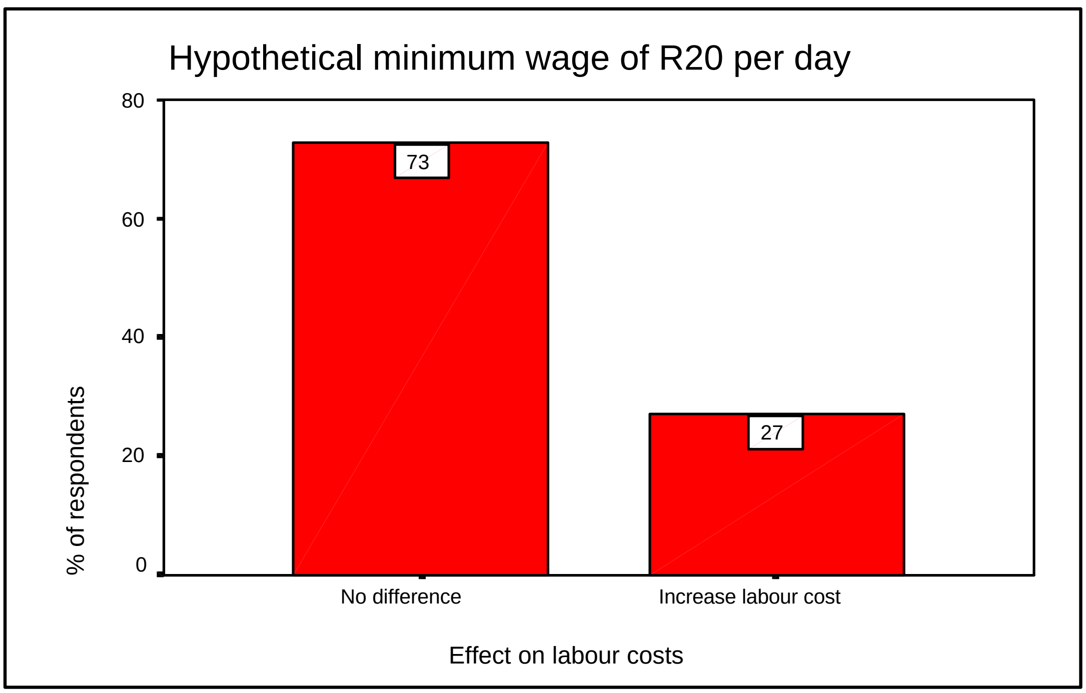
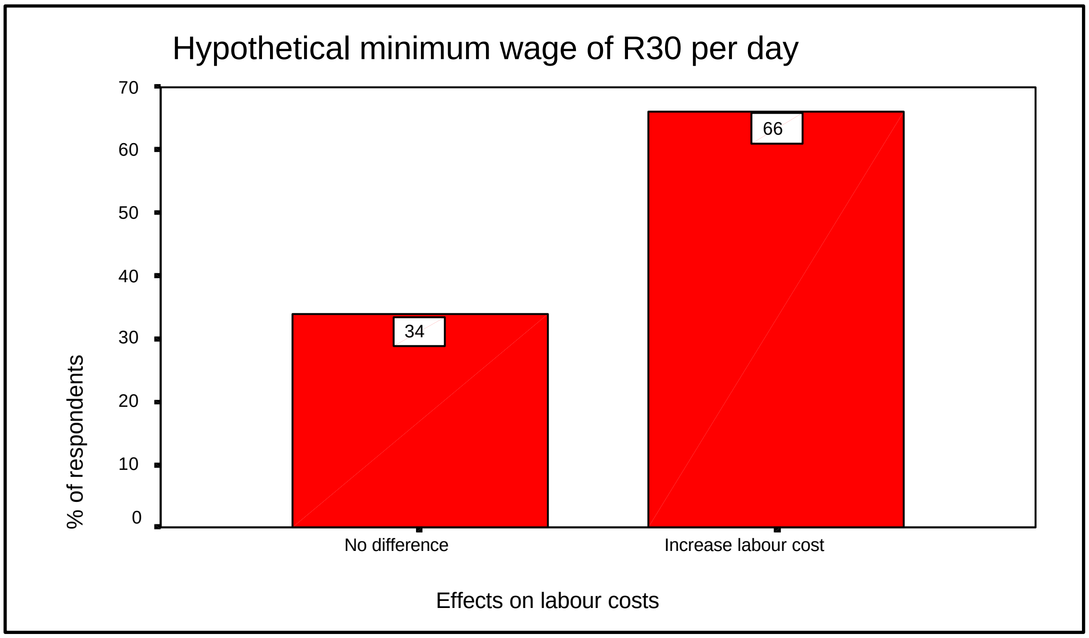


Figure 60:Eeffect on labour costs of a hypothetical minimum wage of R30,00 a day



3.2. Employer responses to a minimum wage

Employers were asked what they would do if their labour costs were to increase as a result of a minimum wage.[51] The responses may be clustered within the following themes, in the order of frequency with which they were mentioned.

(a) Mechanisation of production to substitute for labour
(b) Rationalisation of the labour force through:

- the contraction of productive (especially labour intensive) activities
- cross-subsidising workers' wages
- increased reliance on temporary labour
- increased reliance on labour contractors to provide labour

(c) Better use of labour through:

- increased investment in skills
- better planning of production activities
- creation of incentives to improve productivity

(d) Reduction of benefits and payment in kind

(e) Cease farming.

[51] As this was the final open question in the interview, many employers took this opportunity to 'speak to government' on a number of issues of concern, unrelated to the question of a minimum wage. These responses are summarised in Appendix 4.

A selection of responses for each of these categories is listed below.

