



Will Lower Wages Cause Faster Growth in South Africa?

B Gibson

To cite this article: B Gibson (2000) Will Lower Wages Cause Faster Growth in South Africa?, Studies in Economics and Econometrics, 24:3, 143-163, DOI: [10.1080/03796205.2000.12129281](https://doi.org/10.1080/03796205.2000.12129281)

To link to this article: <https://doi.org/10.1080/03796205.2000.12129281>



Published online: 28 Jan 2022.



Submit your article to this journal [↗](#)



Article views: 15



View related articles [↗](#)

WILL LOWER WAGES CAUSE FASTER GROWTH IN SOUTH AFRICA?

B Gibson*

Abstract

Higher wages for unskilled workers will probably improve the distribution of income, but the impact of wage movements on employment depends crucially on the macroeconomic context. Whereas a restrictive fiscal and monetary stance impedes job creation, a more expansionary set of macroeconomic policies will have a positive effect on employment, albeit at the cost of inflation. If wage bargains spill over into the public sector, then, assuming a PSBR constraint is in force, public investment will adjust and the economy will become less stable. Despite the (slight) profit-led character of the South African economy, it is mainly policy that stands in the way of a more equalised distribution of income, not market forces, the private sector, international investors or any other special feature of the South African economy.

1. Introduction

A cogent analysis of the relationship between real wages and employment depends crucially upon having an accurate picture of the macroeconomy. Neoclassical partial equilibrium models that assume flexible markets effectively exclude the role of demand in determining the level of employment. General equilibrium models in which the labour market clears can hardly be taken seriously, when the actual economy is characterised by widespread unemployment. Demand side models, by contrast, tend to ignore the impact of wage changes on labour absorption in the medium term. Moreover, demand side models that are strongly wage-led, or stagnationist, risk losing touch with important determinants of investment (Bhaduri and Marglin, 1990). In short, simple, unrealistic and out-of-date models risk introducing a serious bias in thinking about market policy.

* Bill Gibson is a Professor in the Department of Economics at the University of Vermont, Burlington. Before this he was on the faculty of the University of Massachusetts at Amherst. He first started working on a model of the South African economy in the early 1990s as part of the Macroeconomic Research Group of the African National Congress and continued this work for a number of years as a researcher with the Development Bank of Southern Africa.
e-mail address: gibson@polyglot.uvm.edu

Thanks are due to Lance Taylor, Stephen Gelb and Dirk van Seventer who collaborated on earlier versions of the model, and to Tom Hertz and Diane Flaherty for useful discussion during the preparation of this paper. The comments of the editors are also gratefully acknowledged.

This paper is an essay on the relationship between wages, employment and macroeconomic policies analysed from the perspective of the complex political economy that characterised South Africa in the late 1990s. The main conclusion is that it is fruitless to contemplate market reform, such as minimum wage legislation or an employment subsidy, without at the same time asking whether the macroeconomic environment will support or inhibit the change in policy. In the current conjuncture, monetary policy is dominant inasmuch as the accord ending the apartheid period fiscal policy has effectively neutralised fiscal policy (Gibson and Van Seventer, 1997, Nattrass, 1997). In such a politically heterodox regime in which policies are often introduced at cross-purposes, microeconomic intuition is seemingly of limited use. It is perhaps more relevant to think in terms of a "macro-foundation" for the analysis of the relationship between real wages and employment. To that end, simulations of a multi-sectoral, dynamic computable general equilibrium (CGE) model are introduced to buttress the claims of the narrative.¹

The paper is organised as follows. In the next section, I address some of the theoretical issues involved in analysing the wage-employment relationship in an informal and heuristic way. The section describes some competing theories and some econometric evidence. The following section briefly describes the CGE and discusses the results of several simulations in which the level of nominal wages are changed. A final section draws some conclusions.

2. Model archaeology

2.1 The SARB model

One of the earliest and crudest analyses of market strategy was offered in a Reserve Bank Occasional Paper (Lombard and Van den Heever, 1990). It was based on the simplest possible microeconomic foundation, the isoquant. The intrepid authors held that the South African economy could embark upon a more labour-absorbing growth path if it only got its factor prices in line with its factor availability. The obvious policy implication vindicated Reserve Bank policy; ensure that the real rate of interest is positive and preferably high. This shifts the factor price-line effortlessly around the isoquant and encourages rational entrepreneurs to select more intensive methods. The analysis of the labour market served to vindicate the Reserve Bank's tight-money policy. Lax monetary policy, which could lead to negative real interest rates, sent the wrong signal to accumulate ever more capital in the face of a growing labour surplus (cf., Padayachee and Zarenda, 1995).

Evidently the authors never found it necessary to broach the issue of what determines the level of output and, indeed, if that level of output were to increase how much more labour could be absorbed. The omission is convenient in that we thereby avoid the thorny problem of whether encouraging more intensive methods of production via the ratio of factor prices, does not, at the same time, discourage

¹ The full details of the model and the calibration procedure are far beyond the scope of this paper but are available in Gibson and Van Seventer, 1997.

the accumulation of capital. If in leaving the next round of production short of capital, we discourage hiring, are we not simply exchanging employment tomorrow for employment today?

2.2 The World Bank model

Once articulated in this way SARB partial equilibrium analysis falls of its own weight or lack thereof, and we are forced to confront the question of the level of output. For the neoclassical general equilibrium model, this turns on the availability of factors of production. The free flow of market forces ensures that the factors will be fully utilised, at least in a somewhat longer run. Again, the wage-rental or factor-price line plays a pivotal role. In an economy in which there are only two goods produced (imports will enter in later) one good will be more capital-intensive than the other. Let the capital-intensive good be traded internationally and the more labour-intensive good be produced for local consumption. This may or may not be true. However, the principal advantage first-world producers find in locating in economies with surplus labour lies in the possibility of combining low wages with high technology, thereby reaping rewards that transportation costs cannot erase.

