A Probabilistic Approach to the Causes of Coups d'Etat

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'In the last ten years on my individual reckoning', observes S. E. Finer, 'there have been seventy-three coups in forty-six countries'.[1] 'Coups', Gurr comments, 'can alter political processes and social institutions as drastically as any classic revolutions'.[2] Yet the incidence and importance of coups are hardly reflected in the sparse literature proposing generalizations about their causes. Certainly, many case studies of individual coups have been undertaken, but the choice of the country has usually been decided by availability of data rather than its significance for a general theory. Given that coups have occurred all over the world, they clearly are a general phenomenon. Existing general explanations for them, however, are open to criticism.[3] These suggest that essentially there is room for a theory which is about coups in particular rather than about wider forms of political instability, [4] or about the narrower, military, coup;[5] which is capable

[1] Edward Luttwak, *Coup d'Etat: A Practical Handbook* (Harmondsworth, Middx.: Penguin, 1969), p. 9.

[2] Ted R. Gurr, 'Psychological Factors of Civil Violence', *World Politics*, xx (1967–8), 245–78, p. 246.

[3] For full criticisms of these theories see Rosemary H. T. O'Kane, *The Coup d'Etat – A Probabilistic Theory* (Ph.D. dissertation, Lancaster University, 1978).

[4] For example, see Harry H. Eckstein, 'On the Etiology of Internal Wars', *History and Theory*, IV (1964–5), 113–63, who, by attempting to explain all forms of political disorder, is unable to suggest why coups, which unlike the rest do not always involve mass participation or violence leading to loss of life, should occur.

[5] See, for example, Morris Janowitz, *The Military in the Political Development of New Nations: An Essay in Comparative Analysis* (Chicago: Chicago University Press, 1964) and Lucian W. Pye, 'Armies in the Process of Political Modernization' in Johnson, *The Role of the Military in Underdeveloped Countries*, pp. 69–89, who are unable to provide an explanation for civilian coups where the military plays at most only a secondary role, or to recognize forms of military intervention which, unlike the coup, are not physical. It is this lack of appreciation of the possibility that the military can intervene when not actually holding office that prevents Fred Von Der Mehden and Charles W. Anderson ('Political Action by the Military in Developing Areas'. *Social Research*, xxvIII (1961), 459–97) from recognizing that in order to demonstrate 'Caretaker Governments' to be evidence of the military being modernizers, they must also show that power and not just office have been handed over. In view of the subsequent evidence that military governments in new nations have demonstrated notably few 'modernizing' achievements and have a tendency to be overthrown themselves, these functional approaches are particularly unsatisfactory.

of falsification, avoiding inherently untestable hypotheses[6] or concepts that are defined so loosely as to invite accusations of tautology;[7] and which is, of course, able to withstand appropriate empirical examination.

It also seems to be the case that any such new attempt should aim only to be probabilistic and not deterministic. This is so for two reasons. Firstly, coups are strategies in which mistakes can be made, and secondly, there are factors that may hinder coups in spite of all their necessary preconditions being present.

That coups are just a particular strategy for overthrowing governments is generally agreed in the literature. The essence of that strategy is an unexpected attack on the heart of the administration by the threat or use of violence by a small conspirational group from within the state apparatus.[8] Given the importance of planning and timing, mistakes will be made. Sometimes coups may be attempted and fail due to tactical errors. At other times coups which would have been successful may not be attempted because the conspirators are unready or have simply miscalculated their potential for success. The crucial question to be answered, therefore, should not be why coups occur, in the sense of for what reason conspirators stage them – fools may stage failed coups at any time – but under what conditions, if attempted, they would be likely to succeed.

Such conditions would, in principle, be capable of explaining both successful and genuine but unsuccessful coups. In practice, however, it would be impossible to distinguish genuine but unsuccessful coups – where the conditions are ripe but errors are made by the executors – from irrational coup attempts – which are bound to fail due to the absence of the necessary preconditions – without using the absence of those conditions as evidence to distinguish them, thus inviting accusations of tautology. In any case the reports available of failed coups are suspect, sometimes being confused with entirely different events. Governments may make unjust accusations of conspiracy as a justification for removing opposition. Observers may simply misinterpret what was actually an attempt, for example, to engineer an assassination or to incite rebellion. For practical purposes, therefore, the definition of a coup employed had to be a workable one

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[6] See, especially, Roger Murray, 'Militarism in Africa', *New Left Review*, XXXVIII (1966), 35–59, who emphasizes the importance of the conspiracy of imperialist institutions like the IMF in encouraging coups. See also Ruth First, *The Barrel of a Gun* (Harmondsworth, Middx.: Penguin, 1970), who shares some of Murray's sentiments, particularly in the case of Ghana. Any documented alternative explanation to the role of imperialist institutions in deliberately engineering coups would be countered by the claim that the real truth had been deliberately 'covered up'.

[7] For example, see Gurr, 'Psychological Factors of Civil Violence', where 'civil strife' is explained by the population's frustration and aggression, which sounds very like the description of a situation of civil strife. For numerous further examples see Robert E. Dowse, 'The Military in Political Development' in Colin Leys, ed., *Politics and Change in Developing Countries* (Cambridge: Cambridge University Press, 1969), pp. 213–46, who is worried about the 'woolliness' of concepts throughout the literature. Fortunately the use of dichotomous variables can help.

[8] The actual techniques employed may differ dramatically. See Dankwart A. Rustow, 'The Military in Middle Eastern Society and Politics', in J. L. Finkle and R. W. Gable, eds., *Political Development and Social Change* (New York: Wiley, 1966), pp. 386–96, at p. 392, where techniques from a whisper in an ear (Iraq, 1938) to the dropping of bombs (Baghdad, 1958) are discussed. He agrees, however, that the more common step is for army units to occupy key communication points. See especially Luttwak's delightful book, *Coup d'Etat: A Practical Handbook*.

restricted to successful coups only. Fortunately for the theory, suggesting as it does the conditions under which a proneness to coups exists, genuine failed coups would be expected before long to be followed by successful ones.

It follows that the notion of a successful coup would not be determined by evidence of the new government having achieved a promised programme, but simply according to whether or not the succession had been achieved without the return of the old regime. A counter-coup bringing a new group to power, however soon it occurred after the first coup, would not make that initial coup unsuccessful.

In addition to the problem of mistakes being made in the planning and execution of coups, the value of a probabilistic approach to their causes lies in the existence not only of conditions that promote coups but also of factors that hinder them.[9] Consequently the theory to be proposed is divided into 'objective preconditions', which are argued to be the general underlying causes of coups, and 'obstacles', which are viewed as having only a hindering effect.

THE OBJECTIVE PRECONDITIONS OF COUPS

The most important part of a government's responsibilities concerns the economy. As a consequence, it is performance in this sector which will usually form the basis upon which the accusations of incompetence or corruption, which normally either precede coups or are later used to justify them, are made.[10] Of course, poor economic performance is sometimes the fault of genuinely incompetent or corrupt governments. However, there do seem to be certain economic conditions that give rise to economic instability and general uncertainty in the economy, which in turn are likely to encourage such accusations of even the most competent and trustworty of governments. It is these conditions which form the general underlying causes of coups.