Mechanization

- ‘Most of the people used will lose their jobs, because everything will be done by machines and controlled by computers’ – citrus farmer, Mpumalanga
- ‘I would substitute machinery for labour, and substitute chemicals for labour. It won’t change my business, but I would look at doing the above-mentioned things. I would reconsider any future investments in agriculture’ – sugar cane farmer, KwaZulu-Natal
- ‘I will have to reduce my labour force and look at new methods of improving my production, e.g. increase the use of machinery and/or the use of chemicals’ – citrus and deciduous fruit farmer, Gauteng
- ‘Mechanise the business as far as is economically viable. It will not allow for the growth or enlargement of the business, therefore there would be no increase in workers’ - livestock farmer, North West
- ‘Mechanisation will be the solution for the high standard minimum wage, like weeds control, ploughing, applying fertilisers will be done by machines’ – sugar cane farmer, Mpumalanga

- ‘I would farm with less labour intensive products, i.e. grain, maize. I would decrease my labour force by 30%. I would scale down my whole farming enterprise’ - vegetable farmer, Western Cape
- ‘If the minimum wage is too high then the more productive and experienced workers will suffer because they will be subsidising the less efficient workers. Farmers will not be able to keep the same variation in wages if the bottom rung’s wages have to go up’ – deciduous fruit and ostrich farmer, Western Cape
- ‘We will use more temporary labour, but the hassle factor is big, so we will use labour contractors so that we shift the supervision role onto someone else. I have no problem with the minimum wage, but 80% of our community does’ - wheat farmer, Western Cape
- ‘Change my system of farming so that I can manage with less workers, e.g. (a) increase cattle numbers and reduce arable area, (b) invest in bigger machinery..[and] retrench surplus labour’ – wheat and maize farmer, Free State

A number of employers indicated a willingness to pay higher wages but insisted that wages needed to be linked to the productivity of employees. Some argued that this meant that the setting of wage levels therefore needed to remain the prerogative of employers rather than being regulated by government.

Productivity

- ‘Reduce labour and manage the remaining workers better for higher productivity and reward them better accordingly’ – fruit and wine farmer, Western Cape
- ‘If the government wants to set the minimum cash wage it should be connected to productivity… the labourers should be paid looking at whether they are working

or loitering. For those who are working, they should be paid more and those that are not, less' - vegetable farmer, Mpumalanga

- '… I am willing to pay a minimum wage of R1 500 to people who are willing to work' - citrus farmer, Eastern Cape
- 'We cannot mechanise more in our type of production. We would get much more serious about productivity and performance. We would have to cut our labour force, but will weed out slower workers and pay the better workers more to keep up the incentives' – deciduous fruit and ostrich farmer, Western Cape
- 'The most important thing is to ensure that the workers are being productive and to make sure that they are paid well. Because of the scale I operate on, it would not be cost-effective to mechanise. I would certainly stick with the labour I have' - vegetable farmer, Western Cape
- 'At the end of the day it would mean working with fewer well-educated, well-motivated staff members who draw higher wages. But I do feel that people are entitled to a fair wage' – dairy farmer, KwaZulu-Natal
- 'At the moment I employ a relatively unproductive portion of society – mostly women and older men. I would keep my total wage bill the same and employ whatever I could now afford in more productive people' – banana farmer, KwaZulu-Natal
- 'There should be minimum wages for workers with different levels of skill' – deciduous fruit farmer, Western Cape

- 'I will keep my eye on production and cut on expenses like clothes, transport and facilities. This farm is still not profitable – we have not got the first harvest. Farms in this area are for sale because of bankruptcies' – mixed produce farmer, Western Cape
- 'All benefits they get will fall away. I will drop the number of people employed. It's a wrong approach to specify minimum wages because it will lead to… (1) unemployment, (2) exploitation of labour (only contractors will benefit)' – dairy farmer, KwaZulu-Natal
- '… the people are given houses free, and free electricity and water, but the government doesn't see that' - citrus farmer,. Mpumalanga
- 'If labour costs increase, everyone's benefits must come down' - sheep farmer, Northern Cape
- 'Close down the enterprise as soon as the government decides on the minimum wage that would impact negatively on labour costs' - cattle farmer, North West
- 'Close down because it would increase my expenses and I already worked on a loss in the past year. If I get financial assistance I will change from crop to stock farming, and this means that I would have to reduce my personnel' – sorghum farmer, North West
- 'Sell out, and my very loyal labourers would lose their homes, work and cattle grazing rights. The farm school would close. The problem is no-one would want to farm' - dairy farmer, KwaZulu-Natal

Among the black farmers interviewed, a few pointed out that government is pursuing apparently contradictory policies of supporting the emergence of black commercial farmers, on the one hand, while instituting regulations which undermine their profitability, on the other.

> ‘The government should stop interfering with the agricultural workers because this will result in more people losing their jobs. Government should allow farmers, especially the small-scale and small commercial farmers to use cheap labour for the next 20 years. That will make all the farmers to be at the same level. Then the government is no more subsidising the farmers like before… People who are members of NAFU are the least when coming to production and profit-making’ – citrus and banana farmer, Mpumalanga

Employers also provided sector-specific information regarding their labour requirements and how this should be accounted for in a sectoral determination.

Labour requirements

- ‘For this type of farming you can’t average working hours over less than five weeks. 16 hours a day for three weeks is the minimum at planting time… We don’t have a problem with labour costs, and we pay the workers well. Other rising input prices are a problem – essential items like diesel and fertiliser – force us to cut labour costs. We plan to have only 1 worker on the farm in the next 10 to 15 years’ - wheat farmer, Western Cape
- ‘Rule of thumb for labour needs in this type of farming is: one worker for every four hectares, plus a tractor driver and mechanic’ – wine and grape farmer, Western Cape
- ‘… banana farmers… would have to take drastic action if a minimum wage of more than R15,00 a day were imposed’ – banana farmer, KwaZulu-Natal
- ‘I don’t have a problem with a minimum wage as long as it is market-related and realistic. I would like to have a minimum wage equal to the pension that is paid by government, i.e. R500,00 a month. The government assumes people in town can get by with R500 and they still have to pay their house. ‘ - vegetable farmer, Western Cape

3.3. Employees’ responses to a minimum wage

Workers were also asked to cite what they would consider to be a fair minimum wage. The average ‘fair minimum wage’ cited by workers was R247,00 a week (R988,00 per month), almost exactly R100,00 higher than the average among employers. The lowest minimum wage proposed was R70,00 and the highest was R750,00. Half of all respondents quoted a wage above R237,00 a week (R948,00 per month). It is worth noting that workers defined a greater range of wages as ‘fair’ than did employers. The distribution of workers’ responses by province merely shows that in those areas where people are poorly paid at present their expectations of a minimum wage are low and vice versa. As expected, therefore, workers in the livestock subsector and women had lower expectations of a minimum wage than men. The average given for a ‘fair wage’ was R205,58 among women and R265,25 among men. The minimum and maximum were R75,00 and R400,00 among women, and R70,00 and R750,00 among men, respectively.

