A NOTE ON POLITICAL COERCIVENESS AND TURMOIL

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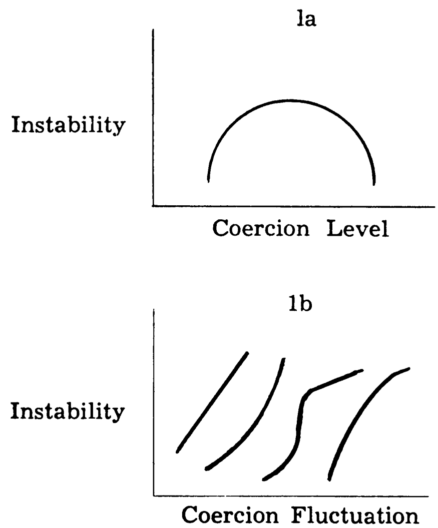
Feierabend, Nesvold, and Feierabend (1970) suggest two major hypotheses relating the concept of permissiveness-coerciveness of political regimes to the occurrence of political instability. First, they expect that "Low levels of political coerciveness (that is, political permissiveness) and high levels of coerciveness are associated with internal stability while mid-levels of coerciveness are associated with political violence." Second, they hypothesize that "The greater (lesser) the fluctuation in level of political coerciveness, the higher (lower) the level of political violence." The justification of these hypotheses are largely in terms of the psychology of frustrations and aggression.[1] Political coerciveness is conceptualized as a set of restraints on the behavior of individuals imposed by a political regime. The more restraints imposed by the regime the more likely is any particular individual to be inhibited from performing certain of his desired behaviors. This situation is seen as producing, in the aggregate, higher levels of system-wide frustrations. It is appreciated, however, that if the number of restraints imposed is sufficiently large, then along with higher levels of frustration there will also appear a deterrent effect. The deterrent effect will presumably prevent these frustrations from becoming manifest in politically violent behavior. Roughly speaking, this is the justification of the hypothesis linking the level of coercion to the level of political instability. The fluctuation hypothesis — the size of fluctuations in the level of political coerciveness is positively associated with political violence — follows from the individual's inability, as a result of these fluctuations, to establish a stable set of expectations concerning the existing level of coercion. This instability of expectations is seen as frustration-engendering in itself and as weakening any deterrent effects that might accrue from a particular level of coerciveness.[2] The relationship required by the level-of-coercion hypothesis and a non-exhaustive set of permissible relationships from the coercion-fluctuation hypothesis are summarized in Figures 1a and 1b respectively.[3]

FIGURE 1



Although the theoretical arguments of Feierabend, et al., (1970) are suggestive, some exception must be taken to their analysis of the data. Their basic approach to testing their hypotheses is to examine the associations between the level of coercion, coercion frustrations, and political instability as measured by the *eta* statistic and the product-moment correlation.[4] The observed relationships appear in Table 1. They considered the level-of-coercion hypothesis to be modestly supported by the .69 *eta* and .58 product-moment correlation between level of coercion and political instability and by some supplementary contingency table analysis. They consider the fluctuation hypothesis to be clearly supported by the .66 *eta* and .67 product-moment correlation between coercion fluctuation and instability.

TABLE 1

Product-Moment Correlation	X_1	X_2	X_3	Eta X_1	X_2	X_3
X_1. Level of Coercion	—			—		
X_2. Fluctuation of Coercion	.36	—		.78	—	
X_3. Political Instability	.58	.67	—	.69	.66	—

(Adapted from Feierabend, et al. (1970: 10))

It seems to the present author, however, that a more straightforward approach to the testing of these hypotheses is available. Letting X_1 be the level of coercion, X_2 be fluctuation in the level of coercion, and X_3 be political instability, we can cast a statistical model in the form of equation 1 where

$$(1)\ X_3 = b_0 + b_1X_1 + b_2(X_1)^2 + b_3X_2 + u$$

u is a random disturbance that meets the usual assumptions necessary for least-squares regression.[5] If the hypotheses are to be supported we would make the following predictions about the coefficients of equation 1: $b_1 > 0$, $b_2 < 0$ and $b_3 > 0$. In the case of b_1 and b_2 these coefficients should capture the hypothesis that in some interval increasing from zero the effect of X_1 is to increase the level of systematic frustrations, while in the region beyond this interval frustrations will be increasing, but the deterrent effect will predominate. The coefficient $b_3 > 0$ follows simply from the argument that political instability is an increasing function of fluctations in the level of coercion.[6] The results of the estimation of equation 1 appear in equation 2.[7] The *t* statistic is reported in parentheses below the regression coefficients.[8]

$$(2)\quad X_3 = 4253.5 + \underset{(2.72)}{3286.3}\, X_1 - \underset{(-2.02)}{374.0}\, (X_1)^2 + \underset{(3.48)}{360.5} X_2$$
$$R^2 = .60$$

The predictions concerning the signs of the coefficients have been borne out and a substantial amount of the variance has been explained.[9] It should also be noted that the *t* statistics are such that all the coefficients of interest are significant beyond the .05 level (one tailed test). These results are interpreted to indicate that the data support the hypotheses to a greater degree than Feierabend, et al. (1970) would indicate, and in particular with respect to the clear emergence of the curvilinear effect of X_1.

