AN ANALYSIS OF FIXED CAPITAL FORMATION IN SOUTH AFRICA SINCE 1994

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Abstract

Fixed capital formation (investment) is an important but generally volatile component of aggregate spending. It is important in that it adds to the productive capacity of an economy. It is value-adding in the sense that it contributes to the growth potential of an economy, but it tends to be volatile as it entails substantial capital commitments based on uncertain expectations. The article undertakes a comparative analysis of fixed capital expenditure, using 1994 as an important year in which South Africa entered a new political dispensation. The article will attempt to evaluate the extent to which fixed capital decisions responded to a changing economic and political environment in terms of expectations and uncertainty.

Keywords:

Fixed capital formation, uncertainty, expectations, certainty equivalent, expected present value of investments, risk-adjusted present value, coefficient of uncertainty, investment climate, period of high and sustained uncertainty, period of cautious optimism.

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1. INTRODUCTION

Fixed capital formation (investment)¹ is at the foundation of virtually all value-creating activities in an economy. Business is in the business of value creation whether in the form of goods or services. A value-creation activity, real or financial, without some form of fixed capital is inconceivable. A country's fixed capital stock, made up of buildings, machinery, equipment and so on, together with its human capital and natural endowments comprise the productive base of its economy. In adding to the productive base of an economy, fixed capital formation contributes to real economic growth and employment creation.

Although there is an apparent dichotomy in the economy between the real and financial sectors and a tendency for these sectors to grow separately, they will never really grow apart. The real and financial sectors are inextricably intertwined. The nominal/financial sector – often referred to as the symbolic or paper economy – will not become truly independent of the real economy of production and employment. Drukker (1998) referred to the concept of a 'symbol' economy and the notion that it was drifting away from the real economy. In the financial world, the value of currency, deposits, shares and other financial assets will ultimately be determined by real economic activity measured by fundamental variables such as real expenditure, output growth, and employment.

There will certainly be short-term deviations in the value of financial assets from their fundamental values, but such deviations will not persist for too long. Fundamentals relating to fixed investment, production, turnover, profits and sustainability of businesses will ultimately determine the value of businesses represented by financial assets and their derivatives traded on financial markets. As fixed investment decisions tend to be based on profit expectations and levels of confidence, they would add value to business as reflected in representative financial assets. Since fixed capital formation, in the aggregate, is an important determinant of the growth potential of the real economy, it would then also play an important role in adding value to the financial world.

As indicated, a decision to engage in fixed capital formation would be based on expected profits and the degree of uncertainty/confidence that is associated with that expectation. Fixed capital formation decisions are generally long term in nature and there would therefore be much importance placed on variables relating to expectations and levels of uncertainty. Any deterioration in confidence levels in an economy would be reflected in reduced profit expectations and/or higher levels of uncertainty, thus discouraging fixed capital formation.

Given their importance for fixed investment decisions, uncertainty and expectations constitute the context in which fixed capital formation in South Africa is analysed in this article. The year 1994 will be used as a dividing point for the analysis, as it represents a



¹ Fixed capital formation refers to the acquisition of plant, machinery and equipment and is used interchangeably with the term fixed investment in this paper.

watershed year in the political history of South Africa when it became a new democracy, pregnant with 'great expectations'. A comparison will therefore be made between the 10-year period leading up to 1994 (i.e. 1985–1994) and the 10-year period thereafter (i.e. 1995–2004).

2. A COMPARATIVE ASSESSMENT OF FIXED CAPITAL FORMATION IN SOUTH AFRICA

As indicated at the outset, a country's fixed capital stock, together with its human capital and natural endowments, comprises its productive base. The lack of fixed capital will inevitably constrain the extent to which an economy can grow. **Table 1** provides a comparative view of the extent to which fixed capital has supported output growth in South Africa.