Figure 61: Fair minimum wages according to employees

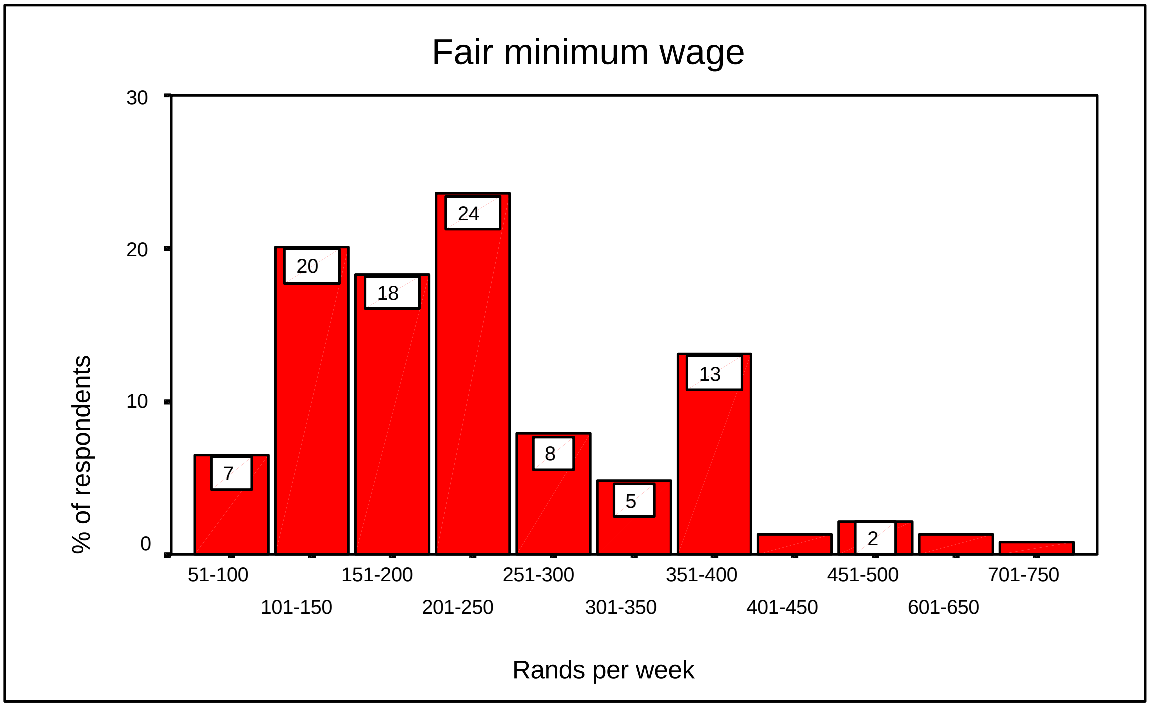


Figure 62 shows women's responses clustered towards the bottom end of the scale, with 50% of women saying that they would consider a figure of R200,00 or less to be a 'fair wage' for them. Men's responses, on the other hand, were fair more dispersed across the scale, with 37% of men citing a figure of R200,00 or less.

Figure 62: Fair minimum wages by gender

3.4. Justifications for minimum wage

Employees were asked to explain or justify the minimum wages they consider fair. A comment that summed up employees' justifications of the minimum wages they proposed was:

> 'The cost of living is too high and we work very hard and deserve better than what we are earning now. The wages are depressingly low. I can hardly afford to take care of the needs of my big family.' – 63 year old man, Free State

Employees justified the 'fair wage' they cited as being 'fair' in four distinct ways:

- the cost of living
- investments: this is what is needed to improve one's life and one's children's future
- the value of labour: this is what our work is worth
- an awareness that farm workers' labour produces profit.

Each theme is explained in turn below, together with a selection of quotes.

Cost of lving

➢ 'The money we are getting now is too little. I will buy my kids clothes and send them to school. If it were not for poverty I would not have worked here. These people promised us a lot of things but when we arrived here there is little. We work like slaves… ' – 27 year old woman, Mpumalanga

- ‘The cost of living is too high. We cannot cope with the ever-decreasing value of our wages.’ – 22 year old, Northern Province
- ‘The money we are getting is too little for a family. You cannot buy children clothes or even send them to school’ – 27 year old woman, Mpumalanga
- ‘It is a reasonable amount because the cost of living is very high’ – 44 year old man, Free State
- ‘Because sometimes I cannot afford to pay my accounts and then I have to borrow from others.’ – 27 year old man, Eastern Cape
- ‘It is understandable because, although it is not enough, I will be able to buy food every month.’ – 30 year old woman, Northern Province
- ‘To afford life.’ – 41 year old woman, KwaZulu-Natal
- ‘Because there’s nothing we get after deductions. It is difficult to afford to do things. We need money.’ - 32 year old man, KwaZulu-Natal
- ‘No-one can live with what we are living on now. I have two children that I am supporting in school and I need money.’ – 32 year old woman, Western Cape
- ‘I need to pay so many things, especially my children’s schooling and I don’t have enough money. It is very stressful.’ – 23 year old woman, Western Cape
- ‘It is the minimum farm workers need to survive.’ – 30 year old man, Western Cape
- ‘You can buy food and come out clean without debts’ – 34 year old man, Western Cape
- ‘Households with few people have problems. You can’t live on one piece of break and milk every evening. We must eat.’ – 33 year old woman, Western Cape
- ‘Because now we cannot meet our basic needs, but if we happened to earn R500,00 a month our living condition would improve.’ – 23 year old man, North West
- ‘The wage we get now does not meet our social and economic needs.’ – 27 year old man, Eastern Cape
- ‘So that I can start my own business so I can send my children to tertiary institutions.’ - 32 year old woman, Mpumalanga
- ‘We will be able to build ourselves houses at home and send our children enough money to pay for school fees.’ – 46 year old man, Mpumalanga
- ‘I want to build my family a house. With that money I will be able to buy building materials.’ – 32 year old man, Mpumalanga
- ‘Then I could carry on spending R100,00 a week and save R50,00 and eventually have my own house.’ – 19 year old man, Western Cape

