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MACROECONOMIC IMPACTS IN SOUTH AFRICA

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This paper examines the impacts of interest rates, exchange rates and money supply on the South African economy from 1947-1994. A vector autoregression framework is used for the analysis. The structure of the relationship can be observed. Long run parameters estimated to analyze the macroeconomic impacts of the interest rate had the most significant effect on real net farm income. Exchange rates have played a role as a cost of production through their effect on insulating farmers from external demand.

1. INTRODUCTION

The South African economy, as was common to most Sub-Saharan African countries, has been dominated by a highly regulated government controlled market. The tight protection against foreign competition, in conjunction with a controlled and largely monopolistic system of marketing boards, subsidies on inputs, favourable taxation and interest rate policy has contributed to distortions in agriculture. Price controls on many commodities which as a result of the marketing act of 1937, facilitated intervention varying from very severe types such as one-channel fixed-price schemes and quotas, to mild measures (Groenewald and Nieuwoudt 1979)

Since the early 1980's, however, there has been a shift towards a more liberated political economy which includes reforms in the financial and agricultural sector. The reform in the agricultural sector came in the form of a reduction in the use of price controls on a number of commodities which gave way to a more market-based pricing system. Farmers also experienced higher interest rates, devalued exchange rates, declining budgetary allocation and a change in the favourable taxation policies thus redeeming the implicit subsidy on agriculture (Kirsten & Van Zyl, 1996). As a result of the Committee of Inquiry into the Marketing Act (1992) a total of eight marketing schemes and marketing boards were abolished (Sartorius von Bach *et al.*, 1994). Reform of interest rates and exchange rates resulted from the de Kock inquiry (1979) which recommended the replacement of direct controls with market-determined prices in monetary and exchange rate policy. These reforms towards a more market led economy will result in the agricultural sector becoming increasingly dominated by the level of effective demand, determined by the level of domestic growth and overseas markets. This study will attempt to add to the work of Dushmanitch and Darrood (1990) on the macroeconomic linkages in South Africa in agriculture. Specific focus will be on the impacts of interest rates, exchange rates and money supply on real net farm incomes at different stages of financial and agricultural sector reform in South Africa.

2. THE MACROECONOMIC ENVIRONMENT

Interest Rates

Throughout most of the 1970's the real long-term interest rates have been low and subsidised which offered substantial incentives to borrow for purchases of durable equipment and fixed improvements. This was supplemented by short term off-shore borrowing in the early 1980's, ahead

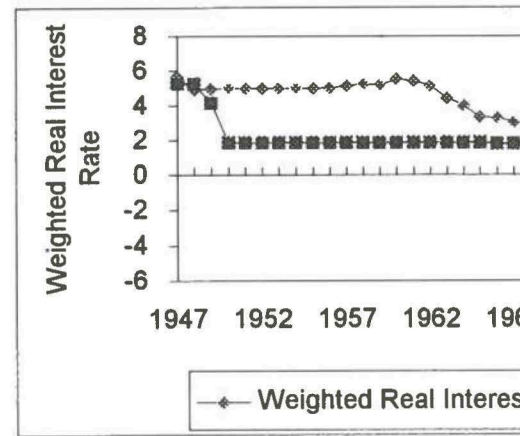


Figure 1: Weighted Real Interest Rate and...

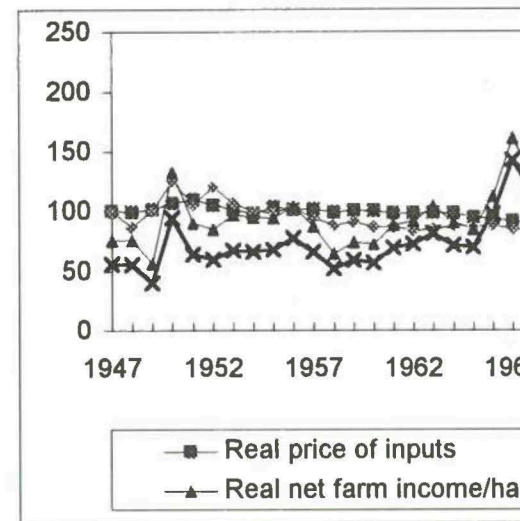


Figure 2: Indices of real net farm income and...

inputs and outputs were highly correlated until 1971. The real output price then increased sharply to 1973 and then gradually declined for the rest of the period. This was a reflection of the Marketing Boards pricing strategy of bringing domestic prices in line with lower boarder prices for most crops. The real input price increased gradually from 1971 to 1980 after which it remained relatively constant. The widening difference between the price of inputs and outputs has resulted in a cost squeeze for farmers indicated by the declining real net farm income since 1974. The sharp drop in real net farm income in 1974 corresponds with the severe drought. Due to the changing structure of agriculture, farm size increasing with the number of farms decreasing, the real net farm income per farm has declined at a slower rate than the real net farm income per hectare.