TABLE 1:	Fixed capita	ll and output growth in South Africa
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Decembric	1985-1994	1995-2004	
Description	(Average)	(Average)	
Percentage growth in real fixed capital stock	1.01	1.36	
Percentage growth in real gross domestic product	0.85	3.10	
Capital-output ratio	2.40	2.20	

Source: South African Reserve Bank (basic data at constant 2000 prices)

During the period 1985-1994, prior to South Africa's entering a new political dispensation, the average growth in real gross domestic product (GDP) was below the average growth in the real fixed capital stock. This implied an increasing under-utilisation of the fixed capital stock and the build-up of excess capacity. This trend may be attributed to the high levels of uncertainty associated with the political environment of the time (explained further below). The pattern, however, was reversed in the period 1995-2004, which saw the average growth in real GDP exceed the average growth in the real stock of fixed capital. These patterns reflect themselves in the capital-output ratio, which declined from an average of 2.4 in 1985-1994 to 2.2 in 1995-2004. The shift in pattern in the latter period implies the need for additional fixed capital formation in order to accommodate increased output growth. This is particularly important given the expectation of an upward growth path of the South African economy.

The growth in the real fixed capital stock implies net additions to the fixed capital stock of a country and is termed net fixed capital formation (NFCF). Gross fixed capital formation (GFCF), however, includes investment in new capital as well the replacement of old, worn and broken machinery and equipment. Whilst new fixed capital formation enhances the productive capacity of an economy, replacement fixed capital formation ensures that the productive base is maintained. Failure to engage in replacement fixed capital formation could potentially result in a net decline in the fixed capital stock of a country. Decisions to engage in fixed capital formation, both new and replacement, would be influenced by

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elements of expectation and uncertainty. **Table 2** provides information on the growth and composition of gross fixed capital formation in respect of the two periods under consideration.

The shift in pattern over the two periods under review is clearly evident in **Table 2**. Not only did GFCF, on average, grow at a negative rate, it also displayed tremendous volatility in the 10-year period leading up to 1994. Once again this may be largely attributable to the uncertainty associated with heightened political problems during that period.

	1985-1994	1995-2004 (Average)			
Description	(Average)				
Percentage growth in gross fixed capital formation (GFCF)	-1.89	5.20			
Gross fixed capital formation as a percentage of GDP	14.54	15.70			
GFCF by kind of economic activity — percentage of GFCF					
Agriculture, forestry and fishing	4.03	3.39			
Mining and quarrying	12.21	9.43			
Manufacturing	17.50	21.66			
Electricity, gas and water	9.61	5.57			
Construction (contractors)	1.19	1.30			
Wholesale and retail trade, catering and accommodation	6.10	6.57			
Transport, storage and accommodation	9.34	13.05			
Financial intermediation, insurance, real estate and business services	24.31	22.95			
Community, social and personal services	15.92	16.11			
GFCF by type of organisation					
Public sector — percentage growth	-5.30	5.29			
Private sector — percentage growth	0.40	5.24			
Public sector — percentage of GFCF	37.50	28.97			
Private sector — percentage of GFCF	62.76	71.02			

TABLE 2: Fixed capital formation growth and composition

Source: South African Reserve Bank (basic data at constant 2000 prices)

Moreover, the political problems of the period may to a large extent be reflected in the decisions taken by the public sector to cut back on fixed investment spending, which, in

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turn, to some extent may have led the cut-back in private sector fixed investments. The turnaround took place in 1994 itself, and except for 1999 (just after the emerging market crisis), GFCF growth remained positive. Although the period 1995 to 2004 saw a slight improvement in GFCF as a percentage of GDP, 15 percent is generally considered to be too low to be supportive of economic growth.

Changes in the composition of GFCF are also observed over the two periods. Whilst the primary sector's share of GFCF fell after 1994, shares of manufacturing, commerce, transport, storage and accommodation increased. A public-private sector comparison shows that although both sectors displayed a complete turnaround in respect of the growth in fixed capital formation, there was a significant increase in the private sector's share of GFCF. The high negative growth rate of public sector fixed capital formation (-5.30%) during the 1985-1994 period, relative to the less than half a percent positive growth rate in private sector fixed capital formation, caused the public sector's share of GFCF to fall from a high of 44% in 1985 to 29% in 1994. In the post-1994 period, fixed capital formation in both sectors grew at almost the same rate, causing their relative shares of GFCF to remain virtually the same, i.e. a 3:7 ratio for most of that period (in 1998, at the time of the emerging market crisis, the private sector's share of GFCF fell to 66%).