The value of labour

- ‘I work hard on the farm. I want to see what I work for. What do we work for? If we walk away from this farm, we don’t have anything. It makes me sad to know I slave my whole life and I still have nothing to show.’ – 42 year old man, Montagu, Western Cape
- ‘The job is dangerous. There are lots of things that can happen to us in the field.’ – 33 year old man, Mpumalanga
- ‘Because we work too hard and we deserve better.’ – 57 year old man, Free State
- ‘Women do just as much work as men, sometimes more.’ – 32 year old woman, Eastern Cape

- ‘We do exactly the same work as the men…’ – woman, unknown age, Western Cape
- ‘I want to be paid for my sweat and hard work’ – 42 year old man, Western Cape
- ‘I am working a very dangerous job with chemicals.’ - 22 year old man, Northern Province
- ‘I am experienced in farm work.’ – 39 year old man, Northern Province
- ‘I am responsible for many things on the farm.’ – 31 year old man, Northern Province
- ‘Our work is worth it. We are answerable to our employer.’ – 46 year old man, Western Cape
- ‘The money he gives is too small. It is not enough, especially to someone trying to take care of a family’ – 52 year old man, North West
- ‘I am trained in welding and also do general work. I should be paid for my speciality, not the same as general workers.’ – 27 year old man, KwaZulu-Natal
- ‘Farm work has become more complicated. We have technical training for working with vines. Workers deserve more pay.’ – 37 year old man, Western Cape

- ‘Because our work makes profit.’ – 41 year old man, KwaZulu-Natal
- ‘We work very hard and the farmer makes lots of profit.’ – 46 year old man, KwaZulu-Natal
- ‘The work is too difficult and it’s only the employer makes a profit’ – 42 year old man, KwaZulu-Natal
- ‘There’s too much work and too little pay. Our salary is not worth our work and the farmer gets a lot out of us.’ – 18 year old man, North West

Three of the 230 employees interviewed explicitly took into account the benefits and payment in kind they receive, and said they cited a lower minimum wage than they would have had they been paid in cash alone.

3.5. Conclusion: minimum wages

Employees could risk losing their jobs through the introduction of a minimum wage which the majority of employers could not afford. Employers repeatedly pointed this out, indicating the ways in which they could substitute for labour or change their production activities in order to minimise their labour requirements. An incentive to invest in the skills and productivity of employees could be a positive by-product of the minimum wage.

Most employees pointed out that the minimum wages they ask for are modest in relation to their current wages. They provided ample justification for why they believed a minimum wage should raise their income, motivated both by what they need and what they deem to be fair. There is substantial overlap between the minimum wages proposed by employers and employees.

4 Social and working environment

Employees were asked: *is there anything else that you would like to tell me about your life as a farm worker?'* Most employees used this opportunity to raise issues of general concern as well as to describe the particularities of 'farm life'.

The qualitative information gained from the qualitative research points overwhelmingly to the fact that existing legislation has not been enforced in the agricultural sector. This implies a challenge for our Department as well as for the Department of Land Affairs.

4.1. Freedom of association

Employees raised two problems in relation to freedom of association. Firstly, some employees expressed a desire to join unions and noted how employers prevented them from doing so. Secondly, respondents cited their employers' refusal to allow family and friends to visit them on the farm or restrictions - which were perceived as unfair - being placed on visits.

- 'People are not allowed to join unions. When union reps visit to inform us the managers send them away or tell the supervisors to tell the reps that people do not want unions…' – 32 year old woman, Mpumalanga
- 'We do not have a union. We want to join a union because people are dismissed sometimes by [the] managers of the contractors…' – 50 year old man, Mpumalanga
- 'There is still oppression here on farms. I only work because I need to put food on the table. I cannot have visitors, but if ever they are allowed, their cars are not allowed on the farm's premises. I am not allowed to be a member of a union.' – 30 year old man, North West
- 'Life has been the same since I came to this farm: no visitors and friends are allowed; the owner does not treat us fairly and equally.'- 35 year old man, North West

4.2. Health and safety

A number of respondents complained about poor health and safety conditions. In a few cases, employees cited workplace accidents that had resulted in injury – sometimes permanent – for which they had not been compensated. The use of pesticides and other chemical substances were among the causes. Employees working on livestock farms talked about fearing for their safety, particularly due to the threat of armed stock thieves.

- 'We are risking our lives here because we work also as security for the farm. We need to make sure that livestock does not get stolen.' – 60 year old man, Free State
- 'People are bitten by snakes and wild animals enter the farm many times….' – 39 year old man, Mpumalanga

- ‘There are people who are hurt or who broke their legs in the forest but they are not paid. If they are retrenched, they are not given compensation for those who are injured at work’ – 50 year old man, Mpumalanga
- ‘There is a friend of mine who once worked here on the farm and was attacked by a cow. He is now paralysed and his life is very saddening. He was never compensated except his UIF fees, but I think he deserved much better than this.’ – 30 year old man, North West

4.3. Violence and abuse

A number referred to verbal abuse in the workplace but did not specify the nature of this abuse. One respondent indicated that these practices had ceased. None referred to physical violence of any kind.

- ‘One thing that has changed here is that the farmers don’t hit or abuse the workers physically because the government has been very strong on that point.’ – 35 year old man, Western Cape
- ‘A farm worker like me is not treated like a human being. We work long hours, are paid less [little], and are under strict supervision with the farmers always shouting at us.’ – 48 year old man, Northern Province
- ‘Sometimes they insult us especially the farmer’s son. We are not allowed to complain about anything. I started in 1986 but the conditions are still terrible.’ – 38 year old man, Free State
- ‘I don’t have anything to tell. I am just scared.’ – 24 year old woman, Northern Province

4.4. Favouritism and punitive practices

Employees identified practices that they see as being unfair and arbitrary in employers’ treatment of employees. The issues that were cited included:

- favouritism: providing benefits to some employees for no apparent reason (eg. bonuses, leave and pensions)
- punishment of employees by withholding bonuses for reasons which employees see as unrelated to their work performance – for poor harvests, for (unsolved) thefts and for fires.