Full utilisation of resources in the perfectly competitive model of neoclassical theory leaves little room for labour market policies. The real wage will increase (decrease) if and only if the mix of output comes to favour the labour (capital) intensive good. An increase in the demand for labour-intensive home goods, for example, causes a movement along an efficiency locus. Since the latter is generally non-linear, both goods rise in capital intensity. As the relatively capital-intensive, traded good contracts, it releases capital and labour in proportions which cause excess supply of capital and an excess demand for labour. As a result, wages rise and the capital rental rate falls. The rewards to the factors of production reflect the relative demand for the goods in which they are used most intensively. All this takes place in a theoretical venue, which has no room for net capital accumulation; the one sector absorbs what the other loses.

Imports complicate matters, to a point. Since there is no reason trade must necessarily be in static balance, the supply of goods available in the neoclassical model no longer depends entirely on the available factors of production. The easiest solution is to take the trade balance as given exogenously; then, how "our" country fares depends on the capital inflow needed to support the trade deficit.

The proper role of the public sector is fully entailed in this framework. Any increase in the demand for home goods by the government not only reduces the output of traded goods, but also appreciates the real exchange rate in order to satisfy the given trade balance. Even if the budget is in balance and taxes match expenditure, government spending will force a reallocation of domestic resources in a way that renders the country uncompetitive by way of its real exchange rate. This sequence only assumes that government purchases are not very import-intensive. It follows that any policy, minimum wage, safety-net transfers, land reform, that

redistributes income to segments of the population with lower propensities to import will cause an appreciation of the real exchange rate.

In a static model, real exchange rate appreciation does not much matter. It is only in the next period, as the economy becomes more "inwardly oriented" that the model becomes useful for policy analysis. If an export orientation is correlated with high GDP growth rates, efficiency losses due to labour market policies become more pronounced over time. The World Bank employs such a model of the South African economy and draws the relevant, indeed necessary, conclusions from that framework (see Gibson and Van Seventer, 2000). Despite its conflict with reality, the model was influential in the formative days of ANC macroeconomic policy. As noted, it fully supports the current and conservative Growth, Employment and Redistribution (GEAR) in preference to the earlier and more far reaching Reconstruction and Development Programme (RDP) (see Nattrass, 1997 and Michie and Padayachee, 1998). To the extent that the South African labour market is not as competitive as the model suggests, the World Bank framework recommends deregulation or labour market "flexibility."

2.3 The MERG model

The early work of the Macroeconomic Research Group (MERG), a loose affiliation of progressive researchers, offered an alternative to the World Bank model, but it was never taken seriously in South African policy debates (MERG, 1993). The ANC came to power initially with the idea that progressive redistribution, and labour market policies that promote it, could become an engine of growth in itself. The *sine qua non* of a wage, or redistributive-led growth model is that resources be under-utilised. Demand then matters. But the story is more complicated by the fact that the components of demand are necessarily interdependent. Worse, they can be related in ways that are unstable over time. The policy environment will also make an important difference, but we shall return to this point later.

A simple wage-led or stagnationist model requires that the progressive redistribution increase the sum of consumption, investment and net exports (Bhaduri and Marglin, 1990). Whether this is likely to happen in practice is an open question. It is quite possible, even probable, that a rise in the real wage while increasing consumption could at the same time reduce investment by even more. Whether investment is sufficiently sensitive to the wage-induced loss in profitability is not a simple question to answer from either an analytical or an econometric perspective. On one hand, the associated rise in demand may well stimulate investment via the accelerator, as producers scramble to replace the unexpected decline in their inventories. On the other, expectations of inflation and the likely response by policymakers, coupled with the loss unit profitability may well reduce investment significantly.

Unfortunately, proponents of the wage-led scenario must also contend with the effects of higher wages on export competitiveness. Under the large country assumption, higher export prices, an appreciated real exchange rate, can reduce demand and possibly have some negative feedback on investment. Within the

small country framework, profits in the export sector will fall, discouraging investment in those sectors. Further complicating matters, is the effect on imports. Most likely, the import to GDP coefficient will fall with progressive redistribution. The effect is not strong however, and we must be prepared for the eventuality that net exports decline with a rise in the real wage. If the combined negative response of investment and net exports to higher wages overwhelms the positive boost to consumption provided by a progressive intervention, then the model is said to be profit-led.

2.4 Efficiency wages

This neat distinction between the two kinds of models, wage and profit-led, is blurred by the introduction of efficiency wage theory. If higher real wages lead to higher labour productivity, then the effect on profits and the real exchange rate will diminish (Bowles, 1995). Moreover, real wage gains that closely correspond to increases in productivity are not inflationary and thus unlikely to provoke a contractionary policy response. But while efficiency wages can transform a scowling profit-led economy into a happier wage-led one, the theory can only be a part of the story that must be told. After all, efficiency wage increases are "earned." To restrict our attention to solely earned wage gains will miss changes in the real wage which come about either through conscious activity on the part of workers, owners and policymakers on one hand, happenstance on the other, or some combination of the two.

2.5 Wages and employment in the models

Of the theories surveyed so far, the relationship between wages and employment is fairly evident. In the simplistic, static isoquant-driven analysis of the SARB, higher wages automatically lead to lower employment levels. For the World Bank CGE, higher wages cannot be introduced exogenously. Employment is given exogenously by the natural rate of expansion of the labour force and perhaps some marginal calculus of the trade-off between income and leisure. In the wage/profit-led framework, employment is most closely linked to output. As a first approximation, a rise in the real wage in a wage-led model will bring an increase in employment while a profit-led model exhibits the more "normal" inverse relationship. But what of this first approximation? Proponents of the micro-foundations approach to macro might well object that the substitution present in the SARB and World Bank models has disappeared in the muddle of structuralism of the wage/profit-led framework. After all, economics "works" in the real economy in that producers do substitute away from expensive inputs. Should this basic feature somehow be reflected in the modelled economy? Perhaps, but the problem becomes inextricably linked with how capital accumulation and technological change are modelled. The World Bank framework does not even bother to include investment seriously since as a static framework, there is no need to describe how the capital stock changes over time. Structuralist models, such as the MERG model as well as the one presented here, are based on an explicit accounting of the way in which investment affects the capital stock. In any given period, the capital stock and thus the embodied technology is determined by last period's investment

decisions. These decisions were presumably based on the wage and rental rates current at the time. Compounding the problem of isolating the effect substitution is the rate of productivity growth.