Much of the changing trends and patterns of GFCF in South Africa between the two periods under consideration, and especially in respect of private sector investment, lend themselves to analysis in the context of changes in expectations and associated levels of uncertainty. However, before engaging in such an analysis, a theoretical framework for analysing fixed capital formation behaviour under uncertainty will be outlined. Although too much detail will be avoided, care will be taken to explain the relevant aspects of the theory in order to facilitate understanding in the application of the concepts, and also to help place fixed investment behaviour in the context of uncertainty.

3. A THEORETICAL FRAMEWORK FOR THE ANALYSIS OF FIXED CAPITAL FORMATION (FIXED INVESTMENT) BEHAVIOUR UNDER UNCERTAINTY

A fixed investment decision generally entails an initially large financial commitment followed by subsequent expenditure over the lifetime of the investment project. The decision to proceed with such an investment is usually based on the expectation of a stream of profits/cash flows beyond a year for some time into the future. Unlike financial investments, a fixed investment decision is not easily reversible without substantial losses. The long-term nature of fixed investment decisions and the extent of financial commitments, initial and subsequent, make such decisions very sensitive to levels of uncertainty in an economy.

A number of variables that influence fixed investment decisions may be identified, including demand, inflation, user costs, the interest rate, technology, competition, government policy and the political environment. However, it is not so much their current values/states as their future values/states that are of importance in determining the future flow and size of income from fixed investments. The uncertainty of fixed investors essentially relates to the future values of those variables.

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Uncertainty is not the same as mathematical risk, where the possible future outcomes of an event and their probabilities can be calculated in advance. Uncertainty describes a world in which the future is unknowable. In other words, uncertainty is not defined as a situation, in which the probability of an outcome to an event is merely less than one. Rather, it is a situation in which the probability of an outcome is not known (Lawson, 1985:914). This is the world of the fixed investor. Current information on relevant variables is not reliable in calculating the future returns of a fixed investment project in that it is their *future* values/states that are of importance, and present knowledge of the latter, years from the time of the decision, is 'usually very slight and often negligible' (Keynes, 1973b:149).

An economy is a dynamic process over time, resulting from aggregate human activity in competition for scarce resources with the aim of accumulating wealth. The mass interaction of individuals and institutions between each other and with their environment generates varying and unpredictable states of nature over time. These varying states of nature are reflected in changing economic relationships and varying patterns of behaviour with respect to variables that are often relevant to fixed investment decisions. The important point is that those variables are the result of human action, as individuals and institutions, in competition with one another engage with the environment. If at any given point in time individuals base their decisions on the states/values of variable prevailing at that time, the future values of those variables that determine the outcome of the decisions are themselves influenced by the actions of the individuals making those decisions (see Davidson, 1981:159).

Given the mutation of economic relationships over time, information on prevailing and past values of relevant variables and their relationships do not serve as a reliable basis for a *mathematical/objective* specification of the future outcome/s of an economic decision. This does not mean that such information is useless. It will, at best, serve as a guide to what may be referred to as the *subjective* formation of expectations. Unlike the concept of mathematical risk, uncertainty does not allow for the objective allocation of probabilities to events/outcomes in advance. However, individuals may engage in the process of subjective estimates of risk. The subjective allocation of probabilities by an individual would depend on factors such as his intellect, past experiences and attitude – and may, at times, act against the rules of logic (0zga, 1965:78).

The element of subjectivity in expectations formation forms the basis for the theoretical framework within which fixed investment decisions are evaluated. The approach followed in this article is based on the model formulated by Chetty (1998). Only the key aspects of the model, extracted from Chetty (1998) and Chetty and Greyling (2001), will be outlined in this article.