- ‘We are not treated the same; some are favourites and others are not.’ – 27 year old woman, Free State
- ‘I am always under pressure because when I have a complaint it is not taken [seriously] but others are taken seriously. There is favouritism. Sometimes we do not get a bonus if something is missing on the farm.’ – 27 year old man, Free State
- ‘If we borrow money from the farmer we have to pay 50% interest rate over one week.’ – 35 year old woman, Western Cape
- ‘I am too old not to wonder if I will get a pension because some do and some don’t, it depends on who the farmer likes…’ – 70 year old man, KwaZulu-Natal

- ‘Some months we do not get our salaries, not because the money is not there, but because the farmer thinks there is little work in those months. Even when there’s a bad season for crops, he has enough to pay our monthly salary.’ – 52 year old man, North West
- ‘We are in jail. We don’t get a bonus if there has been a fire on the farm, so this year we won’t get any…’- 46 year old woman, KwaZulu-Natal

4.5. Tenure security

Employees expressed extreme concern over their security of tenure. A number, particularly in the Western Cape, referred to fellow farm employees who had been evicted. Others expressed fear that, towards the age of retirement, they would be ‘put out on the road’. While a few were aware of the Extension of Security of Tenure Act (ESTA), none showed familiarity with its provisions and those who were aware of it did not see how it could help them. It was particularly in the context of tenure rights that fieldemployees were asked to provide legal advice.[52]

- ‘If people get evicted, they must have some other place to stay. People shouldn’t just be put out on the road.’ – 29 year old man, Western Cape
- ‘People work here for the whole of their lives; when they reach 65 years they are told to leave the farm even though some stayed here even before the farmer…’ – 42 year old woman, Mpumalanga
- ‘… and then when they don’t want me anymore, they’ll just put me out on the road and tell me to go. What happens if we stay here for years and then the farmer tells you to pack your things and go? Some people have been kicked off the farm, and this is the most important thing we want to know. Is this allowed? Because it is not fair’ – 33 year old woman, Western Cape
- ‘A whole family got kicked off this farm because the man stopped working, even though his wife was working full-time with us. They had to go in just one day and they had nowhere to go.’ – 33 year old woman, Western Cape

Employers, on the other hand, raised the issue of tenure security as a disincentive to employ and to provide housing to employees. Comments from employers on the issue included the following.

- ‘We are not very concerned about a minimum wage unless it drastically changes things. The new ESTA law is a bigger problem. It is very bad for the workers, this law. We want to do more, but if they stop working, you can’t get them off the farm.’ – deciduous fruit farmer, Western Cape
- ‘The farmers around here are so angry about ESTA they are bulldozing houses now’ – wheat farmer, Western Cape

[52] Fieldworkers were briefed not to provide legal advice on particular matters, but to refer interviewees to relevant sources of assistance – e.g. a local advice office or non-governmental organisations.

4.6. Labour tenancy and land reform aspirations

A few employees in KwaZulu-Natal and the North West expressed a desire to be able to own and graze livestock – and/or to have access to a small patch of land to grow vegetables – on the farms on which they work. Others saw the fieldworkers as representatives of government, coming with false promises of farms for employees.

- ‘We are not allowed to own livestock. We do not have arable land. We are like visitors who just depend on the farmer…’ – 41 year old man, KwaZulu-Natal
- ‘People like you [referring to the fieldworker] came previously but nothing was changed. So please, let it be that changes do take place. Today many white farmers are being killed and if that should happen on our farm, where will I go?’ – 40 year old man, North West
- ‘People come here desiring money and promising us our own farms but the next thing is you don’t even know where they disappeared.’ – 71 year old man, North West
- ‘He [employer] has a vast amount of water and land to produce those vegetables. My wish is that I can do subsistence farming on pigs.’ – 32 year old man, Eastern Cape

4.7. Gender discrimination

Many respondents – largely women – referred to the inequitable treatment of female employees. This was expressed in two ways:

- firstly, that women **are not** treated the same as men: that women do not have contracts, do not get paid leave, and receive lower wages for doing the same, or similar, work

- secondly, that women **are** treated the same as men: that pregnant women do not get special consideration, that women are made to do heavy physical labour together with men and are made to perform tasks which are culturally taboo (particularly working with livestock).

Respondents also articulated the problem of women’s employment being ‘tied’ to their male partners’. Thus, women living with male employees sometimes do not have a choice but to make their labour available to the farmer as and when this is required – even if only during a particular season. This prevents women from seeking other work.

- ‘Wat nie so lekker is, is wanneer ons nie kan werk nie, byvoorbeeld as dit reën, want op dié dae word ons vroumense nie betaal nie.’ – 33 year old woman, Western Cape
- ‘We women don’t get paid if it rains.’ – 35 year old woman, Western Cape
- Women don't get paid for maternity leave, not even from UIF. We want to be paid for maternity leave and sick leave. And we want to be paid for the annual leave like the men are. – 30 year old woman, Western Cape

- ‘Women on neighbouring farms earn R200,00 a week. I am not allowed to seek work there. I have to work on this farm as long as my husband works here.’ – 31 year old woman, Western Cape
- ‘Women are working under strenuous conditions, with picks and shovels even when they are pregnant.’ – 22 year old man, Northern Province
- ‘Women are treated badly. We do not get the same wages even though we have worked the same number of days. He (employer) keeps promising that he would give us bonuses, but he never does. He promised blue cards but he never got them.’ – 38 year old woman, Free State
- ‘… We want to get the same as the men on the farm. At least that would be a good start. They have contracts and the women don’t. They get leave and we don’t. They get paid much more. Is it fair like that?’ – 33 year old woman, Western Cape
- ‘Women do just as much work as men, sometimes more… The work I do is too much and I suffer because my house is not good…Workers are expected to work in all weathers for long hours. Women, especially, are treated the same as men.’ – 32 year old woman, Eastern Cape

4.8. Quality of employer-employee relationships

A number of employees specifically referred to good practices by farmers and the benefits of investing in a good relationship with one’s employer, especially as the employer was frequently also the landlord. Among the comments was recognition of the social safety net that ‘farm life’ provides to farm employees and dwellers. Those who explicitly spoke about poor relationships with employers emphasised a lack of communication – particularly about wages and benefits – and pointed to the lack of trust and low morale that this generates.