Such economic conditions are typical of countries whose economic sector is producing primary goods for export and trading them on the world market. Crucially, the prices of these goods, which affect the total proceeds from trade, are determined on the world market and so cannot be manipulated by the government of any individual country. If a change in price occurs, the total proceeds from the trade of that good will be affected, and the government will have little or no control over the consequences. In addition, little control can be exerted over variations in the production of these goods, which will also affect earnings. So long as world market price fluctuations do not occur, or are very small, or only have very few repercussions on the whole of the economy, economic instability will not normally follow from instability of exports.

It is argued, therefore, that the preconditions of coups are a combination of factors which, firstly, encourage the occurrence of large fluctuations and, secondly, increase the likelihood that the effects of these fluctuations will be to

[9] See Eckstein, 'On the Etiology of Internal War' and Luttwak, *Coup d'Etat: A Practical Handbook*, who suggest similar structures for explanations.

[10] See Samuel Decalo, *Coups and Army Rule in Africa: Studies in Military Style* (New Haven, Conn.: Yale University Press, 1976).

encourage instability in the local economy and so discredit the government.[11] In the first case two factors are important: the nature of the exports and the wealth of the country. In the second case three factors are important: specialization in exports; dependence of the economy on exports and again, the wealth of the country. The more of these conditions that exist, the higher the probability of a coup occurring.

The nature of the exports is important because if they are primary goods like coffee, cocoa or tin, they are highly susceptible to large fluctuations in their world market prices. Indeed, primary-producing countries suffer significantly more instability in export prices, production and earnings than industrial countries do. In the case of agricultural goods this is the consequence of the relative inflexibility of response by purchasers to changing prices, and of the variability in the quantities produced as a result of vagaries of weather, disease and pestilence. The poorer a country the less likely it is to have either the technical or financial resources for attempting to control these problems. For metal ores and mineral exports, however, the large fluctuations are the consequence of too much variation in demand, this being caused by business cycles and speculation in the consumer industrial countries, coupled with the producers' inability to change production sufficiently quickly to meet the changed demand. Again, costs are prohibitive for the poorer countries and the shortage of skilled workers is a serious handicap.

Artificial control of primary good prices might be attempted. Restricting supply would be one means of attempting this. For perishable agricultural goods, however, stockpiling is not easy and the expense of such attempts is usually prohibitive for the poorer nations. But in any case, the relative ease of storage for the metals and minerals actually encourages the speculation to which they are subject. No attempt by one individual nation would succeed in affecting the world market price unless that nation produced a large percentage of the total trade. None, however, do.[12] Attempts to unite countries in order to control prices artificially have also met with little success, with the exception of petroleum.[13] The existence of these alliances has usually led to the introduction of alliances amongst the importing countries too.[14] Where this has not occurred, substitutes can often be found quite quickly.[15] In by far the majority of cases, these

[11] For expansion of the arguments which follow, see in particular G. K. Helleiner, *International Trade and Economic Development* (Harmondsworth, Middx.: Penguin, 1972) and Alasdair J. MacBean, *Export Instability and Economic Development* (London: Allen and Unwin, 1966).

[12] See *United Nations Yearbook of Internal Trade Statistics, 1969*. Even Brazil contributes less than one-third of total coffee production.

[13] For evidence of continued price fluctuations in commodities subject to international agreements see *United Nations World Economic Survey, 1969–70* (New York: United Nations Organization, 1971), p. 171, Table 6. For discussion of the problems faced by such agreements see Helleiner, *International Trade and Economic Development*, Chap. 3 and pp. 91–3, and MacBean, *Export Instability and Economic Development*, Chap. 12.

[14] For example, the formation of OPEC, the Organization of Petroleum Exporting Countries, was followed by the formation of OPIC, the Organization of Petroleum Importing Countries.

[15] For a list of twenty-four goods with close industrial or natural substitutes see *United Nations World Economic Survey, 1963* (New York: United Nations Organization, 1963), pp. 116–18.

fluctuations on the world market are indeed out of the control of the governments of the countries exporting them.

However, the likelihood of these large fluctuations having damaging general repercussions in a country will be dependent upon the structure of the local economy. Here specialization, the dependence of the economy on its export sector and, again, the wealth of the country, are important. As regards the consequences of specialization in exports, price fluctuations in any particular product may be offset by fluctuations in the opposite direction of other goods, or at least be cushioned by their relative stability, so long as a country's economy is reasonably diversified. But where a single major export forms a large percentage of all exports, the effect of a large price fluctuation in that good is very likely to encourage general economic instability. Where that export industry is also the major employer, this will be particularly likely to have wide repercussions throughout society. Again, this is most likely to be the case in poor countries, where labour-intensive methods of production are generally used.

Nevertheless, a country which exports a single main product may still not be affected by economic instability if the export of the good does not play an important part in the economy. The dependence of a country's economy on the export sector is not, however, a simple matter of how much proceeds from exports contribute to its national income. As Gunnar Myrdal points out, 'the instability of export earnings, even for those countries that export little, creates recurrent crises in balance of payments that not only divert attention from other facets of development, but also impede the importing of vital development products'.[16] Countries which are only just beginning to attempt to develop their economies by means of growth through the export sector are just as 'dependent' on the proceeds from their exports as are countries whose national income is made up largely from the sale of exports. This 'dependence' is also affected by the internal market for the goods. In the same way that the export of many different goods helps cushion the effect of fluctuations in one of them, so the existence of an internal demand for them can sometimes also soften the effects on the general economy. With few exceptions, however, primary products do not have a large home market. This fact, Myrdal argues, makes these countries 'uniquely dependent on external markets – over which they have little influence'.[17]

In sum, fluctuations in export prices and revenue which have wide repercussions throughout the economy are likely to occur in those countries trading on the world market that are primary producers, specializing in a major export, and that have poor economies dependent upon the export sector as a whole.

The instability of export earnings is conducive to coups because it generates problems for both the economy and society that can be directly blamed on the

[16] Gunnar Myrdal, *Asian Drama: An Inquiry into the Poverty of Nations*, abridged by Seth S. King (London: Allen Lane, Penguin Press, 1972), p. 91.

[17] Myrdal, *Asian Drama*, p. 92. In support of Myrdal see, for example, Hans W. Singer, 'The Distribution of Gains Between Investing and Borrowing Countries', *American Economic Review*, XL (1950), 473–85.

government. The government is implicated directly because in poor primary-producing countries government revenues come largely from taxes on foreign trade and on the export sector.[18] Given this, volatile export earnings will make it particularly difficult for the government to make plans, whether for economic development programmes or for welfare. Whether or not unfulfilled promises are made worse by the promise being made, in reality the government will not normally be able to achieve much of substance. As Helleiner says, 'Disrupted and uncertain public services and development programmes are a major cost of export instability'.[19]

Any attempts by a government to stabilize the economy will, even assuming that the government can afford to try them, only create further problems. The holding of foreign currency exchange reserves means a loss of potential revenue from the reserves being put to other uses, whilst the borrowing from abroad to help the economy over a bad patch not only represents a loss through interest payments, but also runs the risk of the 'patch' stretching out for far longer than was either expected or could be afforded.[20]

Attempts to impose import controls in order to avoid balance of payments problems when export earnings fall will affect other industries dependent on imports of fuels, spares and so forth. Unable to achieve full production, the government can be blamed both for adversely affecting those industries and for creating unemployment. The government is also likely to be blamed for the most indirect consequences of export instability. The air of uncertainty generated by both actual and expected fluctuations is likely to lead to a general unwillingness to invest and to make plans. Important local needs may be ignored in favour of safer investments. The government, lacking sufficient control and finance (in particular) to help matters, is likely to be blamed by those affected.