In principle the two effects, substitution and capital accumulation, can and should be separated. Bowles and Heintz (1996) frame the problem as follows: Let employment, L , be determined by the capital-labour ratio, k , and the capital stock, K . Expressed as an elasticity with respect to the percent change in the real wage rate:

$$\varepsilon_L = \varepsilon_k + \varepsilon_K$$

where ε_k is the elasticity of the capital-labour ratio with respect to the real wage and is called by the authors the "substitution" effect. The elasticity ε_K is thus the "scale" effect and a fixed-effect econometric exercise is undertaken on manufacturing data between 1975 and 1993. The authors find that the substitution elasticity is on the order of 0.7 for the manufacturing sectors.

Note that a similar estimate can be obtained simply by taking into account the stability of income shares and productivity growth.² Let α be the share of labour in total output:

$$\alpha = WL/pX$$

where W is the wage rate, L is the employed labour force, p the price level and X is the level of output. If the share of labour remains constant:

$$w^* = X^* - L^*$$

with $*$ indicating growth rates and where $w = W/P$ is the real wage. Thus:

$$\varepsilon_L = X^*/w^* - 1.$$

The elasticity for the same level of output, the substitution effect, is -1, or less if labour share is increasing slightly. This number is close to the Bowles-Heintz estimate. In a growing economy, the relationship could turn positive; if the average growth rate has been on the order of 1.9% and the growth in the real wage is 1.1%, then the elasticity of employment with respect to the real wage is approximately 0.7. A model properly calibrated to the observed rates of real wage and labour productivity growth should show a proper substitution with elasticity in this range. Fallon (1992) and Fallon and Periera (1994) marshal historical evidence that real wage growth has had a substantial negative impact on employment, especially for unskilled blacks. Weeks (1995) notes a number of shortcomings in the analysis, concluding that compositional effects explain the rise in the aggregate capital-

² Labour share has been very constant over the period, in the neighborhood of 57.5% with a standard deviation of only 2%. There appears to be no trend in the data whatsoever.

output ratio more than changes in relative factor prices. Weeks does not, however, challenge Fallon's claim that the data is consistent with a negatively sloped demand curve for labour.

2.6 Real and money wages in the macroeconomy

All of the models reviewed so far concentrate on one or two essential mechanisms to drive the analysis of the real-wage-employment relationship. The main message of this paper, however, is that when wages rise, a wide range of forces is set in motion that can both cancel and reinforce each other. In this section, we survey some of the principal mechanisms by which wages affect employment in the more complex setting of the model of this paper.

In the standard neoclassical Walrasian model, agents are assumed to act and react on the basis of real magnitudes only. Nominal values are of little relevance and we say that the economy is homogeneous of degree zero in prices and wages. In the model discussed here the various agents, firms, households, government and foreigners, all are capable of controlling nominal variables only. Real magnitudes come about as result of the equilibrium of economic forces. Firms and workers may agree on the nominal wage rate, but the real wage depends on factors beyond the control of either. Similarly, the SARB may have a considerable degree of control over the nominal interest rate but little control over the real. The same is true of the exchange rate and, indeed, any nominal value in the economy.

Typically, therefore, real wage gains are accompanied by some inflation inasmuch as they are usually initiated by a rise in nominal wages. How much inflation depends on several factors: (1) the cost of domestic intermediates, which will rise if there is a general increase in wages; (2) the cost of imported intermediates, converted at the current exchange rate; (3) the growth in labour productivity during the period in which real wage rises; (4) the mark-up. If the gain in nominal wages is economy-wide, domestic input costs will rise to reflect the higher wage costs. Imported intermediates on the other hand, do not necessarily increase in value unless the wage increase brings a nominal devaluation. Growth in labour productivity, along with the nominal wage increase, immediately cancels the inflationary effect. In the model that produced the simulations studied below, productivity gains are linked to capacity utilisation as overhead labour is absorbed.

The behaviour of the mark-up is as critical as productivity growth and, again, there are many options and possibilities. If the mark-up increases as the economy approaches full utilisation, then the real wage gains diminish more rapidly. In a profit-led economy, output falls as a result of the rise in wages then there is the secondary effect of a drop in the rate of productivity growth. This amplifies the inflationary effect of the nominal wage increase, thereby reducing the growth in real wages and adding a degree of stability to the model. This is a realistic description of what occurs in an economy with wage-induced growth in output. In a profit-led economy, the increase in the real wage causes a drop in output. If the mark-up continues to decline as output contracts, as it would in the neoclassical model, real wages further increase. This reduces profits further and investment

falls as a result in a second order round of effects. The swings in output produced are too violent to be judged realistic. To resolve this conflict, the model of this paper employs a kinked function that allows the mark-up to increase above its normal rate and remain constant below it. Whether there is a positive or negative reaction in terms of employment depends on the wage- or profit-led character of the model. In either case, the reaction is dampened.

Note that a rise in real wages that provokes a decline in employment requires a profit-led structure; otherwise there would be a positive correlation between the real wage and employment. Economics could still "work" in wage-led regimes, of course, but only at the level of the firm, not the economy as a whole. In a growing economy, a positive correlation between real wages and employment would not necessarily violate the constancy of labour's share in the equation above. Also observe that real wage gains limited to the growth in productivity are not necessarily a recipe for smooth, unproblematic expansion. Nor, on the other hand, is an increase in nominal wages without accompanying gain in productivity necessarily a problem. Note that if nominal wages rise and the nominal exchange rate depreciate to maintain a constant real exchange rate, inflation will accelerate to cancel any real increase. This assumes that the mark-up is constant, which it is in the model of this paper so long as there is normal capacity utilisation. With a constant mark-up and real exchange rate, distribution is impervious to the wage change, and there is neither a wage-led nor profit-led response. Typically, however, nominal wage growth causes the real exchange rate appreciation and real wages increase. If the model is wage-led, output will increase accordingly. Conversely, devaluation is contractionary in the wage-led scheme since real wages fall. If the mark-up rises, autonomously, real wage gains keyed to productivity changes will begin to fall short; the real exchange rate will appreciate further. Output could then fall with the decline in exports. Lower wage growth will be correlated with lower employment despite productivity growth.