It should be noted that there is some evidence to suggest that the relationship may indeed be even stronger than that suggested by equation 2. If the models of equation 3, a second degree polynomial in X_1, and of equation 4, an exponential growth curve in X_2, are estimated (3a and 4a) R^2's of .53 and .60 are obtained respectively.

$$(3)\quad X_3 = b_0 + b_1 X_1 + b_2 (X_1)^2 + u$$
$$(3a)\quad X_3 = 1657.8 + \underset{(6.77)}{6253.7}\, X_1 - \underset{(-5.48)}{806.8}\, (X_1)^2$$
$$R^2 = .53$$

$$(4)\quad X_3 = b_0 + b_1 (b_2^{\,X_2}) + u$$
$$(4a)\quad X_3 = 14739.5 - \underset{(-10.01)}{8217.3}\, (\underset{(9.86)}{.703}^{\,X_2})$$
$$R^2 = .60$$

Equation 3a seems to offer striking support for the curvilinear coercion level hypothesis ($R^2 = .34$ for the linear fit). The bivariate approach of the models of equation 3 and 4 appears to be as predictively powerful as the multivariate model of equation 1. The result of equation 4a suggests that the treatment of X_2 in equation 1 may have been misleading in the sense that the linearity assumption is inadequate, and the estimation of more complex relationship may be in order.[10] This strategy was not pursued due to the incestuous nature of the measures of level and fluctuation of coercion.[11] While the predictive power of more complex models might prove to be greater, it would be impossible to disaggregate the contributions of the individual variables, and these models would not offer a more adequate test of either hypothesis.[12] Less highly related measures of level and fluctuation of coercion would from these standpoints be desirable.

In summary, all the models examined offer strong support for the Feierabend, et al. (1970) hypotheses. It is indeed rare that theoretically prescribed relationships of so few variables, and particularly those of a bivariate nature as in equations 3a and 4a, explain from 53 to 60% of the variance in a cross-section as heterogeneous as the one under examination.[13] Caution should be exercised, however, in interpreting the values of the estimated parameters too literally until the dependent nature of the relationship between the predictor variables is more completely understood, and the models themselves are better specified.[14]. All the conclusions of Feierabend, et al. (1970) are maintained by this analysis.

FOOTNOTES

[1] For a review of the literature of frustration-aggression psychology and applications of derivative models of political violence see Gurr (1969 and 1970).

[2] This short summary cannot adequately review every facet of the Feierabend et al. (1970) argument. It is hoped, however, that the present author is guilty of no major distortions.

[3] If my understanding of the hypotheses is correct, the level of coercion requires a parabolic relation with political instability. This implies a function of the nature displayed in Figure 1a. The fluctuation hypothesis would be satisfied by any monotonic increasing function such as those displayed in Figure 1b.

[4] Introductory but thorough discussions of both these statistics may be found in Hays (1963: 490-538, 547-548).

[5] Standard references on least-squares regression are in Christ (1966), Goldberger (1964), and Johnston (1963).

[6] Here we are assuming that the relationship between X_2 and X_3 is linear. Later in the paper we present evidence that this assumption may not hold.

[7] The data utilized (drawn from a cross-section of 73 nations) and a discussion of the measures appear in Fierabend et al. (1970).

[8] Since we are dealing with a population and not a sample the usual interpretation of the t test is not appropriate. The interpretation of the t statistic that is adopted here shall not be whether the coefficient b_1 itself is a zero, but whether the underlying social process that is generating it can be distinguished from a random model. See Gold (1964).

[9] The amount of variance explained by the model reported by Fierabend et al. (1970: 10) is not inferior to that reported here, $R^2 = .58$ versus $R^2 = .60$. Their result does not, however, show the curvilinearity of X_1, and depends probably on the partial correlation of X_2, r23.1 = .61, in the model $X_3 + b_0 \; b_1 X_1 + b_2 X_2 + u$ versus the partial, r23.1 = .39, in the model of equation 1. This outcome derives from the extreme dependence of the predictor variables. A regression of the form $X_2 = b_0 + b_1 X_1 + b_2 (X_1)^2$ produces an $R_2 = .52$.

[10] Two alternative models that suggest themselves are:

(a) $\log X_3 = b_0 + b_1 X_1 + b_2 (X_1)^2 + b_3 \log X_2 + u$

(b) $\log X_3 = b_0 + b_1 X_1 + b_2 (X_1)^2 + b_3 (1/X_2) + u$

Model (a) would allow for relationships between X_1 and X_3 much like those of equations 1 and 3, while X_2 and X_3 would be related logarithmically. Model (b) would allow the same type of relationship between X_1 and X_3 as the foregoing, but X_2 and X_3 would have an "s" shaped relationship. See Johnston (1963: 44-52).

[11] The method of construction of the fluctuation of coercion measure implies as Feierabend et al. (1970: 105) note some mathematical dependence with the measure of level of coercion. See footnote 9 for an empirical estimate of this dependence.

[12] This is the case when the regressors themselves are correlated. See Goldberger (1964: 192-200).

[13] For some of the problems of working with cross-sections of this type see Hazlewood and Paranzino (1970).

[14] See Goldberger (1970: 192-200).

REFERENCES

CHRIST, C. (1966) Econometric Models and Methods. New York: Wiley.

FEIERABEND, L., B. NESVOLD, and R. FEIERABEND (1970) "Political Coerciveness and Turmoil: A Cross-National Inquiry" 5 Law and Society Review 93.

GOLD, D. (1964) "Some Problems in Generalizing Aggregate Associations," 8 American Behavioral Scientist 16.

GOLDBERGER, A. (1964) Econometric Theory. New York: Wiley.

GURR, T. (1970) Why Men Rebel. Princeton: Princeton University Press.

.... and C. RUTTENBERG (1967) The Conditions of Civil Violence. Princeton: Center of International Studies.

HAYS, W. (1963) Statistics. New York: Holt, Rinehart and Winston.

HAZLEWOOD, L., and D. PARANZINO (1970) Regions, Regionalism and Violence. Philadelphia: Department of Political Science, University of Pennsylvania.

JOHNSTON, J. (1963) Econometric Methods. New York: McGraw-Hill.