- ‘The owner seems to have a knack for maintaining good relationships, has regular meetings, sorts out problems, has fair wages.’ – 30 year old woman, Eastern Cape
- ‘I wouldn’t say I have a bad life. The farmer treats me with dignity. If I ever get the opportunity to do something else I would, but for now I have a job and I can provide for my family.’ – 30 year old man, Western Cape
- ‘Sometimes life on the farm is good and sometimes we are not treated well. It is very demotivating.’ – 26 year old man, Western Cape
- ‘We are being treated badly because we have no say in what is right or wrong.’ – 22 year old woman, North West
- ‘The farmer does not treat us with respect and we cannot always live like this.’ – 23 year old man, Western Cape
- ‘Much is being dictated rather than being communicated or discussed. When you ask questions you are regarded as a troublemaker and soon you'll be intimidated. If you ask too many questions you will not stay long in your job.’ – 18 year old man, North West

4.9. Conclusion: social and working environment

Enforcement of labour legislation remains a challenge in the agricultural sector. The provisions of the Labour Relations Act (LRA), Basic Conditions of Employment Act (BCEA) and Employment Equity Act (EEA) appear to have had little impact in practice on the farms included in this study. This implies the need for new additional methods to be developed for the enforcement of the sectoral determination, to inform employees of their entitlements in terms of the law, but also to inform employers of their obligations and to invest in monitoring and evaluation in the agricultural sector.

The qualitative information derived from the research indicates the extent to which employment in agriculture differs from employment in other sectors, in terms of:

- the extent of dependence of employees on employers (for continued access to goods, services and especially homes, as well as for employment)
- the isolation of employees from sources of information and social support beyond the farm
- the significant obstacles to enabling employees to exercise their labour rights – even when they are informed of them.

Chapter 11

Macroeconomic considerations

1 Introduction

This section of the report is aimed at developing minimum wage scenarios for the agricultural sector, and to test the hypothesis that a minimum wage will impact negatively on the agricultural sector and the economy as a whole. The section begins with a discussion of the potential factors impacting on agricultural employment and wages. It also provides an econometric analysis of the factors impacting on agricultural employment and wages in South Africa. Econometric estimation of the determinants of agricultural output, exports and investments has also been undertaken. The report proceeds with a simulation of the effects of different minimum wage scenarios on the agricultural sector and the economy as a whole.

2.1. Survey data analysis

The National Institute for Economic Policy was commissioned to assist in establishing the potential determinants of agricultural employment and in particular, to test the significance of the relationship between average wage categories and agricultural employment.

It is also aimed at establishing the variations in effects of average wage categories on employment for the different agricultural sub-sectors. This analysis will provide a basis for the development of minimum wage scenarios and their potential effects on agricultural employment

The 1993 Census of Agriculture was used for the survey analysis. The Census provides information for 70 statistical regions in South Africa for 1993. The census also provides a breakdown of the data by sub-sectors, namely field crops, horticulture and animal production across statistical regions. For each statistical region and for each sub-sector, the following variables are provided:

- Number of farms
- Total farm area (hectares)
- Total number of paid labourers
- Total wages and salaries paid
- Other remuneration
- Total gross farm income
- Total capital expenditure
- Total current expenditure
- Total farming debt

Other variables were generated for each of the 70 statistical regions. These include:

- Total remuneration (the sum of wages paid and remuneration);
- Average wage rate (total remuneration/number of paid labourers);

- Net farm income (gross farm income minus current expenditure);
- Labour productivity (the ratio of gross farm income to the number of paid labourers);
- Farm income per hectare (the ratio of gross farm income to average farm size).

3. Statistical analysis of the effects of wages on employment

The Census data described above were used to run a cross-sectional Analysis of Covariance (ANCOVA) model of employment. The ANCOVA model is a regression model with both quantitative and qualitative variables.

The average annual wages were grouped into four categories and used as dummies in the regression. These categories are:

- R0-R3000 = category 1 (dummy 1)
- R3001-R6000 = category 2 (dummy 2)
- R6001-R9000 = category 3 (dummy 3)
- R9001 and over = category 4 (dummy 4)

All the variables that could affect employment were included in the regression. However, those that were found to be insignificant were dropped. The dummy1 of the wage category was dropped from the regression. This is a requirement for the ANCOVA model. Coefficients of the dummies are therefore explained in relation to the first wage category.

The results of the analysis are presented in Table 33 below. The regression results of the survey analysis indicate that the variation in farm employment among statistical regions and sub-sectors is explained by variations in farm incomes, investment, the number of farms, farm area and wages. These variables are also common to all the sub-sectors with the exception of total farm area, which affects only mixed farming.

Farm incomes, investment and the number of farms have positive effects on agricultural employment. This implies that an increase in any of these variables will lead to an increase in agricultural employment. These relationships are as expected. According to the results, a 1% increase in farm income will lead to a 0,5% increase in employment, while a 1% increase in investment and farm units will lead to a 0,23% and 0,32% increase in farm employment respectively.

The regression results further show that the variations in average wage categories explain the variations in employment. As indicated in Table 33, average wage categories affect employment negatively. Movement of average wage from the lowest category to a higher category may imply labour shedding. Increasing the average wage of farm workers in the lower average wage category (R0-3000) to the next average wage category (R3001-6000) will lead to a decline of 39% in the number of farm workers in the lower average wage category. In other words, fewer people will be employed in agriculture if wages are adjusted upwards. This also confirms the effects of wages on employment.