Not only will the levels of employment and wages in the industry in which a fluctuation occurs be affected, but so also will the level of income in the economy as a whole, because of the fluctuations of foreign exchange earnings created by the instability in exports. These 'spill over' effects will of course be the larger and more important the poorer the country in question. In addition to the effects on income from fluctuations in the earnings of one sector, there might also be effects on the level of prices and employment.[21] In sum, such

[18] Helleiner, *International Trade and Economic Development*, p. 85.

[19] Helleiner, *International Trade and Economic Development*, p. 86.

[20] The 1964 coup in Brazil is illustrative. Before the coup the government received enormous foreign loans and encouraged direct investment from foreign countries, largely in order to fulfil promised development programmes in the face of declining coffee exports and revenues (coffee representing 41 per cent of the value of the total export revenue). At first per capita growth expanded by 3–4 per cent but by 1962 it had fallen to 0·7 per cent, and by 1964 to −6 per cent. See Andre Gunder Frank, *Capitalism and Underdevelopment in Latin America* (Harmondsworth, Middx.: Penguin, 1969), pp. 211–12.

[21] As in the case of Brazil, Ghana acquired an enormous foreign debt in the face of growing balance of payments deficits and, due to declining prices, diminishing cocoa export proceeds. After 1961 high inflation occurred, the consumer price index rising by 65 per cent in three years. See Jon Kraus, 'Ghana, 1966' in William G. Andrews and Uri Ra'anan, *The Politics of the Coup d'Etat* (New York: Van Nostrand Reinhold, 1969), Chap. IV, p. 105, and Dowse, 'The Military in Political Development', p. 234.

economies are very likely indeed to create real grievances and therefore to nurture accusations of government mismanagement and incompetence.

Extra difficulties may also occur in countries divided by racial or tribal differences, where a government will, in addition to the accusation of incompetence, be particularly likely to stand accused of corruption. As MacBean comments,

A sudden rise in the proceeds realised from the export of an important crop may appear to redistribute income in an entirely arbitrary manner. One group of farmers may be enriched, while the consequent rise in domestic price levels makes another group not only absolutely but relatively worse off. Equally, a sudden drop in proceeds can create tensions. These effects of export fluctuations are potentially very serious in countries where race or tribal connections often determine occupations and social tensions are already high.[22]

Where the government is also comprised mainly of one tribe or race, and confronted by a sudden change in the value of the particular export with which it is associated, it will run the clear risk of being accused of corrupt manipulation. Similarly, a government which sets up marketing boards for exports, in an attempt to smooth out fluctuations, may, when the producers feel they are not gaining full or fair benefit from their produce, also find itself accused of corruption. Indeed such an accusation, whether justified or not, would seem probable whenever one group in society is made relatively better or worse off by export fluctuations, or when, in times of general adversity brought on by reduced export earnings, government personnel appear to benefit in particular.[23]

The particular effects of export instability will differ according to the type of commodity affected and the nature of the society in which the fluctuations occur. Although it is easier to imagine decreasing prices and declining or stagnant export earnings encouraging coups, increasing prices and earnings may be just as disruptive, particularly when occurring quickly and to the benefit of some sections of society and not others.[24]

In summary, then, it is argued that the preconditions of coups are essentially to be found in countries specializing in and dependent on exports, especially where these goods are primary and the country is poor. Moreover, a coup, rather than any other political event, will be the most likely outcome of these preconditions. Clearly, given accusations of corruption or incompetence –

[22] MacBean, *Export Instability and Economic Development*, p. 28. The 1966 Nigerian coup serves as a good example. Tribal tensions were already high, being exacerbated by price fluctuations in the major exports, each concentrated in particular areas. The increasingly valuable revenues from oil, located mainly in the Eastern regions, were used to benefit the North, from which area the Government largely came. See First, *The Barrel of a Gun*, p. 148.

[23] This seems to have been the case in Ghana. Nkrumah's Convention People's Party, having founded the Cocoa Purchasing Company to assist poorer farms, effectively put itself in direct competition with important cocoa farmers and local cocoa-brokers. Not surprisingly it was in the Ashanti area, the main cocoa-producing area, that the National Liberation Movement was formed to stage the coup. See First, *The Barrel of a Gun*, p. 178.

[24] This was the case in Nigeria and also, for example, in Libya in 1969, when the stark riches and poverty in the feudal society were sharply highlighted by the flood of oil revenues. Again, see First, *The Barrel of a Gun*, p. 158.

whether justified or not – and the resultant lack of support, the need for a change of government would seem evident. The legal way of changing a government – an election – even in countries where the staging of one might be a real possibility, would be ruled out because a government would be very unlikely to choose to stage one at the height of its unpopularity. Even if it was willing to do so, the time required for organizing elections is long. The speed of the coup is one of its great advantages. In addition to speed, the coup has one further advantage over other illegal forms of government overthrow: efficiency. It is the most likely method for obtaining government office with least loss of life, and with the fewest people and arms.

THE OBSTACLES

The decision of a group of conspirators to intervene, however, is based upon calculation of the chances of success.[25] It has already been argued that it will choose a time at the height of the government's loss of support, the culmination of export-induced economic instability. Three other factors, however, will also need to be considered. Following Luttwak's method, three obstacles to coups may be suggested. Where they exist, even if all the necessary economic conditions are present, they will reduce the likely success of a coup. Being part of the calculations of the conspirators, they will also reduce the probability of such an attempt. The effect of these obstacles is to prevent coups from occurring even where the necessary economic conditions exist. It is not suggested that they are causes of coups.

The first obstacle, the recent independence of a government, follows logically from the suggestions so far made.[26] It has been argued that the presence of a

[25] It follows that the motive for removing the government and the source of conspirators would be likely to differ according to the nature of the society, structure of the economy, and pattern of economic instability engendered. They might sometimes be intent on being 'modernizers' (see, for example, Lucian W. Pye, 'Armies in the Process of Political Modernization'). They might equally (as First, *The Barrel of a Gun*, pp. 429–32 suggests) be intent on increasing their own share of the spoils, or as Decalo suggests in *Coups and Army Rule in Africa: Studies in Military Style*, p. 21, be seeking vain personal glory. If it is the military that most often stages coups this surely reflects their peculiar advantages for staging them (rather than the importance of special modernizing characteristics); their monopoly of coercion; and the fact that their neutrality or support would have to be gained before a civilian group could stage a coup. In this latter case the military would be likely either to be provoked into pre-empting a civilian attempt or to join forces with the civilians, so masking the real civilian nature of the coup. Potential coup situations will often involve several groups of plotters. Certainly it is unlikely that motives for the military to intervene will be purely military ones. Most coups are likely to be staged by a combination of military and civilian personnel for a combination of motives which, although compatible at the time of the coup, are likely to create problems for the new government.

