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Human rights, political instability and investment in south Africa: a note

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Abstract

This paper extends the model of Fielding [J. Dev. Econ. 58 (1999) 405.], which is designed to explain changes in investment in South Africa during the Apartheid period, by allowing a role for indicators of political instability and political and civil rights, as measured by Fedderke et al. [Fedderke, J., de Kadt, R., Luiz, J., 1999. Indicators of Political Liberty, Property Rights and Political Instability in South Africa: 1935–97, ERSA Working Paper 4, University of the Witwatersrand. The conclusions based on estimation of the original model are robust to the inclusion of the political factors, but these factors do explain some of the variation in investment over time.

JEL classification: E22; O16
Keywords: Investment; Social capability; South Africa

1. Introduction

Fielding (1999) presented a time-series model of South African investment for 1960–1993 in which the aggregate capital stock in the manufacturing sector is explained by the user cost of capital, real wages, the scale of output and several

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indicators of economic uncertainty. The relative sizes of the estimated coefficients lead to a number of conclusions about the constraints facing South African investors, as well as about the relative importance of different types of economic uncertainty.

In the same year, Fedderke et al. (1999) presented time series measures of a number of variables designed to capture elements of social capability in South Africa over the period 1935–1997. These include indicators of political instability, political rights and civil (property) rights [1]. It is suggested that these variables can explain some of the variation in South African economic performance over time, just as cross-country measures of social capability can explain variations in economic performance across countries (Johnson and Temple, 1998; Fedderke and Klitgaard, 1998). These cross-country studies suggest that social capability plays an important role in the growth process, but cross-country variations in social capability measures cannot easily be linked directly to public policy changes. This limitation is not true of time-series variations, so time-series models potentially have more to say that is of interest to the policy-maker.

In this paper, we present an extension of the Fielding (1999) model of investment that includes measures of social capability from the Fedderke et al. (1999) paper. The purpose of this exercise is twofold: first, to determine whether the conclusions based on the original estimates of the investment equations are robust to the inclusion of social capability measures; and second, to see whether the investment data can support Fedderke et al.'s (1999) suggestion that time-series variations in social capability can affect economic performance in an individual country.

2. The revised model

The regression estimates presented below are revisions of the original model of the capital stock summarised by Fielding's (1999) Eq. (14), which is

$$\begin{aligned}\ln(k_t) = {} & \Sigma_i b_i \ln(k_{t-1}) + \Sigma_j a_{1,j} D(j) + a_2 \ln(c/P)_t + a_3 \ln(w/P)_t \\ & + a_4 \ln(g)_t + a_5 \ln(Q)_t + a_6 S(1)_t + a_7 S(2)_t + a_8 S(3)_t \\ & + a_9 m_t + a_{10} f(t) + u_t \end{aligned} \quad (1)$$

where k is the private manufacturing capital stock, the $D(j)$ are seasonal dummies, c/P is the real user cost of capital, w/P is the real wage rate, g is the public capital stock, Q is a measure of output per firm, the $S(\cdot)$ are indicators of uncertainty in the net returns to investment, m is an indicator of macroeconomic

[1] See Fedderke et al. (1999, Section 5) for definitions of these political concepts.

instability (in the reported regressions a long-short interest rate spread, $[r_B - r_T]$), $f(t)$ is a time trend and u an i.i.d. residual. To this equation we add three variables from Fedderke et al. (1999): the 0–200 index of political freedom, *POR* (in Appendix 1 of the paper), the 0–100 index of property rights, *PRR* (in Appendix 2) and the "consensus" index of political instability, *INS* (on page 24). These three series are depicted in Fig. 1.