The model provides a macroeconomic approach to analysing uncertainty and expectations in fixed investment behaviour, based on a microeconomic analysis involving the notion of expected utility. At the microeconomic level it focuses on the decision as to whether or not to proceed with an investment, and therefore presupposes that the investor can or already has evaluated different investment options. Fixed investment decisions include repetitive, new and replacement investments, as they are all influenced by expectations and uncertainty.

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Suppose x represents an investment option with an expected monetary value (expected risky return), denoted by $\mathcal{E}(x)$. If $\mathcal{EU}(x)$ represents the option's expected utility and m denotes a monetary value such that its utility, $\mathcal{U}(m)$, is equal to $\mathcal{EU}(x)$, then m will represent the maximum price that the investor would be willing to pay for the investment. Alternatively, the investor will be indifferent between keeping the certain amount, m, and investing it in the risky investment yielding $\mathcal{E}(x)$. Hence, m is a risk-adjusted return of the risky investment and is referred to as a certainty equivalent. A certainty equivalent coefficient (α) may also be determined *ex post*, as follows:

$$a = \frac{m}{E(x)} \tag{1}$$

In measuring the risk attitude of an investor, α can take on a value that is equal to 1 (risk neutrality), greater than 1 (risk preference), or less than 1 (risk aversion). Equation (1) may also be written as follows:

$$m = a.E(x) \tag{2}$$

Equation (2) attributes to α an *ex ante* definition, as it may now be seen as a riskadjustment factor, which adjusts the risky value of an investment option to the certainty equivalent or risk-adjusted value (*m*). In this sense, α may take on a broader meaning to include both risk attitude and risk perception.

Since a fixed investment is expected to yield a stream of returns over its useful economic life, the expected return in each year would be adjusted by the certainty equivalent coefficient that corresponds to the level of risk perceived to exist in each of those years. This allows for the calculation of a risk-adjusted present value of the investment project.

$$M = \sum_{t=1}^{n} \frac{z_t E(x)}{(1+i)}$$
(3)

In equation (3), M represents the *risk-adjusted present value* (certainty equivalent) of the investment option. Although z is defined similarly to α , it represents a *weighted index* of both the level of perceived risk and the attitude to it. Since the utility associated with M corresponds with the expected utility of the investment, the investor would be indifferent between the option of keeping the *certain* amount (M) and the option of investing it for an *uncertain* return. The investor may therefore require additional inducement to actually proceed with the investment. Equation (4) brings this dimension into consideration.

$$M = v.EPV \tag{4}$$

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In equation (4), the average of the risk adjustment factor (z) is obtained from equation (3), and then extended to include the additional inducement that may be required by the investor to proceed with the investment. The new coefficient v then takes on a wider meaning by incorporating the perceived level of risk, the risk attitude and the further inducement, which reflects the capricious nature of the investor. The expected present value of the investment (\mathcal{EPV}) is adjusted by this factor to obtain the actual amount that an

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investor is willing to commit to the project. The adjective 'capricious' is used as it refers to the state of the investor's mind, which could potentially exhibit considerable variability over time.

In extending the analysis to the macro-economy, the sum of investment expenditure (M) in each project at time t yields the gross domestic fixed capital formation (I) and the sum of the risky present value of each project at time t, yields the gross domestic present value (R). The aggregation process suggested here should not pose any theoretical problems, as it does not entail comparisons between investment projects in terms of size, duration, risk and degree of interdependence. The risk-adjusted present value of all projects undertaken at time t may now be expressed as follows:

$$I_t = V_t R_t \tag{5}$$

The factor V now relates to the broader economy in that it captures the general level of risk perception in the economy, the degree of risk aversion and the general mood or sentiment of investors at a particular time. In terms of equation (5), and according to Chetty and Greyling (2001), "the general level of uncertainty prevailing among investors at any moment is reflected in the degree to which investors are prepared to spend *certain* sums for uncertain returns. Therefore, the decision to act on investment proposals and the extent of the total outlay mirror the degree of risk perception and the general mood of investors." The factor V is therefore a coefficient of uncertainty, as it determines how much investors actually invest for every risky expected monetary unit.