In a profit-led regime, real wage gains will lead to higher unemployment as the level of investment declines. Slower rates of investment will cause a decrease in capital formation and there will be a slow down in the growth of productive capacity. The level of capacity utilisation falls in the current period causing investment in new capacity to fall even further in the next period. What then happens to capacity utilisation is unclear. If output (utilisation) falls faster than capacity, then investment will spiral down; if utilisation does not fall as quickly as capacity, the utilisation rate will rise and investment will recover.

In the wage-led arrangement, utilisation will rise and this will accelerate economic activity. But since, in the wage-led world, consumption rises at the same time as investment falls in new capacity, it follows that the utilisation rate will increase. This implies that investment will partially recover in the next period in response to the higher levels of the rate of capacity utilisation. Since employment in any given period depends on demand-determined output rather than the capacity to produce, it follows that the dynamic effects of a wage change on employment are not easy to predict. An increase in investment in one period could put downward pressure on the utilisation ratio, and thus investment, in the next. Employment would oscillate

as a result. On the other hand, a balanced investment response to higher demand would keep the utilisation ratio constant and thus employment would rise smoothly. Conversely, a decline in the real wage, which stimulates profits and therefore investment, could be conducive to higher employment in this period but significantly less in the next.

So far, we have ignored the effect of the cost of capital on investment. Wage increases not offset by productivity gains will cause inflation. With a given nominal rate of interest, the real cost of capital will fall and this will contribute to the wage-led character of the economy. Profits lost to higher wages are regained by way of lower interest rates. Some endogeneity of the money supply ensures that market forces alone will not short-circuit the expansion.

A wage-induced increase in output that is self-propelled via the real cost of capital will probably not be tolerated by the monetary authority. The economy will seem out of control, higher wages and prices leading to higher investment, output and rates of capacity utilisation. Even though this effect can only be present over a relatively short run, the monetary authority is likely to respond by raising the nominal interest rate. The objective, as noted in the first paragraph of this section, will be to maintain a positive real rate of interest. There could easily be some overshooting, of course, since the central bank can control only the nominal rate. The monetary authority can easily convert an otherwise wage-led economy into one that appears profit-led in the statistical record.

Were the economy strongly and authentically profit-led, the central bank would not have to intervene. The private sector would undertake to do their work for them. Higher wages would always result in lower employment levels. Even so, a vigilant and effective monetary authority, bent on curbing the rate of inflation appears to be a sufficient condition for a profit-led regime.

2.7 Policy dominance

Fiscal policy is not immune to changes in the nominal wage rate. If the fiscus labours under a spending constraint, wage increases can have dramatic implications. Often the constraint is defined in terms of the Public Sector Borrowing Requirement (PSBR), or deficit before borrowing. The PSBR is the difference between government investment (which may or may not include capital transfers) and government savings. The latter consists mainly of government spending on current account, goods and services, plus government wages, transfers and interest payments. The spending goal is frequently expressed in terms of the ratio of the PSBR to GDP.

When the PSBR constraint binds, the government will typically adjust government investment rather than current expenditure in order to satisfy the constraint. The elements of current expenditure may be deemed too politically sensitive to adjust while investment projects can easily be shelved and reactivated later, if the constraint allows. Wage disturbances have a multiplicity of effects on the PSBR to GDP ratio that may or may not cancel out. Higher private sector wages can

reasonably be assumed to leak into the public sector, perhaps with a lag, so that the wage increase quickly becomes economy-wide. Under a wage-led regime, the wage increase brings an increase in output that allows for a higher absolute PSBR, consistent with the targeted ratio. If the PSBR can accommodate the wage increase and remain within its limits, then it is possible that government investment could remain constant or even rise with an increase in real wages. If the economy is profit-led, however, the effect on government revenue will be ambiguous; inflation will increase indirect taxes, but output and direct taxes will fall. On balance, it is unlikely that government investment will rise. If, indeed, it falls, the economy appears even more profit-led.

A significant quantity of public debt complicates matters since the inflation accompanying the rise in wages may well drive down the real value of interest payments. There have been several episodes in the recent history of South Africa in which a burst of inflation has caused the real value of interest payments to fall. The implication is clear: if the government derives revenue from inflation tax, it can spend more on real investment.

The interaction between wage increases in the PSBR constraint are multifaceted with the balance of real and nominal wage gains determining whether the response is more likely to be wage-led or profit-led. If the debt is large, indirect taxes increase significantly with inflation and private real wage gains have a delayed impact on the public sector wage bill, then real wage increases will be more positively correlated with employment gains due to the PSBR constraint. But most probably, a fixed PSBR ratio will cause the model to become more profit-led.

There can be help from the movement of the mark-up as well. If the wage increase is mildly expansionary but at the same time forces the mark-up to rise, the resulting slow down in real wage growth might channel more resources to public investment (and private investment through crowding in). Paradoxically, an aggressive mark-up reaction on the part of capital that mitigates the nominal wage increase might well bring higher level of employment when the PSBR constraint binds.

There is one more level of complexity that is worth considering and will be relevant to the simulations studied below. If the PSBR constraint does not bind, the government deficit will obviously be larger with nominal wage growth. In the South African economy, the larger deficit expands credit to the private sector. The counterpart to the rise in credit is an accumulation of deposits by the private sector, especially households. The effect on the money supply of the rising deficit is itself a signal to the Reserve Bank to tighten money market conditions. This effect is present in the CGE and can lead to lower levels of output when the PSBR constraint does not bind. Crowding out becomes more severe in the model.