The political and property rights series are both constructed by comparing the number and extent of rights guaranteed by the South African constitution and justice system in a particular year with those in an "ideal type" of state. For the political rights series, the ideal includes a universal adult franchise, freedom of expression (widely defined), freedom of movement, separation of powers, a Bill of Rights and checks on the arbitrary or discriminatory application of laws. A state exhibiting all or almost all of these characteristics would score 175–200 on the *POR* scale. At the other extreme, a de jure totalitarian state would score 0–25. As can bee seen in Fig. 1, South Africa fell towards the upper edge of the "totalitarian" category during the 1960s, as the Apartheid system became en-

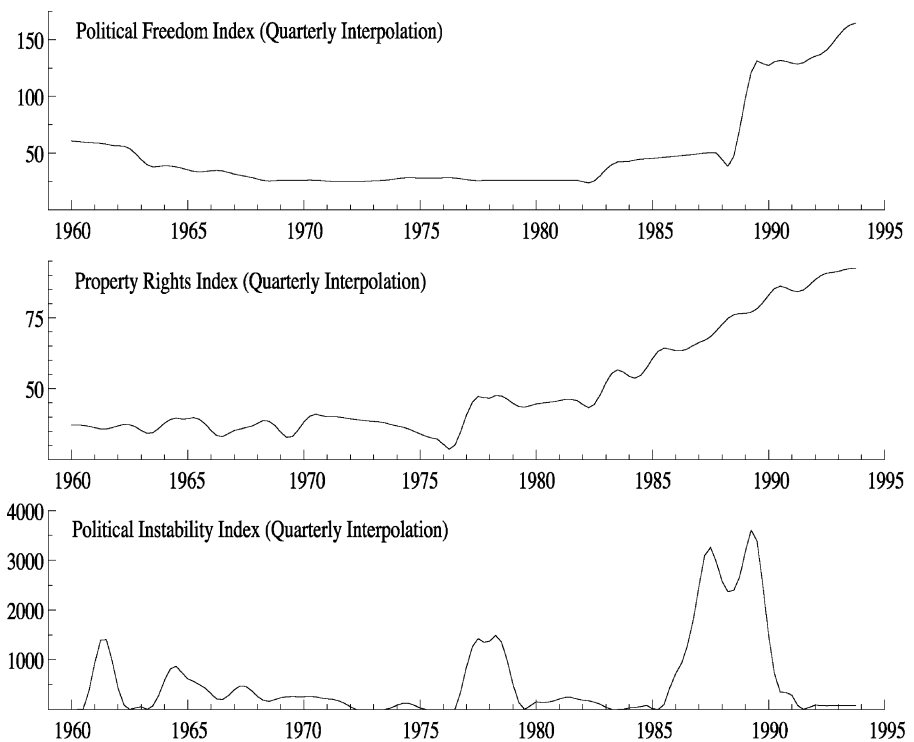

Fig. 1. The political time series.

trenched. There was a small improvement in the index in the 1980s, when the most extreme Apartheid laws were abolished, then a substantial movement towards the "ideal type" with the Interim Constitution in the 1990s. The property rights scale is constructed in a similar way, but here the ideal type is a state guaranteeing "the right to possess, the right to use, the right to manage, the right to capital, the right to security, the incident of transmissibility and liability to execution". As shown in Fig. 1, there is little movement in the *PRR* index over the period 1960–1980: it remains around the 40% mark. From 1980 to 1995, there is a steady improvement in the index, so that by the end of the sample period South Africa is very close to the ideal.

The *POR* and *PRR* series indicate the extent of de jure rights embedded in the South African constitution and legal system. By contrast, the political instability index is a measure of the number and magnitude of identifiable events reflecting an absence of such rights. These events include criminal prosecutions for offences against the state, detentions, banning orders, states of emergency, applications of censorship laws, actions against "riots" and political fatalities. The relative weights given to events of different types are based on the consensus of a panel of South African social scientists. As Fig. 1 indicates, the peaks of political instability are around 1961, 1978 and 1989.

The regression equations reported below employ the same quarterly economic data as in Fielding (1999). The three political variables are reported only anually, so we construct quarterly interpolations using the method of Lisman and Sandee (1963). All of the economic variables appear to be $I(0)$ except for $\ln(g)$, which appears to be $I(1)$; so this variable appears in the regression equations in first differences. Fedderke and Liu (1999) report tests for the order of integration of a range of the political variables from the Fedderke et al. (1999) paper. They cannot in any case reject the null that the series are $I(1)$, but note that their tests have low power because of the many possible structural breaks that might have arisen in the political turbulence of Apartheid South Africa. In the regression equations below the political variables appear in first differences. Levels of the variables, when added to these regressions, have no explanatory power[2].