[26] This obstacle is closely influenced by Zolberg's discussion of the importance of 'the passing of time' and his statement that, 'coups are more likely to occur after a few years of independence than initially because it takes some time for a government to use up its political capital and for opponents to test the government's strength'. See Aristide R. Zolberg, 'The Structure of Political Conflict in the New States of Tropical Africa', *American Political Science Review*, LXII (1968), 70–87, p. 78.

specified set of economic objective conditions make the occurrence of a coup highly probable over some period, because it leads by various paths to the demonstration that the government is weak in not being able to control the economic sector, or that it is corrupt in appearing to manipulate it to its own advantage. However, it takes time for a new government to demonstrate its capabilities. Coups are therefore unlikely to occur in a recently independent country until its new government has had the opportunity to demonstrate its inadequacy in dealing with the country's economy. It simply takes time for a government to lose support and for an opportunity for a coup to occur.[27]

The second obstacle is that once a coup has occurred the likelihood of having another will be increased.[28] This may be stated in the form of an obstacle: a country with no experience of a coup will be less likely to have one than a country where one has already occurred. In general, where no precedent has been set, it can be expected that potential conspirators will at first try less drastic measures. In terms of their calculations, they would be more apprehensive of their chances of success than conspirators in countries which had already witnessed a successful overthrow. Although governments which had themselves been installed by coups might be very aware of the possibility of being over-thrown in turn, any repressive measures which they introduced in an attempt to prevent their overthrow would be more likely to encourage loss of support and thus make the need for a coup seem more urgent.[29]

A third obstacle is the presence of foreign troops.[30] The presence of a foreign army becomes an obstacle because, in order to stage a coup, one of the most important strategies is at least to neutralize the army in order to prevent the coup's failure. Foreign troops, however, will be particularly unlikely to be

[27] Another reason why this may be important is because countries recently made independent rarely possess experienced armies, so that at least one possible source for likely conspirators will not exist. The correlation between recent independence and not having an army is high ($r = 0.605$). This interpretation is also supported by the fact that Algeria, which succumbed to a coup only three years after independence, had a particularly highly trained and well-established army.

[28] This obstacle is also stimulated by Zolberg's suggestions (see fn. 26): 'within one country also coups engender other coups. The success of one set of claimants encourages others to try' (p. 80).

[29] It is perhaps for this reason that in some parts of Latin America the 'illegal' coup has almost become an institution. See also Rustow, 'The Military in Middle Eastern Society and Politics', p. 391, who argues that military coups are encouraged by repression. The increasing reliance of the government on the military, whilst contributing to the 'army's skills in domestic coercion', argues Rustow, makes the civilian government 'a more vulnerable and tempting target'.

[30] That this might be an obstacle was inspired partly by First, *The Barrel of a Gun*, pp. 413–23, where she discusses the role played by foreign armies in Africa and in particular by the French, especially in Gabon. But it was largely developed from Luttwak's argument that the presence of a foreign army indicated that the host country was not truly independent (see *Coup d'Etat: A Practical Handbook*, p. 44). To some extent the presence of foreign troops may indicate that power does not entirely rest with the internal government. This is particularly likely if the forces are those of the ex-colonial power and especially if they still hold command positions in the country's own army or police force. If power were not considered to exist in the hands of the government then people would be less likely to blame that government for incompetence, and therefore a coup would be less likely to be attempted. However, this would seem to be a special case of the more general argument proposed.

sympathetic. Luttwak suggests that in order to stage a coup in the presence of this obstacle, the conspirators must either ask for the foreign power's permission or risk the consequences of failure; he recommends the former. Clearly there are risks involved with either solution. In any case, it seems too strong an assumption to make that all foreign powers would have any wish to interfere in the politics of their host country. Indeed, it is not always the case that they would be able to do so. A group of technical advisers or members of a training mission are highly unlikely to be either sufficiently equipped or drilled for intervention in the face of an attempted coup. The soldiers must be either fully equipped for combat, or else hold high-ranking positions in the local army.

It has been suggested that foreign countries might encourage coups, rather than hinder them.[31] If the existing host government starts implementing policies which are against the interests of the foreign power, then the foreign army will certainly have reason to intervene. However, such cases would seem to be the exception rather than the rule, because if these troops have the potential for non-physical manipulation of the existing government, they would generally be expected to prefer that, being the less hazardous option.

Again, it might be argued that so long as a foreign country has interests to protect, there will be no need for its army to be present in a country in order for it to intervene to prevent a coup. With modern technology, troops can be quickly dispatched to the scene of action. However, a major part of the argument that the presence of foreign troops is an obstacle is that their very presence will itself reduce the likelihood of these troops having to be used to reverse coups.

This proposed explanation for coups then yields the following testable hypothesis. The probability of a successful coup is a function of: a country's poverty; the specialization of its export production; the nature of its exports; the dependence of its economy on export revenues; and the absence of three obstacles – recent independence, the lack of any previous coup and the presence of foreign troops, capable of combat.

EXAMINATION OF THE HYPOTHESIS
The Method

For testing this hypothesis some form of multivariate analysis is obviously appropriate. As the test is for whether or not a coup occurs, the dependent variable is binary rather than continuous and therefore prompts the use of discriminant analysis. Discriminant analysis is concerned with the forming of a linear function of independent variables which maximizes the correct classification between two populations: in this case countries which have had coups and those which have not.[32] It also has the real advantage, in operationalizing the dependent variable in binary form, of avoiding the more usual construction

[31] See Murray, 'Militarism in Africa', and First, *The Barrel of a Gun*, pp. 413–23.
[32] For a detailed explanation of discriminant analysis, see K. G. Rogers, G. M. Townsent and A. E. Metcalf, 'Planning for the Work Journey', *Local Government Operational Research Unit*

of arbitrary indices which violate the requirement of an interval scale.[33] The analysis was applied to cross-section data collected for 125 countries that were independent by 1970.[34] The statistics used in the analysis presented here refer to 1968 but examination of 1970 statistics when they became available showed very high stability in the results.[35] The use of 1970 as the 'base year' has the

Report, No. C 67, pp. 47–51. The dependent variable, Z, is calculated from

$$Z_i = Y_i - \frac{n_1}{n_1 - n_2}$$

where Y = had a coup 1950–70 = 1,
                    and not = 0;
n_1 = the number of countries having had coups;
n_2 = the number of countries not having had one.

Hence, the two ideal scores were $Z_1 = 0.648$ for countries having had a coup and $Z_2 = -0.352$ for countries not having had one. The technique essentially consists of the procedure for multiple regression analysis employing a dummy dependent variable (see John P. van de Geer, *Introduction to Multivariate Analysis for the Social Sciences* (San Francisco: W. H. Freeman, 1971)). It differs from it in that the dependent variable, rather than being 0 to 1, is either positive or negative, the calculation of the dependent variable scores being determined by the size of the two populations. The effect of this on the function generated is to change the constant term, reflecting the shift in the range of scores on the Y axis.

[33] See, for example, the 'Military Intervention Index', constructed by Robert D. Putnam, 'Toward Explaining Military Intervention in Latin American Politics', *World Politics*, xx (1967–8), 83–110, which succeeds only in constructing an ordinal scale and not the interval scale necessary for the calculation of the correlations which he undertakes. For elaboration of this problem see Hubert M. Blalock, Jr, *Social Statistics* (New York: McGraw-Hill, 1960), pp. 13–16. For a detailed explanation of the use of dummy or binary variables, see J. Johnston, *Econometric Methods* (New York: McGraw-Hill, 1963), pp. 221–8.