The model as described here exhibits a monetary "policy dominance" in that higher interest rate engineered to reduce the level of aggregate demand, typically causes public sector investment to fall. With a binding PSBR constraint, contractionary monetary policy implies contractionary fiscal policy and the economy becomes more profit-led.

The validation of the claims of this paper is based on the degree to which the model fits the South African economy. While beyond the scope of this paper, the correspondence has been addressed in a number of publications cited in the references. As argued elsewhere (Gibson and Van Seventer, 2000), it is well nigh impossible to calibrate a neoclassical CGE to the historical data of the South African economy, not to mention the micro-based isoquant parable of SARB. The alternative models do not have the look and feel of the South African economy and should not be trusted as a guide to policymaking.

3. Simulations

Even in a simplified framework of a CGE, it is evidently difficult to predict the course of employment in response to an increase in nominal wages. In this section, I briefly consider some simulations of a 15% increase in the nominal wages of unskilled labour. I shall attempt to disentangle the effects of aggressive anti-inflationary policy and the PSBR constraint. I then ask what would occur if wages were lowered or aggregate demand increased.

The simulations were designed as follows: First, the model was calibrated to replicate the South African economy from 1992-1995. The model fits the data for the growth in output, inflation, real wages, and government expenditure, including wages, transfers and interest payments, the real exchange, real and nominal interest rates and the money supply. Other components of aggregate demand are determined endogenously, as are the elements of the associated financial flow-of-funds analysis. Two important reaction functions are included, one for the nominal interest rate and a second for the nominal exchange rate. Both impute an aggressive anti-inflationary attitude to the central bank.³

3.1 Is the South African economy profit-led?

The period 1992-95 was one of recovery from a fairly deep recession and while output was growing, inflation was under control. Real wages were increasing, productivity growing and the PSBR to GDP ratio was declining, as was government investment. Nominal and real interest rates were high and the financial system was channelling resources to households for speculation in domestic financial assets.⁴

Table 1 reports results for five simulations and compares them to the base run. Note that some results are reported in absolute terms and others relative to the base run (footnotes in the table indicate the format). In the first simulation, wages are increased by 15% under a binding PSBR constraint. There are four occupational categories in the CGE, professional, service, labour and farm labour. Only the

³ For other applications of earlier versions of the model see Gibson and Van Seventer, 1996, 1996a, 1997 and 1997a. For a full discussion of the base run of this paper see Gibson and Van Seventer, 1998a.

⁴ It goes without saying that the results presented in this section would change if the CGE were calibrated to a different period of South African economic history.

nominal wages of unskilled labour are increased relative to the nominal wages of the base run. This obviously provokes a significant change in the income distribution by both race and class. All other policy parameters were set as in the base run.

Table 1: Simulations of the CGE¹

	1992	1993	1994	1995	Average
Real GDP Growth Rate²					
Base	-2,4	1,3	2,8	3,4	2,5
1. Wage increase-constant PSBR	-2,4	0,4	2,7	3,2	2,1
2. Wage increase-variable PSBR	-2,4	-0,6	2,1	3,0	1,5
3. Wage increase-constant interest	-2,4	1,1	3,1	3,2	2,5
4. Wage decrease	-2,4	1,9	2,8	3,5	2,7
5. Aggregate demand increase	-2,4	4,5	4,5	5,1	4,7
Capacity Utilisation²					
Base	86,4	86,3	87,4	86,9	86,9
1. Wage increase-constant PSBR	86,4	85,1	86,3	85,8	85,7
2. Wage increase-variable PSBR	86,4	84,2	84,9	84,9	84,7
3. Wage increase-constant interest	86,4	86,1	87,6	87,0	86,9
4. Wage decrease	86,4	87,1	88,3	87,9	87,8
5. Aggregate demand increase	86,4	88,2	90,3	89,7	89,4
Inflation²					
Base	13,9	9,7	9,0	8,6	9,1
1. Wage increase-constant PSBR	13,9	12,2	9,0	8,7	10,0
2. Wage increase-variable PSBR	13,9	14,1	9,3	8,9	10,8
3. Wage increase-constant interest	13,9	15,0	8,9	8,6	10,8
4. Wage decrease	13,9	7,4	8,9	8,7	8,3
5. Aggregate demand increase	13,9	18,3	19,3	15,0	17,5
Real Wage³					
Base ⁴	100	99,6	102,0	103,0	101,5
1. Wage increase-constant PSBR	100	103,072	103,119	103,072	103,1
2. Wage increase-variable PSBR	100	101,3	101,1	101,1	101,2
3. Wage increase-constant interest	100	100,398	101,128	101,078	100,9
4. Wage decrease	100	96,8	96,7	96,6	96,7
5. Aggregate demand increase	100	94,1	92,2	94,4	93,6

Table 1 continued

	1992	1993	1994	1995	Average
Employment³					
Base ¹	100	101,0	102,1	105,4	102,8
1. Wage increase-constant PSBR	100	99,3	99,2	99,3	99,3
2. Wage increase-variable PSBR	100	98,7	98,1	98,2	98,3
3. Wage increase-constant interest	100	100	100,1	100	100
4. Wage decrease	100	100,5	100,5	100,5	100,5
5. Aggregate demand increase	100	104,3	105,2	106,1	105,2
Private Investment³					
Base ¹	100	109,0	118,2	137,9	121,7
1. Wage increase-constant PSBR	100	100,3	100,2	100,7	100,4
2. Wage increase-variable PSBR	100	96,7	92,7	94,7	94,7
3. Wage increase-constant interest	100	99,5	99,7	99,4	99,5
4. Wage decrease	100	98,1	99,2	101,1	99,4
5. Aggregate demand increase	100	105,1	109,7	110,8	108,5

Source: Model computations.

Notes: 1. Base year is 1992. 2. Percent. 3. Ratios to the base run. 4. 1992 = 100.