Table 1 reports the results of estimating the revised capital stock equation by IV without any restrictions; it corresponds to Table 3 in Fielding (1999), with impact elasticities on explanatory variables reported above steady-state elasticities. As in the original version of the model nine lags of the dependent variable are included, and $\ln(c/P)$, $\ln(w/P)$ and $\ln(Q)$ are instrumented on their own lagged values. The estimated coefficients from Table 3 of the original paper are shown in the last column of Table 1 below. Comparison of the two sets of coefficients shows that none of the coefficients in the original version of the model is significantly

[2] The regression includes growth rates of *POR* and *PRR*; this is not possible for *INS*, which is sometimes equal to zero, so absolute changes in *INS* are used.

Table 1
Modified capital stock

Variable	Coeff.	Std. err.	*t* Ratio	Original coeff.
$\ln(Q)$	0.06868	0.03935	1.745	0.10307
$\ln(c/P)$	−0.03525	0.01451	−2.429	−0.02272
$\ln(w/P)$	−0.17026	0.10380	−1.640	−0.20385
$\Delta\ln(g)$	−0.06195	0.14937	−0.415	−0.05377
$[r_B - r_T]$	−0.47088	0.17107	−2.753	−0.45782
$S(1)$	0.54496	0.40911	1.332	0.73603
$S(2)$	0.09181	0.55716	0.165	−0.36163
$S(3)$	−0.13181	0.69251	−0.190	0.23889
$\Delta\ln(POR)$	0.02883	0.03033	0.951	
$\Delta\ln(PRR)$	0.14752	0.06071	2.430	
$\Delta INS^* 0.0001$	−0.09797	0.04662	−2.101	
$D(1)$	0.01698	0.00920	1.845	0.01764
$D(2)$	0.01097	0.01006	1.090	0.01158
$D(3)$	0.00458	0.00723	0.634	0.00155
Solved long run equation				
$\ln(Q)$	0.1899	0.0939	2.022	0.2517
$\ln(c/P)$	−0.0975	0.0496	−1.966	−0.0555
$\ln(w/P)$	−0.4709	0.2787	−1.690	−0.4978
$\Delta\ln(g)$	−0.1713	0.4143	−0.413	−0.1313
$[r_B - r_T]$	−1.3020	0.5210	−2.499	−1.1180
$S(1)$	1.5070	1.0910	1.381	1.7970
$S(2)$	0.2539	1.5340	−0.166	−0.8831
$S(3)$	−0.3646	1.9280	−0.189	0.5834
$\Delta\ln(POR)$	0.0797	0.0883	0.903	
$\Delta\ln(PRR)$	0.4080	0.2022	2.018	
$\Delta INS^* 0.0001$	−0.2709	0.1482	−1.828	
$D(1)$	0.0470	0.0270	1.741	0.0431
$D(2)$	0.0303	0.0277	1.094	0.0283
$D(3)$	0.0127	0.0200	0.635	0.0038

IV specification test: $X^2(24) = 28.755$ [0.2295] $RSS = 0.0270$.
LM residual autocorrelation (order 1): $F(1,97) = 0.34524$ [0.5582].
LM residual autocorrelation (order 4): $F(4,94) = 0.21256$ [0.9309].
LM heteroscedasticity: $F(47,50) = 0.85508$ [0.7049].
LM ARCH (order 1): $F(1,96) = 1.0689$ [0.3038].
LM ARCH (order 4): $F(4,90) = 0.6324$ [0.6407].
Residual normality: $X^2(2) = 0.7314$ [0.6937].

different from its counterpart in Table 1 below (*t*-ratios are slightly lower in the revised model, but this would not affect statistical inference if a generous confidence interval were used). The rank ordering of variables by the size of their coefficients is unchanged, and therefore the economic inferences presented in Fielding (1999) are robust to the inclusion of the political variables. All these remarks are still true if we estimate a restricted version of the model in which

some variables are omitted so as to minimize the Schwartz Bayesian Information Criterion. This version is reported in Table 2, which corresponds to Table 4 of Fielding (1999). Recursive estimates of the model (available on request) indicate that there is no significant variation in the regression coefficients as the sample size changes.

Two of the three political variables are statistically significant at the 5% level: *INS* (political instability) and *PRR* (property rights). Increases in instability reduce the capital stock and improvements in property rights raise the capital stock. It is not possible at this degree of aggregation to determine whether these effects reflect a link between perceived investment risk and political instability/poor property rights, or whether these factors reduce the return to capital by inhibiting efficient capital allocation. Nevertheless, the political variables do explain some of the variation in the capital stock over time that was previously unexplained.