[34] The use of cross-section data can be criticized for representing the conditions which existed after a coup, when the hypothesis refers to preconditions. However, the majority of developing countries had not changed the scores of their socio-economic variables much in relation to the rest of the world since the Second World War. In any case, as Ferguson points out, 'in general the effect of unreliability in measurement of variables is to reduce the obtained correlation coefficients slightly below the values that would be expected if there were no such measurement error' (see George A. Ferguson, *The Statistical Analysis in Psychology and Education* (New York: McGraw-Hill, 1966), p. 289). Given that the problem of errors in variables would be expected to increase the likelihood of the hypothesis being falsified, this difficulty could not be said to bias the data in favour of the theory.

[35] Reliable data for 1970 eventually became available in 1976 in the 1974 *United Nations Statistical Yearbook* (New York: United Nations Organization, 1975). In this volume a particular effort had been made to collect a complete set of data for 1970. For all the more recent years, missing data, especially for the 'developing countries', continued to be a major problem. Employing the more recent data it was found that no significant differences resulted. This was confirmed by a test for structural stability (see fn. 56). See also fn. 52 for discussion of its predictions. Even when taking 1968 statistics there remained some independent countries for which data were unavailable: Communist China, North Vietnam, North Korea, Albania, the Yemen, Nepal, Oman, San Marino, Liechtenstein, the Vatican City, Andorra, Nauru, Western Samoa, Maldives and Equatorial Guinea. The loss of the latter small countries was not really worrying, because their size would tend to make their statistics unreliable even where available. The four communist countries were a particularly unfortunate loss, however, because it would not be unreasonable to expect that they might be possible exceptions to the generalization proposed. Nevertheless, their low dependence on world

major advantage of allowing examination of the performance and predictions
of the model for the period which has since elapsed. For the qualitative variables
the period 1950–70 was chosen, because over this period the frequency of coups
increased dramatically. For the dependent variable this was stretched just into
1971 in order to include Uganda, in which a coup had already occurred when
the data were being collected.[36]

The three independent variables representing the obstacles were also opera-
tionalized in binary form. Firstly, a dummy was constructed to represent the
occurrence of a previous coup during the period 1950–70.[37] For the operation-
alization of the second obstacle – whether or not a country had recently gained
independence – a choice had to be made as to which year should be used for
dividing the recently independent countries from the rest, and 1 January 1966
was chosen. Five years seemed a reasonable length of time for the demonstration
of a government's abilities and also long enough for the euphoria surrounding
independence, which usually benefits first governments, to subside.[38]

The third obstacle – the presence of a foreign army which was capable of
combat – was likewise represented in the form of a dummy. It was constructed
to include all countries having foreign troops present in 1970 or, in the case of
countries having had coups, where troops were present at the time of their first
coup during the period 1950–70. Foreign troops fulfilling this requirement were
of two types: those on secondment to local armies as officers; and armoured
divisions deployed within the host country.[39] Training missions and technicians

market trade and the fact that none of them have had coups is consistent with the arguments
presented. The cases of the Yemen, Oman and Nepal would not be expected to represent significant
deviations, but it was nevertheless unfortunate that they could not be included.

[36] Countries having had at least one coup were then the following: Algeria, Argentina, Bolivia,
Brazil, Burma, Burundi, Cambodia, Central African Republic, Colombia, Congo Brazzaville, Cuba,
Dahomey, Dominican Republic, Ecuador, Egypt, El Salvador, Ghana, Greece, Guatemala, Haiti,
Honduras, Indonesia, Iraq, Laos, Libya, Malta, Nigeria, Pakistan, Panama, Paraguay, Peru, Sierra
Leone, Somalia, South Korea, South Vietnam, Sudan, Syria, Thailand, Togo, Turkey, Uganda,
Upper Volta, Venezuela, Zaire.

[37] The countries were the following: Argentina, Bolivia, Burma, Columbia, Dahomey, Dominican
Republic, Ecuador, El Salvador, Guatemala, Iraq, Panama, Peru, Sierra Leone, Sudan, Syria,
Thailand, Togo.

[38] The countries were as follows: Barbados, Botswana, Guyana, Lesotho, Mauritius, Southern
Yemen, Swaziland.

[39] Following David Wood in *The Armed Forces of African States* (Adelphi Papers, No. 27, April
1966) the countries were the following: (i) Foreign Officers on secondment to local army (or police
force where no army exists): Botswana, Cameroon, Gabon, Gambia, Malawi, Mauritius, Zambia.
(ii) Foreign armoured divisions (not missile bases): Chad, Ivory Coast, Malagasy Republic,
Malaysia, Malta, Mongolia, Niger, Philippines, Senegal, Singapore, South Vietnam, West Germany
(NATO) and East Germany, Hungary, Poland and Czechoslovakia (since 1968) (Warsaw Pact
troops). Egypt, which did not have such troops at the time of its coup in 1952, was not included,
although their presence since may help to explain the absence of a second coup. These European
countries were included only reluctantly because it was thought that given their high economic
indices and the fact that none of them have had successful coups since 1950, they might bias the
results in favour of the theory. However, running the model as if these countries were not subject
to this obstacle ($X_6 = 0$), the multiple correlation coefficient, R, actually increased, although by the
insignificant level of 0·005. The model remained virtually unchanged, all variables remaining

manning missile bases were not therefore included. Ideally, this variable would not have been operationalized in dichotomous form, because it is highly probable that where the troops are particularly strong their presence would present far more of an obstacle than elsewhere. In Mongolia, for example, Soviet troops may number as many as a quarter the size of the total population. It was not possible, however, to operationalize this variable in any other form. Apart from there being no reason to expect that any simple relationship between the number of the foreign troops as a proportion of the size of the local army or total population would exist, such data were not, in any case, available in a reliable form. A more important consideration was that the variable had to be operationalized in the form of a dummy because there could be qualitative differences between those countries where foreign personnel actually formed part of the local armed forces and those where they were separate.

The first of the objective conditions, the country's poverty, was operationalized by the score of Gross National Product per capita for the year 1968. The second variable, for specialization, was represented by the value of the major export for 1968 as a percentage of that year's total export earnings.[40] As for GNP per capita, this variable was also transformed into logarithms. The third variable, export of primary goods, had to be operationalized very simplistically by a dummy variable, which represented whether the major export was a primary good or not.

The fourth variable, dependence on the export sector, was particularly difficult to operationalize. The fact that proceeds from exports formed a major contribution to the national income was not the only way in which a country could be highly dependent on exports. Following Myrdal, countries which were only just beginning to develop their economies through expanding their export sectors, especially where the exports had no internal markets, were also highly dependent on their export sector. It was therefore decided to operationalize the variable by the earnings from the major export as a percentage of national income but transformed into a relationship which could take into account the exceptional dependence on exports faced by those countries embarking on export-led development. The transformation used was $Y = a + bX + cX^2$.[41] This would result in a U-shaped relationship if b were negative and c positive, indicating that countries in the middle ranges of these percentages would be least likely to have coups whilst those at the highest values of X (economies especially dependent on a single export) and lowest (Myrdal's new exporters) would be most likely to have coups.

significant at approximately the same level, except this particular variable, the 't statistic' increasing from 3·59 to 3·91.