Table 32: The determinants of agricultural employment (ANCOVA regression results)

Independent variables	Sub-Sectors				
	Total Agriculture	Field Crops	Horticulture	Animal Production	Mixed Farming
Log of Farm Income	**0,50****	**0,45****	**0,46****	**0,48****	**0,42****
Log of Investment	**0,23****	**0,13****	**0,15****	-	**0,30****
Log of No. of Farm	**0,32****	**0,46****	**0,45****	**0,50****	**0,40****
Dummy2	**-0,39****	**-0,24****	**-0,34****	**-0,43****	**-0,27****
Dummy3	**-0,83****	-	**-0,33****	**-0,83****	**-0,17**
Dummy4	**-1,57****	**-1,38****	-	**-0,62****	**-2,75****
R^2	**0,99**	**0,99**	**0,99**	**0,99**	**0,99**
No. of Observations	**272**	**67**	**65**	**70**	**70**

Notes:
The dependent variable is the log of employment
*** Significant at 5% level of significance**
**** Significant at 1% level of significance**

4. Impact analysis of minimum wage scenarios in agriculture

Different scenarios of minimum wages were established and their effects on the average wage were determined through their effects on the different wage categories. The average wage categories from the Census were used to simulate the effects of minimum wages on the movement of farm workers from a lower average wage level to a higher average wage level. They were also used to determine how the average wage will change with changes in the minimum wage.

The increase in the average wage rate from the survey analysis as a result of a given minimum wage scenario was then used as an exogenous shock to the average wage equation of the agricultural sector in the a macroeconomic model developed by NIEP. The purpose was to determine the effects of the different minimum wage scenarios on the agricultural sector and on the economy as a whole. These effects were then analysed in terms of their impact on agricultural employment, output and prices. The effects of the average wage shocks on employment, output, price and consumption in the total economy were also simulated simultaneously.

These elaborate variable linkages in the NIEP macroeconomic model allow for an impact analysis of both the direct and indirect effects of the minimum wage scenarios on the agricultural sector and on the economy as a whole.

Table 33 below indicates the distribution of average wages among farm workers according to the 1993 Agricultural Census. As indicated, 52% of all farm workers worked in statistical regions where the average wage was R3000/year or less (R250/month) in 1993. Only 1,8% of all farm workers were located in statistical regions where the average wage was more than R9000/yr (R750/month). However, this varied across sub-sectors. For example, 73% of all farm workers in mixed farming were located in statistical regions where the average wage was R3000/yr or less, whereas in horticulture only 25% of farm workers were located in such statistical regions.

Table 33: The distribution of farm employment by wage category, 1993

Wage /year (Rand)	Number of farm workers				
	Total agriculture	**Field crops**	**Horticulture**	**Livestock**	**Mixed farming**
0-3000	561 056	137 524	6 5448	151 286	206 798
3001-6000	453 960	86 030	187 307	106 907	73 716
6001-9000	26 934	0	8 629	13 998	4 307
9001+	19 671	38	0	19 353	280
Total	**1 061 621**	**223 592**	**261 384**	**291 544**	**285 101**

Source: Statistics South Africa, *Census of Agriculture, 1993*

4.1. Formulation of minimum wage scenarios

It is assumed that real wages have remained relatively constant since 1993. Wages in 1993 were therefore adjusted by the inflation rate to 2000. These adjusted wages were used as the base scenario. The resulting average annual wage is R4633.60, with the lowest average wage at R628.00. The base scenario also shows that 20% of the farm workers are located in statistical regions where the average annual wage is not more than R3000 and 84% are located in statistical regions where the average annual wage is not more than R6000 (R500 per month).

This base scenario was used to represent a case of no change in the minimum wage. It is also used as the reference in determining the potential implications of changes in the minimum wage. Three scenarios were developed for this analysis.

Scenario 1
Provide a minimum average wage of R6000/yr (or R500/month). This also implies that farm workers whose wages are below R6000/yr will have their wages adjusted to R6000/yr, whereas wages that are above R6000/yr will remain unchanged.

Scenario 2
Provide a minimum wage of R8000/yr (or R667/month). This implies that farm worker's whose wages are less than R8000/yr will have their wages adjusted to R8000/yr. However, wages which are more than R8000/yr will not be adjusted.

Scenario 3
Provide a minimum average wage of R12000/yr (or R1000/month). This also implies that farm workers whose wages are below R12000/yr will have their wages adjusted to Rl2000/yr, whereas wages that are above Rl2000/yr will remain unchanged.

5. Implications of minimum wage scenarios to the Average wage

Table 34 below illustrates the effects of different scenarios on the average wage. The larger the wage adjustments, the stronger the effects on the average wage and the wage bill will be.

As shown in Table 34, Scenario 3 will have the biggest impact on average wage. This scenario will increase the average wage by 161,7%. Scenario 1 has the smallest impact on average wage and leads to a 39% increase in the average wage.

Table 34: Percentage change of average wages over the base scenario

	Total	Field crops	Horticulture	Animals	Mixed farming
Scenario 1	**39,0%**	**50,7%**	**23,2%**	**36,0%**	**53,4%**
Scenario 2	**78,1%**	**98,6%**	**56,8%**	**67,7%**	**100,9%**
Scenario 3	**161,7%**	**197,9%**	**133,5%**	**136,8%**	**199,7%**

The scenarios have different implications to the average wage of sub-sectors. The mixed fanning and field crop sub-sectors are generally most affected by the minimum wage scenarios. For example, in Scenario 1, the average wage of mixed farming and field crop will increase by 53,4% and 50,7% respectively, whereas the same scenario leads to increases of 23,2% and 36% for horticulture and animal production respectively. As indicated in Table 7, Scenario 1 leads to 50,7% increase in the average wage of the field crop sub-sector, whereas the same scenario leads to 23,2% increase in the average wage of the horticultural sub-sector.

6. Implications of minimum wage scenarios to income distribution.

Table 35 below illustrates changes in income distribution among farm workers with minimum wage scenarios. The scenarios will not change the distribution. However, these scenarios will ensure a minimum average wage to all farm workers and will reduce income inequality among farm workers.