Table 2
Modified capital stock

Variable	Coeff.	Std. err.	*t* Ratio	Original coeff.
$\ln(Q)$	0.08280	0.03465	2.390	0.10844
$\ln(c/P)$	−0.03521	0.01391	−2.531	−0.01960
$\ln(w/P)$	−0.19252	0.09903	−1.944	−0.21394
$[r_B - r_T]$	−0.51251	0.15287	−3.353	−0.44902
$S(1)$	0.57288	0.33642	1.703	0.73861
$\Delta\ln(PRR)$	0.14531	0.05816	2.498	
$\Delta INS^*0.0001$	−0.07917	0.04214	−1.879	
$D(1)$	0.01389	0.00658	2.110	0.01585
$D(2)$	0.01159	0.00857	1.352	0.01427
$D(3)$	0.00321	0.00689	0.465	0.00102
Solved long run equation				
$\ln(Q)$	0.2214	0.0754	2.936	0.2583
$\ln(c/P)$	−0.0942	0.0464	−2.032	−0.0467
$\ln(w/P)$	−0.5148	0.2553	−2.016	−0.5097
$[r_B - r_T]$	−1.3700	0.4838	−2.832	−1.0700
$S(1)$	1.5320	0.8179	1.873	1.7600
$\Delta\ln(PRR)$	0.3886	0.1852	2.098	
$\Delta INS^*0.0001$	−0.2117	0.1243	−1.703	
$D(1)$	0.0371	0.0185	2.005	0.0378
$D(2)$	0.0310	0.0226	1.372	0.0340
$D(3)$	0.0086	0.0184	0.467	0.0024

IV specification test: $X^2(28) = 30.102$ [0.3584] RSS = 0.0273.
LM residual autocorrelation (order 1): $F(1,101) = 0.32229$ [0.5715].
LM residual autocorrelation (order 4): $F(4,98) = 0.19753$ [0.9391].
LM Heteroscedasticity: $F(39,62) = 1.1438$ [0.3132].
LM ARCH (order 1): $F(1,100) = 1.2568$ [0.2649].
LM ARCH (order 4): $F(4,94) = 0.7291$ [0.5743].
Residual normality: $X^2(2) = 0.6200$ [0.7335].

The estimated steady-state coefficient on the rate of growth of the *PRR* index is 0.408. This coefficient implies that changes in the property rights series have a marked impact on the capital stock. Between 1977 (the political low point of the Apartheid era) and 1997, *PRR* grew by 1.4% per quarter. The regression coefficient implies that during this transition period the steady-state capital stock was on average 0.57% higher than it would otherwise have been. This 0.57% is equivalent to 0.92 billion Rand at 1995 prices. Similarly, the regression coefficient on ΔINS (-0.27) implies that over the two years of the sharpest rise in the instability index (by around 3000 points between 1985 and 1987) the steady-state capital stock was 1.02% lower than it would otherwise have been[3].

3. Conclusion

We have shown that manufacturing investment in South Africa is highly sensitive to time-varying measures of the state of the South African polity, as well as to indicators of economic uncertainty. The addition of the political variables does not alter previous conclusions about the economic determinants of investment, but the political factors do explain some of the variance in investment performance over time that was previously unexplained. During the period of political liberalization South African investment performance has been better than could otherwise have been expected.

These results are consistent with two other papers that evaluate the impact of different types of uncertainty on South African investment: Fielding (1996) and Fedderke (2000). The first of these papers uses cross-section data for individual firms, and the second annual panel data for different manufacturing sectors, rather than quarterly aggregate data, but their results are broadly similar to those reported here. However, one other feature revealed in these two papers is the substantial heterogeneity in the responsiveness of investment to indicators of uncertainty. Firms in different sectors appear to respond to different types of uncertainty. Further work at a disaggregated level might reveal more of the structure of the relationship between investment and political and economic uncertainty.

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[3] To put these numbers in context, the sample standard deviation of $\Delta \ln(PRR)$ is 3.36%, and that of ΔINS^{*} 0.0001 is 2.41%.

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