[40] A less simple operationalization – taking the total of the four major exports as a percentage of all exports – was also considered. In practice, however, the two operationalizations were very highly correlated at $r = 0.917$. In any case, it suffered the disadvantage of being less easily interpreted.

[41] This relationship would have probably been better represented by the function $\log Y = a + b (\log X) + c (\log X)^2$. Unfortunately this function could not be used, because of the dummy dependent variable being negative. For discussion and illustration of transformations see Mordecai J. B. Ezekiel, *Methods of Correlation Analysis* (New York: Wiley, 1949), pp. 75–127, p. 79.

However, a more serious difficulty existed with these variables, namely the problem of intercorrelation.[42] In particular, the dummy variable of whether or not the major export was a non-manufactured good was highly correlated with the logarithmic functions of GNP per capita and with the largest export as a percentage of all exports with $r = +0.542$ and $r = +0.688$ respectively. This was not unexpected, as concentration of exports is most likely to occur in poorer countries exporting primary goods. Unfortunately, this violation of the assumed independence of variables in regression analysis resulted in the dummy variable being insignificant. However, by removing these two variables from the regression equation, the dummy variable became both significant, with a t-statistic of 3.48, and also correlated in the expected direction;[43] countries where the major export is a primary product were more likely to have coups than those exporting manufactured goods. Because the fact of being a primary producing country was represented in the other two variables, it was not included in the model.[44] The results are presented as Equation 1, 'The Model'.

EQUATION I – THE MODEL[45]

$$Z = 0.141 - 0.0909\,X_2 + 0.179\,X_2 - 0.0160\,X_3 + 0.000157\,(X_3)^2 + 0.566\,X_4$$
$$\qquad (2.69) \qquad (3.31) \qquad (2.69) \qquad (2.06) \qquad\qquad (6.24)$$
$$- 0.325\,X_5 - 0.266\,X_6,$$
$$\quad (2.42) \qquad (3.59)$$
$$(R = 0.741,\ R^2 = 0.549 \text{ or } 55\%,\ (\ ) = t \text{ statistic})$$

where $Z = Y - \frac{44}{125}$ (44 being the number of countries having had at least

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[42] For a detailed discussion of multicollinearity, see Johnston, *Econometric Methods*, pp. 201–7.

[43] For an explanation of students' t distribution, see Blalock, *Social Statistics*, pp. 144–9.

[44] In general, the effect of intercorrelation would be to reduce the significance of each variable. When multicollinearity is at a very high level, however, the fraction of explained variance, R^2, may be increased. This is clearly a major problem, because this might lead to the hypothesis not being falsified when it should be. However, inclusion of the dummy variable in the regression, 'whether or not a country produces a primary good as the major export', which was the most highly intercorrelated of all the variables, increased the multiple correlation coefficient by only 0.002. Additional confirmation comes from the fact that the correlation coefficients are not larger than the multiple correlation coefficient. This is indeed the case with no r being as high as R at 0.741. It was therefore decided to run the regression without fear that the results would be likely to be unduly favourable. Indeed, it was expected that the reduction in the significance scores by the multicollinearity would probably be unfavourable to the hypotheses.

[45] *Data sources:* Variables Y and X_4: *Keesing's Contemporary Archives* (London: Keesing's Publications, Longman); *Europa Yearbooks*, 1950–72 (London: United Nations); *The New York Times Encyclopedic Almanac*, 1970, (New York: 1969); *The Statesman's Yearbooks*, 1950–72 (London: Macmillan); Luttwak, *Coup d'Etat: A Practical Handbook*, Appendix C, pp. 194–9; First, *The Barrel of a Gun*, pp. xii-iv; Marcel Niedergang, *The Twenty Latin Americas*, Vols. 1 and 2 (Harmondsworth, Middx.: Penguin, 1971); X_1: *Europa Yearbook*, 1970; *United Nations, Statistical Yearbook*, 1971 (New York: United Nations, 1972); *New York Times Encyclopedic Almanac*, 1970; X_2 and X_3: *United Nations Yearbooks of International Trade Statistics*, 1968 and 1969 (New York: 1970 and 1972); X_5, *Europa Yearbooks*; X_6, Col. T. N. Dupuy and Col. Wendell Blanchard, *The Almanac of World Military Power*, 2nd ed. (London: Arthur Baker, 1972); *Europa Yearbooks*; A. Hovey, *United States Military Assistance: A Study of Policies and Practices* (New York: Praeger, 1965); Wood, *The Armed Forces of African States*.

one coup and 125 being the number of independent
countries in the data set)

and Y = Dummy 1 = has had a coup during the period 1950–70,
  0 = has not had a coup during that time.

X_1 = Log (Gross National Product per capita in 1968, in US dollars).

X_2 = Log (value of principal export as a percentage of total exports for 1968, in US dollars).

X_3 = Value of total earnings of major export as a percentage of National Income, for 1968.

X_4 = Dummy 1 = has had a coup before, during the years 1950–70,
  0 = has not had a previous coup during that period.

X_5 = Dummy 1 = has become independent since 1 January 1966,
  0 = has not.

X_6 = Dummy 1 = Foreign troops, capable of combat, present in country in 1970,
  0 = not so.

In all cases the direction of the correlations support the deduced hypothesis: coups are inversely related to GNP per capita, the coefficient of X_1 being negative; the positive sign for X_2 indicates that coups are, as argued, directly related to the score of the largest export as a percentage of all exports. Again, as expected, coups are less likely to occur in the middle range scores of total export proceeds as a percentage of National Income, and more likely to occur at the highest and lowest scores, the relationship indicated by X_3 being U-shaped. The three dummy variables also behave as the hypothesis suggests: the positive sign for X_4 indicates that coups are more likely to occur in countries where there has been a previous coup; whilst the negative signs for X_5 and X_6 indicate that they are less likely to occur in countries which are either recently independent or where foreign troops are present.

Furthermore, in spite of the possible problem of intercorrelation, all the variables are significant, having t-statistics scoring more than 1·98, the critical value which represents a 95 per cent level of confidence for 120 degrees of freedom.[46] Similarly, the proportion of variance explained, R^2, is 0·55, confirming that the hypothesis has not been refuted and that it may be used as a predictive equation. Indeed, it is a high result for a cross-national analysis, especially when using a dummy dependent variable which would be expected to reduce the multiple correlation score.[47]

Examination of the estimated values of the discriminant scores compared to

[46] For an explanation of the computation of degrees of freedom, their relevance to the t statistic and the statistical table for the distribution of t, see Blalock, *Social Statistics*, pp. 156, 247 and 442. For support for the use of tests of significance where data are being used for a universe of cases rather than the random sample for which they were designed, see Blalock, *Social Statistics*, p. 270, and D. Gold, 'Some Problems in Generalizing Aggregate Associations', *American Behavioural Scientist*, VIII (1969), 6–18.

[47] See Blalock, *Social Statistics*, p. 274 and Johnston, *Econometric Methods*, p. 224. See also fn. 34.

the actual values revealed two significant groups of misclassified countries. Countries not having had a coup but predicted to have one were those where Z was negative but $\hat{Z}$ was positive; and countries having had a coup but which could not be explained by the model were those where Z was positive but $\hat{Z}$ was negative. The findings are presented in Tables 1 and 2.