The table shows that the wage increase causes the economy to slow down, but not dramatically. Instead of a recovery of 2,5% on average, the economy grows at 1,4%. In the second simulation, a 15% wage increase with a variable PSBR (i.e., fixed public sector investment) the economy slows slightly less. In the third simulation, we neutralise the central bank's reaction function, holding the interest and exchange rates equal to their base run values. Without the reaction of the SARB, the economy expands at a similar rate to that of the base run. In fact, the cumulative growth is slightly faster than in the base run, but the difference is so small that we conclude that wage-led growth is hardly efficient. In the fourth simulation, we decrease the wage of unskilled labour, again by 15%. This causes output to rise even faster, by 2,7% on average. A 10% increase in demand, that is, investment, government current expenditure and exports, causes output to increase the most rapidly, by an average of 2,2% faster.⁵

In the second panel of Table 1, it is evident that capacity utilisation in the first three simulations falls, relative to the base run, while it rises in the last two. Raising aggregate demand pushes the level of capacity utilisation up the most. Even though

⁵ The increase in government expenditure does not include wages or transfers. Interest payments on debt are endogenous.

the increase includes investment, it is clear that the expansion is unbalanced. Spending increases faster than capacity. Longer run simulations (not shown) indicate that this is the least sustainable of the five.

Inflation, shown in the next panel, follows the pattern of wage increases with the third and fifth simulation the most inflationary. In the first five simulations, capacity utilisation does not rise to the threshold at which the mark-up begins to rise. The result is a significant acceleration in the price level as the economy approaches the capacity constraint in the last.

The real wage increases in the remainder of this panel is measured relative to the base. The average increase in the first simulation is only 1% higher than the increase in the real wage in the base run. The first and the second simulations produce a similar real wage response since the inflation rate is virtually the same. The initially faster inflation rate in the third simulation causes the real wage to lag behind the other two, but only slightly. A decrease in the nominal wage and an increase in demand, with wages lagging behind prices, produce a pronounced decline in the real wage.

One of the most disingenuous arguments made by the SARB in South Africa is that lower inflation helps the poor and therefore credit tightening not only gets the prices right, but also fights poverty. My simulations reveal the shortcomings of this argument. Surely, the fight against inflation waged by the bank is effective in raising the real wage once the wage price spiral begins. But the effect of the real wage acceleration only makes the economy more profit-led. As jobs are lost and wage demands weaken, first nominal and then real wages decline along with output. The aggressive response of the monetary authority does not combat poverty; it creates it.

This is seen most clearly in the next panel that shows the employment response to the change in wages. The first two simulations show that a rise in the real wage of unskilled labour by 1% causes a decline in employment by about 1,7%. But note that the third simulation shows that the employment impact of the real wage increase is virtually zero, when the reaction to inflation is muted. There has been a 1% increase in the real wage, on average, with no loss of employment.

The first two simulations suggest that raising wages in the current policy environment will be damaging to employment. But does this automatically imply that lowering wages will increase employment? In the fourth simulation, we see that a change in the nominal wage is hardly symmetrical. A drop in the real wage of 3,3% does lead to an increase in employment, but only of 5,0% relative to the base run. The reason is evident in the next panel of the table; lower wages improve profits but also reduce the rate of inflation. There is some hysteresis built into the interest rate reaction function such that when inflation abates, the nominal interest rate does not decline as rapidly as it does when inflation accelerates. The inertia in the nominal interest rate causes the real interest rate to increase and as a result, investment declines. What lower wages give back to accumulation, higher interest

rates take away. Note that the effect is not long lasting, however, and by the end of the simulated period investment recovers significantly.

In the last simulation, with an increase in aggregate demand, nominal wages lag behind inflation and the real wage falls accordingly. The combined result of lower wages and higher demand increases the growth rate to the highest of the simulations and therefore employment increases rapidly. By 1995, the 5,6% decrease in real wage produces an increase of 6,1% in employment. Can we conclude from these simulations that the model of the South African economy is profit-led? Apparently, the intrinsic nature of the economy is difficult to assess underneath the various layers of policy. An aggressive central bank will indeed cause the economy to appear profit-led, but on balance, the calibrated model suggests that the economy is only slightly profit-led, in the absence of central bank intervention.

3.2 Policy Dominance

A second question arises with respect to the relationship between monetary and fiscal policy built into the model. A comparison of the first and second simulation seems to suggest that the PSBR constraint does not much matter. Table 2 provides some additional detail.

First, note that without the binding PSBR constraint, the real interest increase is steeper. The SARB must apply the brakes with more force to reduce the rate of inflation when unaided by the fiscus. Second, it is clear from the table that the various mechanisms discussed above which ultimately determine the level of public investment are active in the model. Government investment is an average of 2,2 percentage points higher when the PSBR constraint is not binding. But note that private investment essentially keeps par with the base with a binding PSBR constraint, but falls by 5,3% on average when the constraint does not bind. Evidently, the higher interest rate associated with the extra demand almost completely crowds out private investment.

This raises the question as to how the economy would respond without the PSBR constraint, but also without policy dominance in the sense that a rise in investment by the fiscus would be cancelled by the central bank. In a simulation not shown in the table, we raised unskilled wages by 15% with no binding PSBR constraint, under the proviso that the bank would not raise interest rates any further than when the PSBR constraint was binding. Consistent with discussion of the constraint above, output, inflation and employment all increased somewhat since private sector investment was not crowded out as much. The effect was not strong however, primarily because the model shows some impact of inflation on investment via uncertainty. Since this effect is built in to reflect private sector behavior toward risk, it cannot be neutralised by central bank interest and exchange rate policy. The results of this simulation show that crowding *in* is fairly weak and can easily be overpowered by the policy dominance of the central bank.