4. A SYSTEM APPROACH TO MODELING MACRO-LINKAGES

A Vector Autoregressive approach (VAR) was used to model the linkages of the macroeconomic variables and agricultural variables, specifically with net farm income. This approach places minimal restrictions on the model so that the true structure of the relationship can be observed. In order to capture the long run relationships, cointegration between the variables was examined. The Dickey-Fuller

Table 1: The results of the FIML estimates under just vector

Variables in the VAR model	
Exports	
Real Net Farm Income	
Real Price of Outputs	
Real Price of Inputs	
Exchange Rate	
Real Interest rate	
Money Supply	
Rainfall	

the discount factor determining current assets and thus further reducing wealth. The positive sign on money supply indicates that a 1% rise in money supply will raise real net farm income by 0.14%. The real price of outputs had a positive but less significant effect than the real price of inputs on real net farm income with a 1% rise in the real price of outputs increasing real net farm income by 0.52%. The exchange rate variable was restricted to zero as one of the identifying restrictions. It did not have a significant direct effect on real net farm income but indirectly through the price of inputs. On the output side depreciation of the exchange rate has not been passed on to producers, through the Marketing Boards, as higher producer prices.

5. TIME VARYING MACROECONOMIC EFFECTS

This study so far has assumed that the long-run relationships between variables are invariant with time. To capture the possible effect of changing long run relationships during the reform process a time-varying parameter framework was used (Charemza, 1993). The cointegrating vectors were estimated in a 'rolling regression' manner with a window size of twenty five. The first regression was estimated using data from 1947 to 1971, the second regression with data from 1948 to 1972 and so on until the end of the sample (twenty four windows were estimated).

Tests for time varying cointegration of the three cointegrating vectors showed that the real net farm income

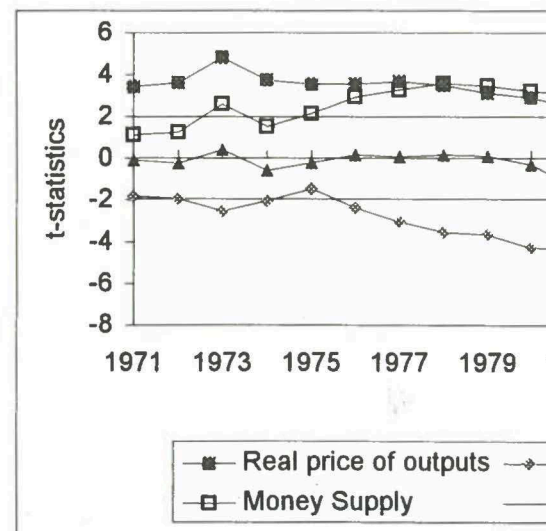


Figure 3: Time varying t-values of the variables

1987 to the end of the sample period.

6. CONCLUSION

The effect of macroeconomic policy reform in terms of exchange rate and interest rate, initiated by the devaluation commission (1979), altered the economic environment in which agriculture operates and applied pressure on agricultural reform. A change in the reserve requirement in the banking sector made subsidised farm interest rates impossible which resulted in the interest rate becoming a highly significant cost of production. This cost was magnified by the level of real farm debt resulting in public and private lenders increasing borrowings based on expected land price increases. The negative effect of high interest rates on real net farm income peaked in 1983 which coincided with the sharp anti-inflationary interest rate increase. The level of real farm debt has resulted in a strict lending requirement by the Land bank which has resulted in a gradual reduction in the significant negative effect of the interest rate on real net farm income.

The marketing boards appear to have been successful in insulating producers from external demand through insulating exchange rate effects on producer prices. The decrease in real output prices towards the end of the period is in part a result of policies bringing domestic prices in line with lower boarder parity prices. Real input price did not follow a similar trend suggesting that liberalization in recent years has effected input prices less than output prices resulting in a cost squeeze for farmers. With reform in the monetary and agricultural sector, specifically on interest rate, exchange rate and price supports the financial position of farmers has deteriorated. Even though there is a reduction in subsidies to agriculture investment is vitally important such a research and development expenditure, to improve productivity and efficiency.

It is also important to have consistency of macroeconomic instruments such as the exchange rate and the real interest rate which has not always been the case. The depreciation in the mid-1980's resulted in imported inflation while at the same time trying to control inflation with high interest rates. This has increased the financial burden on small enterprises like agriculture. With the increasing significance of macroeconomic variables on the farm sector it is essential that flexibility be developed to enable farmers to maintain a favourable financial position.

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