TABLE 1   *Countries Having Had Coups Where Coups Are Not Predicted by the Model*

	Z	$\hat{Z}$
Venezuela	0·648	−0·0412
Honduras	0·648	−0·0214
Greece	0·648	−0·0172
Congo-Brazzaville	0·648	−0·0109

TABLE 2   *Countries Not Having Had Coups Where Coups Are Predicted by the Model*

	Z	$\hat{Z}$
Ethiopia	−0·352	0·340
Rwanda	−0·352	0·263
Afghanistan	−0·352	0·209
Guinea	−0·352	0·207
India	−0·352	0·168
Ceylon	−0·352	0·140
Jordan	−0·352	0·122
Iran	−0·352	0·113
Chad	−0·352	0·0915
Mauritania	−0·352	0·0863
Kenya	−0·352	0·0717
Chile	−0·352	0·0602
Liberia	−0·352	0·0563
Niger	−0·352	0·0485
Saudi Arabia	−0·352	0·0208
Morocco	−0·352	0·0142
Jamaica	−0·352	0·0123
Uruguay	−0·352	0·00636

Given the proportion of explained variance, there are surprisingly few misclassifications out of the total of 125 countries. These misclassified countries are of clear interest and deserve close attention. If one first considers those

countries which have not had coups but which the model suggests should have had, more detailed examination reinforces the view that the equation does provide a predictive model.[48] Of these countries predicted to have coups in Table 2, nine of them have now succumbed. In July 1973, the Kayibanda government of Rwanda was overthrown by a military coup. In the same month, in Afghanistan, after forty years as monarch King Mohammed Zahir Shah was overthrown in his absence by a coup led by his brother-in-law and cousin, Lieutenant-General Sardar Mohammed Daud Khan. In Chile, in September of the same year, the first elected Marxist government, that of Salvador Allende, was overthrown by a classic military coup.

The following year, in April, Diori, President of Niger, was overthrown by the armed forces. Then, also in 1974, as the end came to the celebrations in Chile of the first anniversary of their coup, the Ethiopian army, after months of progressive erosion of traditional power, finally deposed Emperor Haile Selassie and so concluded the first successful coup in the country claiming its monarch to be the descendant of Solomon.

In April 1975, the joint effort of the army and police in Chad overthrew President Ngaria Tombalbaye's government. In the summer of that year, Uruguay had also seemed very close indeed to a successful coup. In February 1973, the army succeeded, for the first time in Uruguay's history, in achieving active participation in the country's administration. By July, the army was virtually in control. President Bordaberry's remaining in office, however, prevented this military intervention being defined as a coup. But it was recognized that in all probability it was an office held without power. At the time, therefore, Uruguay seemed a highly plausible prediction for a coup but could not be classed as having had one. On 12 June 1976, however, President Bordaberry was finally deposed after the military withdrew their support and confidence from him, and took complete control. At last Uruguay could be classed as having had a successful *coup d'état*.

In July 1978, in Mauritania, President Mokhtar Ould Daddah was overthrown by a bloodless coup led by the Chief of Staff of the Armed Forces. Finally, and most recently in May 1980, Liberia suffered its first coup, ending the regime of President Tolbert.

Of the remaining countries, several coup attempts have also been reported: in Saudi Arabia, two abortive coups were reported in 1969, King Faisal being assassinated in 1975. In July 1971, the army attempted to overthrow King Hassan II of Morocco. In July 1973, between March and September, and in July 1976, President Sékou Touré of Guinea alleged that there had been several attempts at a coup. In Iran, following the recent revolution, executions have been carried out in retaliation for an alleged coup attempt. Even if we allow that in some cases these allegations may be disputed, in general it is probable that a genuinely attempted coup will before long culminate in a successful one, being usually a sign of imperfect strategy rather than the lack of necessary conditions.

[48] All of the following coups and events can be checked in *Keesing's Contemporary Archives*, and the *Europa Yearbooks*.

Of the remaining five countries, none of them have experienced attempted coups.

Although the predictions that these countries will have coups seem on balance to be persuasive, they could also be regarded as a criticism of the theory, indicating additional or even alternative general explanations. Two possible such explanations might be suggested. The first is that being a monarchy makes a coup less likely. Jordan, Morocco, Saudi Arabia and pre-1979 Iran are all monarchies, although so too, of course, was Afghanistan before 1973, and Ethiopia until 1974. Run as a dummy variable in the model, the fact that a country was a monarchy was not significant, however, having a t-statistic of only 0·05.[49] Not being highly correlated with any of the variables in the model, this could not be accounted for by the problem of intercorrelation. The second possible explanation was also to do with the nature of the political system, namely the extent to which it might be classed as 'democratic'. This is a particularly popular explanation for the absence of coups in India. Valid operationalization of this concept is difficult;[50] nevertheless, a very simple dummy was constructed, which represented whether or not a country could be considered a Western-type liberal democracy. However, with a t-statistic of only 0·34 it was not significant. Chile's and Uruguay's recent coups seem, in any case, to reduce the plausibility of this argument.[51]

The second set of countries to be examined were those which have had coups but which have not been explained by the model: Congo-Brazzaville, Greece, Honduras and Venezuela. These four countries may be classed as deviant cases, whose coups cannot be explained by the theory. Again, discovery of common factors amongst them might suggest refinements to the proposed theory, or even a preferable alternative. Cursory observation of these four cases, however, suggests no obvious similarities. Two of them are from the same continent but oil-producing Venezuela, one of the richest countries in Latin America and now considered democratic, seems to have little in common with the banana-exporting, election-rigging, Central American country of Honduras.[52]

[49] Data source: *Europa Yearbooks* and the *New York Times Encyclopedic Almanac*, 1970. However the variable was constructed (e.g. to exclude 'constitutional monarchs') it remained insignificant with a low score.

[50] The problem here, as with Putnam's MI index (see fn. 33), is the difficulty of constructing the interval scale necessary for correlation analysis. Attempts to do so soon revealed that there were almost as many different variations of political systems as countries, not to mention the problems of trying to decide, for example, the real power of monarchs, or the meaningfulness of elections. See, for example, the criticisms made against Phillips Cutright ('National Political Development: A Measurement and Analysis', *American Sociological Review*, XXVIII (1963), 253–64) by Martin C. Needler in 'Political Development and Socio-Economic Development: The Case of Latin America', *American Political Science Review*, LXII (1968), 889–97.

[51] As a further check on the generality of the Model and its claim to achieve a 'best' explanation, a variety of other variables suggested by existing theories were also included, in turn, in the Model. In no case did they achieve significance. See O'Kane, *The Coup d'Etat: A Probabilistic Theory*, Chap. 7.

[52] Discriminant analysis applied to the newly collected data for 1970 (see fn. 35), which was expected to suffer from fewer errors, indicated that the apparent deviance of Honduras, Saudi Arabia and Jamaica was the consequence of errors in the data and that Tunisia should have been included amongst the list of predictions for a coup.