Table 2: Additional details of the impact of a change in nominal wages in the CGE

	1992	1993	1994	1995	Average
Real Interest¹					
Base	1,6	3,1	3,4	5,9	4,1
1. Wage increase-constant PSBR	1,6	3,2	3,4	5,6	4,1
2. Wage increase-variable PSBR	1,6	3,5	4,8	6,5	4,9
3. Wage increase-constant interest	1,6	3,1	3,4	5,8	4,1
4. Wage decrease	1,6	3,2	3,5	6,0	4,2
5. Aggregate demand increase	1,6	5,3	4,8	7,7	5,9
Government Investment²					
Base	10,5	10,6	10,3	10,0	10,3
1. Wage increase-constant PSBR	10,5	9,2	8,7	8,2	8,7
2. Wage increase-variable PSBR	10,5	10,7	10,3	10,0	10,3
3. Wage increase-constant interest	10,5	11,3	11,1	10,6	11,0
4. Wage decrease	10,5	11,8	11,5	11,4	11,6
5. Aggregate demand increase	10,5	8,8	11,4	12,2	10,8
Government Wage Bill²					
Base	44,1	44,3	43,3	44,8	44,1
1. Wage increase-constant PSBR	44,1	44,5	43,5	44,9	44,3
2. Wage increase-variable PSBR	44,1	43,7	42,6	44,0	43,4
3. Wage increase-constant interest	44,1	43,4	42,4	43,9	43,2
4. Wage decrease	44,1	44,1	43,1	44,6	43,9
5. Aggregate demand increase	44,1	47,5	45,5	48,2	47,1
Government Interest Payments²					
Base	19,1	20,6	22,4	23,5	22,2
1. Wage increase-constant PSBR	19,1	20,4	22,3	23,3	22,0
2. Wage increase-variable PSBR	19,1	20,4	22,6	24,1	22,4
3. Wage increase-constant interest	19,1	20,3	22,1	23,2	21,9
4. Wage decrease	19,1	19,6	22,1	25,0	22,2
5. Aggregate demand increase	19,1	18,6	20,9	23,4	21,0

Table 2 continued

	1992	1993	1994	1995	Average
Government Income²					
Base	90,0	91,3	103,1	99,5	98,0
1. Wage increase-constant PSBR	90,0	89,9	101,5	97,7	96,4
2. Wage increase-variable PSBR	90,0	89,4	100,4	96,6	95,5
3. Wage increase-constant interest	90,0	90,8	102,7	99,0	97,5
4. Wage decrease	90,0	91,2	103,8	102,3	99,1
5. Aggregate demand increase	90,0	94,0	108,6	108,4	103,7
Gini-Total income					
Base	0,599	0,603	0,593	0,605	0,600
1. Wage increase-constant PSBR	0,599	0,597	0,587	0,598	0,594
2. Wage increase-variable PSBR	0,599	0,598	0,587	0,599	0,594
3. Wage increase-constant interest	0,599	0,599	0,588	0,599	0,595
4. Wage decrease	0,599	0,610	0,601	0,612	0,608
5. Aggregate demand increase	0,599	0,608	0,600	0,612	0,607

Source: Model computations.

Notes: 1. Percent. 2. Billions of 1992 rands.

The last panel shows that the Gini coefficient improves in the first three simulations and by a similar amount. But it is important to identify an inherent tendency in the reported Gini of the model. When output falls, so too do distributed profits. Moreover, nominal wages of skilled and managerial labour are more sensitive to the level of economic activity than unskilled workers. These factors combine to produce a strong impact on the Gini in an equalising direction following a contraction in economic activity and *vice-versa*. Consequently, the economy as a whole is arguably better in the last of the first three simulations, despite the slight increase in the reported Gini.

3.3 Sharing the pain

In the fourth simulation, in which wages are reduced, the central bank does not have to fight inflation via higher real interest rates and an appreciated exchange rate. Nonetheless, the monetary authority plays an important role. First there is the hysteresis in the interest rate reaction function mentioned above such that when inflation abates, the nominal interest rate does not decline as rapidly as it does when inflation accelerates. Similarly, the real exchange rate does not adjust to maintain parity. When inflation falls, the real exchange depreciates and this provides a boost to economic activity via a rise in exports.

Table 1 shows the economy responds positively to the decrease in real wages with growth lower initially and then accelerating. Inflation is lower, of course, and it would seem that this simulation combines the best of both worlds. Note that under the assumption of a fixed mark-up, the real wage does not fall much. The average real wage decreases by less than 1% and employment *falls by seven-tenths of 1%*. The hysteresis in the interest reaction function is visible in Table 2. As noted above, there has been significant crowding out of private investment. But it is also true that with lower nominal wages for unskilled labour, the government wage bill actually rises. Lower inflation means higher real wages for service and professional workers, the bulk of government employment. Moreover, the inflation tax on government debt and fiscal drag are lower. Public investment falls as a consequence. The Gini coefficient rises above the base line to its highest average. Lowering money is evidently not the way to improve the distribution of income, although as noted, the rise in output can explain some of the deterioration in the Gini.

Far more favourable terms of exchange between real wage losses and employment gains are seen in the last simulation. There, investment, government current expenditure (including the government wage bill) are exogenously increased and exports by 10%. Now the output response is quite significant, some 4.4% above the base line simulation. Capacity utilisation also rises and inflation accelerates. Table 1 shows that the real wage falls by 3.3% compared to the 0.8% decline when wages of unskilled labour falls. The important difference is that the fall in the real wage is shared by all wage earners, not just unskilled labour. As a result, employment levels increase rapidly, by 4.3% on average.

More detailed results of the last two simulations are shown in Table 3. There it is evident that when unskilled wages are lowered, Blacks and Coloureds suffer the most since the occupational mix of Whites and Asians is more skewed toward the professional, technical and managerial categories versus unskilled labour. In both of the last two simulations, Blacks lose some 3.3% of their real income. With a decrease in wages, they lose nothing in terms of employment opportunities, but neither do they gain. By contrast, when there is a demand expansion, Black employment rises by 4.1%. Now not only is the pain of financing growth shared, but also there are also significant employment rewards.