Equation (5) may be transformed to reflect growth rates of the relevant variables. Refer to Chetty (1998) for additional detail.

$$\dot{I} = \dot{V} + \dot{V}\dot{R} + \dot{R}$$
(6)

According to equation (6), the growth rate in investment (\dot{I}) is equal to the rate of change in the level of uncertainty (\dot{V}) , plus the rate of change in the present value of investments (\dot{R}) , plus the product of both values $(\dot{V}\dot{R})$. Equation (6), based on the foregoing microeconomic arguments, expresses a relationship between fixed investment, uncertainty and expectations. Equation (6) may now be used to solve for \dot{V} .

$$\dot{V} = \frac{\dot{I} - \dot{R}}{1 + \dot{R}} \tag{7}$$

Although equation (7) conveys an ex post calculation of the rate of change in the level of uncertainty, it presupposes an ex ante change in the level of uncertainty, together with a change in expectations, causing investors to alter their investment plans accordingly. Equations (6) and (7) provide a macroeconomic framework within which to analyse changing levels of investor uncertainty in the South African environment. This is undertaken in the next section.

4. INVESTOR UNCERTAINTY IN SOUTH AFRICA

Equation (7) above indicates that (\dot{V}) can be computed if one knows the values of (\dot{R}) and (\dot{I}) . The rate of change in the level of fixed investment undertaken by the private sector will provide a value for (\dot{I}) . However, (\dot{R}) relates to the *expected rate* of change in the present value of capital projects over time, which is not directly observable and would hence have to be derived via some process of approximation.

In general, the expected rate of change in the present value of potential investment projects comprises the expected growth rate in income (\mathcal{Y}) and the expected rate of change in the interest rate (r). Although changes in the present value of projects may also be attributable to changes in the number of potential projects, relative to a previous period, that possibility will be absorbed into the expected growth rate in income (for the purpose of convenience).

Fixed investment projects generate a stream of income over several years. The present value of one year's income (R_i) expected from potential projects, to be received in one year's time, will be given by $Y_i / (I + r_i)$. Similarly, the present value of one year's income expected from potential projects in the following year will be given by $Y_2 / (I + r_2)$. The annual growth rate in R may then be approximated as $(R_2 / R_1 - I)$. If t represents the decision-making period and t-1 the previous period, the annual growth rate in R may be written more completely as in equation (8). For a full derivation of equation (8) and further explanation, see Chetty (1998:164-166).

$$\dot{R} = \frac{(1+\dot{Y})(1+r_{t-1})}{1+r_t} - 1$$
(8)

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Equation (8) provides a simplified approach to approximating the expected rate of change in the present value of potential projects from one year to the next. It must be emphasised that equation (8) is a simplification of an approach that would have considered changes in the number of potential projects, the expected income/cash flow in each period in the life of those projects, the expected interest rate in each period and so on.

In determining a value for equation (8), the growth rate in real GDP will be used as a proxy for the growth rate in income (\dot{Y}) and the real interest rate on long-term government bonds (10 years and over) will be used for r. The GDP deflator is used to compute the real interest rate. Furthermore, the expected rate of change in the present value of projects is calculated as an average of the same variable for the previous and current period. This is done as a convenient way to allow for a role of current information in the formation of expectations. The values derived for \dot{R} , together with the corresponding values for \dot{I} , in respect of the years under consideration, are entered into equation (7) to determine values for \dot{V} which indicate levels of uncertainty. **Table 3** shows the values of \dot{R} , \dot{V} and \dot{I} for the periods under review. In evaluating trends in the level of uncertainty, it must be noted that declining values of V (represented by negative values of \dot{V}) imply higher (or deteriorating) levels of uncertainty.