Table 35: Percentage distribution of farm workers among income categories-total agriculture

	Income Categories (per month)		
	≤ 6000	**6001 - 12000**	**≥ 12000**
Base	**84,14**	**14,01**	**1,85**
Scenario 1	**84,14**	**14,01**	**1,85**
Scenario 2	**0,00**	**98,15**	**1,85**
Scenario 3	**0,00**	**98,15**	**1,85**

With scenarios 1 and 2, all farm workers in the lower wage band will earn a wage of R6000/yr and R8000/yr respectively. However, the number of farm workers in statistical locations with average wage of R6000/yr or less will be the same as in the base scenario (84,14%).

Scenarios 2 and 3 will move all farm workers from the lower wage category (6000/yr) to the next wage category.

Scenario 2 ensures a minimum average wage of R8000/yr (R667/month). This will also result in no farm worker earning a wage less than R8000/yr and 98,15% of all farm workers earning a wage of between R8000/yr and R12000/yr. The proportion of farm workers earning an average wage of more than R12000/yr will be the same as in the base scenario (1,85%).

Scenario 3 will have the same distribution as scenario 2. However, scenario 3 will ensure a minimum average wage of R12000/yr.

7 Implications of minimum wage scenarios-macro-simulation results

In this section, the macro-simulation results of the effects of minimum wage scenarios on employment, output, price and disposable income are discussed.

The imposition of a minimum wage in agriculture has marginal effects on the agricultural sector, other sectors and the economy as a whole.

7.1 Minimum Wage Scenarios and Employment

Setting a minimum wage in agriculture over and above the current level can have implications for both agricultural employment and total employment.

As indicated, the minimum wage scenarios can lead to a reduction in agricultural employment. The higher the level of the minimum wage, the larger the effects on agricultural employment. Providing a minimum wage of R500/month (scenario 1) will result in a decline in agricultural employment of 8.6%. This could translate into job losses of 70747. Raising the minimum wage to R1 000/month (Scenario 3) could cause a decline of 17.6% in agricultural employment.

Agricultural wage adjustments can also lead to a slight decrease in total economic employment. Total economic employment will decrease by 1.2% and 2.4% if a minimum wage of R500/month (scenario1) and R1000/month (scenario 3) respectively are set for the agricultural sector.

Although the minimum wage scenarios can lead to job shedding in the agricultural sector as well as the total economy, in terms of the model it can result in an increase in employment in the manufacturing sector. For example, under Scenario 3, employment in the manufacturing sector can increase by 2,37%. These can be explained by the substitution of capital for labour. The increase in the minimum wage can lead to an increase in labour cost relative to capital cost. This may result in an increase in the demand for capital. Such capital is acquired from the manufacturing sector and thus can lead to an increase in employment in the manufacturing sector.

Although the minimum wage scenarios can lead to increases in manufacturing employment, these increases does not compensate for decreases in employment in agriculture and other sectors[3] of the economy thus leading to a general decline in total economic employment.

[3] Apart from manufacturing and agriculture, other sectors of the economy are included in the model. The macro-simulation indicates very marginal declines in employment of some sub-sectors of the economy. These marginal declines add up to give a general decline in total employment. Only the significant results of the macro-simulation have been reported in this report.

The minimum wage scenarios can have larger impacts in future years. For example, with scenario 3, about 1,2% of total employment can be lost in 2001 as opposed to total employment losses of 1,53% in 2004. Agricultural employment on the other hand, can decline at a constant rate over time.

7.2 Minimum Wage Scenarios and Output

The model indicates that the minimum wage scenarios may not have any significant impacts on agricultural output. One would have expected that employment declines will negatively affect agricultural output. The absence of impacts can, however, be attributed to the fact that the wage adjustments may lead to an increase in labour productivity which could have compensated for the potential losses in output from the reduction of the labour force.

The minimum wage scenarios, however, may impact marginally on total economic output. Total output will increase by 0,01% across all the wage scenarios. This could translate into R53,7 million. Economic output is not very sensitive to the different minimum wage levels. In other words there are no significant differences in impacts of wage scenarios on total economic output.

7.3 Minimum Wage Scenarios and Disposable Income of Households

Current income of households may increase by more than 0,7% with the wage scenarios. It could increase by 0,87% if the minimum wage in agriculture is set at a Rl000/month. This may translate into an increase of about R3,2billion in households' disposable income. The degree of impacts of minimum wage scenarios on income and expenditure declines at a small rate over time.

7.4 Minimum Wage Scenarios and Prices

The model indicates that the minimum wage scenarios will have no significant impacts on the price level in the agricultural sector and the economy. This is probably because the agricultural sector is very small compared to the total economy. Agricultural employment is only 11% of total employment and agricultural wages only account for 2,2% of total economic remuneration.

8. Summary and conclusions

This report has shown the declining trend of agricultural labour. It has further shown that agricultural labour is lowly paid compared to other sectors in the economy. Although agricultural wage rate grew at a faster rate than many sectors of the economy, the gap between the wage rate in agriculture and other sectors continue to increase. Agricultural wage on the other hand is important for rural households, as it constitutes on average 39% of rural incomes.

This study has, however, shown that wage increases could have a detrimental effect on employment. The wage elasticity of labour is estimated at —0,10. This implies that a 1% increase in the average agricultural wage rate will lead to a 0,1% decline in agricultural employment.

The macro-simulation results indicate that providing a minimum wage of R500/month may lead to 8,6% decline in agricultural employment. This would translate into job losses of 70747. The higher the minimum wage, the higher the disemployment effects. Increasing the minimum wage in agriculture could also translate into a general decline in total economic employment. The analysis has indicated that providing a minimum wage of R500/month could lead to a 1,2% decline in total economic employment.

The imposition of a minimum wage in agriculture could have some indirect positive effects in the economy. This study has shown that the wage scenarios may lead to greater economic output and an increase in disposable income of households. Total economic output and household incomes may increase by R53,7 million and R2,57 billion respectively if a minimum wage of R500/month is imposed. Increasing agricultural minimum wage above its current levels may also have a positive effect on employment in the manufacturing sector. Employment in manufacturing sector may increase by 1,95% if a minimum wage of R500/month is imposed.

The higher the minimum wage, the higher the effects on employment and household incomes. Economic output, however, is not sensitive to changes in the minimum wage.