Table 3: Lower real wages for unskilled labour¹

Average Real Wage	1992	1993	1994	1995	Average
15% Decrease in Unskilled Wages					
Base	100	99,6	102,0	103,0	101,5
Private	100	96,0	95,9	95,9	95,9
Government	100	99,3	99,3	99,2	99,3
White	100	98,8	98,8	98,7	98,8
Coloured	100	95,3	95,2	95,1	95,2
Asian	100	97,2	97,1	97,0	97,1
Black	100	94,4	94,2	94,1	94,2
Average	100	96,8	96,7	96,6	96,7
10% Increase in Demand					
Private	100	93,5	91,7	94,0	93,1
Government	100	93,3	91,5	93,6	92,8
White	100	93,3	91,5	93,7	92,9
Coloured	100	94,3	92,4	94,5	93,7
Asian	100	93,9	91,9	94,1	93,3
Black	100	94,4	92,4	94,5	93,8
Average	100	94,1	92,2	94,4	93,6

Source: Model computations.

Note: 1. 1992 = 100.

4. Conclusions

The model of this paper holds no priors on the debate over the relationship between the real wage and employment. Rather, the methodology was to build a CGE, calibrate it as well as possible to the historical period and examine some counterfactual scenarios.

The conclusions summarised as follows: First, higher wages for unskilled workers will probably improve the distribution of income. How much higher wages will hurt employment is a question of macro rather than microeconomic policy. While other theoretical frameworks might suggest that the loss in employment would be considerable, the CGE of this paper does not.

Second, crowding out depends on how the central bank responds to changes in the rate of inflation. Conservative central banks around the world are quick to anticipate the threat of inflation on the horizon. But they are also notoriously slow

in adjusting the nominal interest rates when inflation falls. Similarly, to the extent that the real exchange rate is managed to contain inflation, rather than promote exports and employment, progressive redistribution will be difficult.

Third, the effect of higher wage depends on whether a PSBR constraint is in force, which is what we have called policy dominance. If the wage bargains spill over to the public sector, and public investment adjusts, the result will be a less stable economy. A somewhat profit-led economy will appear more profit-led and a wage-led economy will seem more stagnationist than otherwise. Thus, econometric studies that correlate higher wages with lower levels of employment, but do not model the full policy environment are unlikely to be of much help in understanding how an effort to improve the distribution of income is likely to be tolerated.

Fourth, a rise in real wages of unskilled labour improves the distribution of income; a decline in wages will cause inequality to rise but not in mirror image. The data of this model suggests that wage cuts for unskilled labour are not an important source of growth. This does not mean however, that lower real wages will be uncorrelated with growth. This typically comes about in economies with surplus labour due to lags in the adjustment in nominal wages. While generalised wage declines can and often do serve as a way to finance accumulation of capital, it does not follow that a wage cut can initiate the process.

The simulations of this paper show that it is the policy regime that imparts the overwhelming majority of the profit-led quality to the model. When properly calibrated to the actual historical data of the South African economy, the model remains slightly profit-led. Still, it is mainly policy that stands in the way of a more equalised distribution of income, not market forces, the private sector, international investor or any other special feature of the South African economy.

REFERENCES

- Bhaduri, A and Marglin, S (1990): "Unemployment and the Real Wage: The Economic Basis for Contesting Political Ideologies", *Cambridge Journal of Economics*, 14, 375-393.
- Bowles, S (1995): *Employment Effects of Labour Productivity Increases: Possible Effects of a Labour Accord and Competition Policy*, University of Massachusetts, Amherst, MA.
- Bowles, S and Heintz, J (1996): *Wage Subsidies and Job Creation: Options for South Africa*, University of Massachusetts, Amherst, MA.
- Fallon, P (1992): *An Analysis of Employment and Wage Behavior in South Africa*, Southern Africa Division of the World Bank.
- Fallon, P and Pereira da Silva, L (1994): "South Africa, - Economic Performance and Policies", Discussion Paper, 7, Washington: World Bank.
- Gibson, B and Van Seventer, D (1996): "Toward a Growth Strategy", *Development Southern Africa*, 13(4), 511-538.
- Gibson, B and Van Seventer, D (1996a): "Trade, Growth and Distribution in the South African Economy," *Development Southern Africa*, 13(5), 771-792.

Gibson, B and Van Seventer, D (1997): "The DBSA Macromodel", Occasional Paper, 120, Development Bank of Southern Africa, Midrand.

Gibson, B and Van Seventer, D (1997a): "The Macroeconomic Effects of Restructuring Government Expenditure by Function in South Africa", *South African Journal of Economics*, 65(2), 191-225.

Gibson, B and Van Seventer, D (2000): "A Tale of Two Models: Comparing Structuralist and Neoclassical Computable General Equilibrium Models for South Africa", *International Review of Applied Economics* (forthcoming).

Gibson, B and Van Seventer, D (1998a): "Real Wages, Employment and Macroeconomic Policy in a Structuralist Model for South Africa", Department of Economics, University of Vermont.

Lombard, JA and Van den Heever, JP (1990): "The Optimal Allocation of Savings in the South African Economy and the Role of Monetary Policy", Occasional Paper, 1, South African Reserve Bank.

Macro-Economic Research Group (MERG) (1993): *Making Democracy Work: A Framework for Macroeconomic Policy in South Africa*, Cape Town: Oxford University Press.

Michie, J and Padayachee, V (1998): "Three Years after Apartheid: Growth, Employment and Redistribution?", *Cambridge Journal of Economics*, 22, 623-635.

Nattrass, N (1995): "Towards a Strategic Framework for Growth and Employment", School of Economics, University of Cape Town.

Nattrass, N (1997): "Gambling on Investment: Competing Economic Strategies in South Africa", *Transformations*, 31, 25-42.

Padayachee, V and Zarenda, H (1995): "Macroeconomic and Labour Market Policies for Employment Generation in South Africa", University of Durban Westville and University of Witwatersrand.

South African Reserve Bank (1998), *Bulletin* (various issues).

Taylor, L (1991): *Growth, Income Distribution and Inflation: Lectures on Structuralist Macroeconomic Theory*, Cambridge: MIT Press.

Weeks, J (1995): "Redressing Inequality in South Africa: Poverty and Labour Market Restructuring", School of Oriental and African Studies, University of London.