10-PERIOD: 1985-1994 (Rates of change)				10-YEAR PERIOD: 1995-2004 (Rates of change)			
Year	(\dot{V})	(\dot{R})	(\dot{I})	Year	(\dot{V})	(\dot{R})	(\dot{I})
1985	-0.1237	-0.0022	-0.1256	1995	0.1006	0.0078	0.1091
1986	-0.1878	0.0266	-0.1662	1996	0.0424	0.0331	0.0769
1987	0.0261	0.0124	0.0388	1997	0.0212	0.0265	0.0483
1988	0.1603	0.0146	0.1773	1998	-0.0325	0.0137	-0.0193
1989	-0.0230	0.0453	0.0213	1999	-0.0419	0.0107	-0.0317
1990	-0.0124	0.0165	0.0039	2000	0.0250	0.0551	0.0814
1991	-0.0378	-0.0183	-0.0553	2001	0.0140	0.0491	0.0638
1992	-0.0086	-0.0153	0.0238	2002	-0.0273	0.0536	0.0248
1993	0.0385	0.0039	0.0425	2003	0.0292	0.0308	0.0608
1994	0.1390	-0.0105	0.1271	2004	0.0842	0.0235	0.1097
Average	-0.0029	0.0073	0.0040	Average	0.0215	0.0304	0.0524
Period of high and sustained uncertainty			Period of cautious optimism				

TABLE 3: Changes in private sector fixed capital formation (\dot{I}) , expectations (\dot{R}) and uncertainty (\dot{V}) in South Africa

Source: South African Reserve Bank

FIGURE 1: Investor Uncertainty and Expectations



Table 3 and Figure 1 show how changes in the expected present value of projects and changes in the level of uncertainty interact according to the framework given by equation (6), to reflect changes in the level of private sector fixed investment. A more in-depth

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study will entail a closer analysis of the interplay between uncertainty and expectations. For the purpose of this article, only a broad comparison will be made between the two periods under consideration.

Chetty (1998), using the same approach, demarcated four periods in terms of trends in levels of investor uncertainty from 1960 to 1996:

- 1960 to 1975 period of low to moderate uncertainty;
- 1976 to 1981 period of growing uncertainty;
- 1982 to 1993 period of high and sustained uncertainty; and
- 1994 to 1996 period of recovery.

Table 3 and **Figure 1** show that the 10-year period leading up to 1994 coincides to a large extent with the period described above as one of high and sustained uncertainty. The less than one percent average growth in private sector fixed investment corresponded with a less than one percent average growth in the expected present value of income, associated with volatile and deteriorating levels of uncertainty.

Signs of recovery did emerge from 1993, with the improvement in uncertainty levels peaking in 1994. Except for the deterioration in investor uncertainty in 1998, 1999 and 2002, a moderate improvement in investor uncertainty of just over two percent was experienced on average for the post-1994 period. Given the moderate improvement in investor uncertainty and private fixed investment increasing by an average of just over five percent, the period 1995 to 2004 may at best be described as one of 'cautious optimism' with regard to investor behaviour.

The high levels of investor uncertainty in the 1985–1994 period may be attributed to a number of factors relating to the general and economic policies pursued by the government of the time. Due to ongoing political unrest, in the form of school boycotts, strikes and consumer boycotts against the newly established three-tier system of government, which excluded Africans, a full state of emergency was imposed in 1986. Disinvestment campaigns and large capital outflows due to poor foreign perceptions led to a debt crisis in 1985 and to the subsequent foreign debt moratorium. Economic policies such as the entrenchment of exchange control, the formalisation of privatisation and other related policies in an environment of political turmoil contributed to increasing levels of investor uncertainty.

The year 1994, in which South Africa had its first democratic elections, marked a turning point in the country's history. The first 10-year period (1995-2004) thereafter commenced with a recovery in investor sentiment, together with fixed investment spending. A number of economic policies/strategies, from different stakeholders, were advanced and/or debated during this period: the Reconstruction and Development Programme (RDP) of the African National Congress (ANC)-led alliance, released in 1994; the 'Growth for All' strategy released by the South African Foundation (SAF) in 1996; 'Social Equity and Job Creation: The Key to a Stable Future', released by the Congress of South African Trade Unions (COSATU) and others; and government's very own strategy, 'Growth, Employment and Redistribution' (GEAR), released in 1996. Although there was a perception that the rate at which policies were being proposed exceeded the delivery of policy objectives (National Institute for Economic Policy, 1996:1), the policy proposals from different parties indicated a growing

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excitement regarding the future of the country.

As the period progressed, sound fiscal policy and the relative success of monetary policy, in the form of inflation targeting, contributed favourably to the investment environment. However, a number of factors continue to impact negatively on the investment environment. According to an assessment of South Africa's investment climate based on a joint survey by the World Bank and the Department of Trade and Industry (2005), despite favourable performances in respect of productivity, economic growth, and price stability, as well as positive perceptions regarding tax rates, the legal environment and credit access, four areas of the investment climate were identified as important concerns, viz. worker skills, macroeconomic instability, labour regulations and crime.

Despite government training programmes, managers placed the greatest emphasis on worker skills (in terms of shortages and cost) as an impediment to business operations and growth. With regard to labour regulations it was found that, in comparison to other middle-income countries covered in the assessment, South African legislation resulted in a higher degree of rigidity and cost in the hiring and firing of workers. This was an important area of concern for managers covered in the survey. Negative perceptions regarding macroeconomic stability/instability appeared to be driven mainly by exchange rate instability. This was a concern especially amongst exporters. Finally, crime appears to be a serious area of concern amongst businesses covered in the survey. The direct costs of crime and security costs, when measured as a percentage of sales, were found to be higher than many middle-income countries covered in the assessment.

Similar findings were made in a research project by the Centre for Research into Economics and Finance in Southern Africa (CREFSA) in partnership with the BusinessMap Foundation (2005), covering the perceptions of foreign-owned firms on South Africa's investment climate. Although there were generally favourable perceptions around economic growth, the institutional environment, and infrastructure, the important areas of concern included exchange rate volatility, efficiency of government, crime, corruption and labour market inflexibility.

In the final analysis, despite the relative economic progress made by South Africa and its favourable economic policies, certain factors, as mentioned above, continue to impact negatively on domestic and foreign investor sentiment. This is reflected in moderate improvements in investor expectations and investor uncertainty, and hence fixed investment spending. As indicated in **Table 3**, moderate improvements in investor uncertainty in the post-1994 period are reflected in an average increase of 2.2 percent in V. The moderate improvement in the expected present value of projects is reflected in an average increase of 3 percent in R, for the same period. The combined impact of the changes in both variables is seen in the average increase of 5.2 percent in private fixed investment spending. Although this may be seen as a significant improvement in comparison to the previous period (1985-1994), the investment environment of the post-1994 period as characterised by cautious optimism.

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5. CONCLUSION

Uncertainty and expectations constitute the context in which fixed capital formation in South Africa is analysed in this article. Given the importance of the year 1994, which saw the birth of a new South African democracy, comparisons in respect of trends in fixed investment spending and shifts in expectations and uncertainty relating to the investment climate were made between the 10-year period leading up to 1994 (i.e. 1985-1994) and the 10-year period thereafter (i.e. 1995-2004).

The political and economic problems of the 1985-1994 period resulted in a build-up of excess capacity and negative growth in gross fixed capital formation. The public sector led the way, with negative growth in its fixed capital expenditure, whilst private sector fixed capital expenditure grew by less than a percent. The overall growth in gross fixed capital formation was negative. The adverse impact of the political and economic problems of the time on the investment climate of the country was reflected in a significant deterioration in investor uncertainty and expectations. Despite the moderate recovery evident from 1993, the1985-1994 period as a whole may be classified as a period of high and sustained uncertainty.

The 1995-2004 period showed clear signs of recovery, with modest economic growth, price stability and generally sound economic policies. However, important concerns are still being expressed by business in respect of important areas that have an impact on their operations and growth. These areas include: the shortage and costs of worker skills, inflexible labour regulations, exchange rate instability, and levels of crime. These negative perceptions, together with positive perceptions relating to aspects such as labour productivity, South Africa's legal environment and tax rates, characterise the investment climate of the 1995-2004 period. In view of the moderate improvement in investor uncertainty and expectations, reflected in an average increase of 5.2 percent in private sector fixed capital spending, this period may be described as one of cautious optimism.

REFERENCES

- African National Congress (1994). *The Reconstruction and Development Programme: A Policy Framework.* Johannesburg: Umanyano Publications.
- Allen, B.T. (1988). Managerial Economics. New York: Harper and Row Publishers.
- Chetty, S. (1998). Uncertainty and Expectations in Fixed investment Behaviour and the Implications for Economic Policy. Unpublished Doctoral Thesis. Johannesburg: Rand Afrikaans University.
- Chetty, S. & Greyling, L. (2001). Uncertainty and Expectations in Fixed Investment Behaviour. *The South African Journal of Economics*, 69(2), pp. 223–242.
- Congress of South African Trade Unions (COSATU), National African Congress of Trade Unions (NACTU), Federation of South African Labour (FEDSAL). (1996). *Social Equity and Job Creation, the Key to a Stable Future.* Released by COSATU, NACTU and FEDSAL.

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- Davidson, P. (1981). Post Keynesian Economics: Solving the Crisis in Economic Theory. (In: Bell, D. & Kristol, I. (eds). *The Crisis in Economic Theory.* New York: Basic Books.)
- Davidson, P. (1991). Is Probability Theory Relevant for Uncertainty? A Post Keynesian Perspective. *Journal of Economic Perspectives*, 5(1), pp. 129–143.
- Drukker, P.F. (1986). The Changed World Economy. *Economic Impact, A quarterly review of World Economics*, (54), pp. 6-13.
- Jones, S. & Muller, A. (1992). The South African Economy, 1910–90. London: Macmillan Academic and Professional Ltd.
- Keynes, J.M. (1973a). *A Treatise on Probability: The Collected Writings of John Maynard Keynes, Volume 3.* London: Macmillan for the Royal Economic Society.
- Keynes, J.M. (1973b). *The General Theory of Employment, Interest and Money: The Collected Writings of John Maynard Keynes, Volume 7.* London: Macmillan for the Royal Economic Society.
- Lawson, T. (1985). Uncertainty and Economic Analysis. *The Economic Journal (Quarterly Journal of the Royal Economic Society)*, Dec 1985, pp. 909-927.
- Lucas, R.E. Jr & Prescott, E.C. (1971). Investment under Uncertainty. *Econometrica*, 39(5), pp. 659-681.
- McGuigan, J.R. & Moyer, C.R. (1975). *Managerial Economics: Private and Public Sector Decision Analysis.* Hinsdale, Illinois: The Dryden Press.
- National Institute for Economic Policy (NIEP). (1996). *From RDP to GEAR: The Gradual Embracing of Neo-liberalism in Economic Policy*. Released by NIEP, Johannesburg.
- Northcott, D. (1995). Capital Investment Decision-Making. London: The Dryden Press.
- Ozga, S.A. (1965). Expectations in Economic Theory. London: Weidenfeld and Nicolson.
- Pappas, J.L. & Hirschey M. (1985). *Fundamentals of Managerial Economics*. 2nd edition. Japan: The Dryden Press.
- South African Foundation. (1996). *Growth for All: An Economic Strategy for South Africa*. Parktown: The South African Foundation.
- Von Neumann, J. & Morgenstern, O. (1953). *Theory of Games and Economic Behaviour*. 3rd edition. Princeton: Princeton University Press.
- World Bank and Department of Trade and Industry, RSA. (2005). South Africa: An Assessment of the Investment Climate, Washington DC, World Bank. Available from: http://wwwl.worldbank.org/rped/documents/ICA008.pdf (Accessed August 2006).
- Centre for Research into Economics and Finance in Southern Africa and BusinessMap Foundation. (2005). Foreign Direct Investment in South Africa: The initial impact of the Trade, Development and Cooperation Agreement between South Africa and the European Union. Available from:

http://www.businessmap.org.za/Documents/1418/CREFSA_BusinessMap_FDI_in_South Africa_October_2005.pdf (Accessed August 2006).