A third set of countries which are of interest are those for which the presence of an obstacle is preventing a coup. If the obstacles were to be removed, then clearly these countries might also be predicted to have coups. Clearly, it is not possible in reality to change the fact that a previous coup has occurred, although perhaps it might be the case that such a coup in the distant past would be less important than a recent one.[53] However, it is possible to 'remove' the conditions of a country's being recently independent and having foreign troops present. None of the countries used in the analysis may any longer be classed as recently independent. However, the significance of the variable would suggest that more recently independent countries would not be expected to experience a coup within a few years. In order to examine the effects of the removal of this variable, the discriminant function was re-run without it. Lesotho, Southern Yemen and Swaziland were predicted to have coups whilst Guyana, Barbados, Botswana and Mauritius were not. Of these, Southern Yemen suffered a coup in June 1978 when President Rubayya Ali was overthrown and executed by opponents within the ruling National Front.

By running the regression without the dummy variable of whether or not foreign troops are present (X_6) and again using discriminant analysis, predictions based on the removal of this obstacle could also be made. Gambia, the Malagasy Republic, Malawi, Mongolia, the Philippines and Senegal were predicted to have coups if the foreign troops were to leave the country. Of these, the seconded British officers and NCOs in Malawi are being replaced as fast as Malawian officers become trained and qualified, whilst in the Philippines the presence of the US military bases have become an important political issue. Only in the Malagasy Republic, however, have the French troops completely departed.[54] Given the protests leading to their departure, the army chiefs already having been invited to take full executive power, and the resignation after a referendum of the then President, Tsiranana, the Malagasy Republic seemed a reasonable candidate for a coup at the time of the troops' departure. It was therefore not a surprise when on 11 February 1975 Colonel Ratsimandrava, the then Head of State, was shot and replaced by a National Military Directorate consisting of nineteen officers. Cameroon, Zambia, Malaysia and Singapore, where the foreign troops have now been withdrawn, are not predicted to have coups. Similarly, the remaining countries would not be expected to experience them in the event of their foreign troops being evacuated. In general, it would seem that the model's predictions of coups in the near future have both supported and illuminated the theory.

[53] Nevertheless, the same technique that was used to examine the implications of change in the other two dummies can be usefully applied here in order to examine possible bias. The problem is that only countries which have had coups between 1950 and 1970 can also have had previous ones during that time. It might be argued that this accounts for the high t statistic at 6·24. However, of the forty-four countries having had a coup, only seventeen of them have had more than one during the same period. Furthermore, when the regression was run without this dummy variable only Dahomey, Peru and Togo out of these seventeen countries could not have been explained by the model.

[54] In addition to Keesing's *Contemporary Archives*, see Dupuy and Blanchard, *The Almanac of World Military Power*, pp. 228 and 351.

In addition to these predicted coups and cases where coups had occurred by 1970 but which had not been explained by the model, two further cases have occurred which are of particular interest: the successful coup in Portugal and the unsuccessful one in Cyprus. In April 1974, the Caetano Government of Portugal was overthrown by a military coup, bringing General Spinola to power. Three months later, on 15 July, President Makarios was forced to flee Cyprus, after a coup led by Greek officers of the Cypriot National Guard. The Sampson government installed by the officers was very short lived. Within a week, Clerides, Speaker of the House of Representatives in Makarios' government, was sworn in as President. Given that Clerides exercised these powers under the provision of the constitution for situations where the President was absent, the coup must be classed as unsuccessful. By the end of the year, Makarios had returned to resume his presidential position, although to a now divided land. The coup attempt undoubtedly had lasting effects on the country, but it was not a successful employment of the strategy.

Nevertheless, in view of the possibility that these cases, being both European, might adversely affect the model and seriously reduce the plausibility of the theory, it was decided to re-estimate the model to include coups which had occurred by 16 July 1974. At that time the coup in Cyprus appeared successful. In addition, successful coups had also by then occurred in Rwanda, Afghanistan, Chile, Niger and Ethiopia. These seven new coups were now included in the dependent variable. The discriminant analysis was run and Equation 2 was obtained.

EQUATION 2

$$Y = 0{\cdot}785 - 0{\cdot}125\ X_1 + 0{\cdot}177\ X_2 - 0{\cdot}0158\ X_3 + 0{\cdot}000140\ (X_3)^2 + 0{\cdot}469\ X_4$$
$$\quad\quad (3{\cdot}63)\quad\quad (3{\cdot}22)\quad\quad (2{\cdot}61)\quad\quad (1{\cdot}81)\quad\quad\quad (5{\cdot}07)$$
$$- 0{\cdot}407\ X_5 - 0{\cdot}302\ X_6,$$
$$\quad (2{\cdot}97)\quad\quad (4{\cdot}00)$$
$$(R = 0{\cdot}746,\ R^2 = 0{\cdot}557).$$

The result was clearly very close to that of the model. In spite of the two 'problem' cases, the multiple correlation coefficient, R, had increased slightly (by 0·005). All the variables were correlated in the expected direction, and with the exception of $(X_3)^2$, all remained significant.

Running the analysis for those countries which had had successful coups by summer 1975, which now include Chad and the Malagasy Republic, but not Cyprus, the same constancy of the model was found (see Equation 3).

EQUATION 3

$$Y = 0{\cdot}787 - 0{\cdot}137\ X_1 + 0{\cdot}201\ X_2 - 0{\cdot}0166\ X_3 + 0{\cdot}000142\ (X_3)^2 + 0{\cdot}447\ X_4$$
$$\quad\quad (4{\cdot}09)\quad\quad (3{\cdot}75)\quad\quad (2{\cdot}82)\quad\quad (1{\cdot}87)\quad\quad\quad (4{\cdot}96)$$
$$- 0{\cdot}434\ X_5 - 0{\cdot}219\ X_6,$$
$$\quad (3{\cdot}25)\quad\quad (2{\cdot}97)$$
$$(R = 0{\cdot}762,\ R^2 = 0{\cdot}581).$$

It was clear that, on balance, those coups occurring since 1970, whether predicted by the model or not, supported the theory. Indeed, with the four further first coups in Uruguay, Southern Yemen, Mauritania and Liberia all predicted by the model, it is clear that the inclusion of coups until 1980 in the dependent variable would have achieved an R^2 even higher than 58 per cent.

Nevertheless, the coup in Portugal had not been explained by the model; nor had the 1967 coup in Greece and the subsequent coup in 1974. These failures of the model could not simply be attributed to error in the data. A yet further test for the possibility that the theory was applicable only to 'developing' countries and not to developed ones was therefore examined. A test of structural stability, the F ratio, was applied to the two subsets of 'developing' and 'developed' nations.[55] With $F = 0.567$, no significant difference between the coefficients of these relationships and those of the model were found, and the argument that the theory was general was not refuted.[56]

SUMMARY AND CONCLUSION

A probabilistic explanation for coups has been proposed which hinges on the vagaries of the world market and the resulting lack of governmental control over local economies dependent on exports. In particular, it has been argued that poor countries, highly specialized in and dependent upon the production for export of primary goods, were especially likely to succumb to coups. Three obstacles to coups taking place, even where these preconditions persisted, have been suggested: recent independence; not having had a coup before; and the presence of foreign troops.

A predictive model was generated in order to attempt to refute the testable hypothesis deduced from this theory. It failed to be falsified, withstanding tests

[55] For discussion of this test see Johnston, *Econometric Methods*, pp. 136–7.

$$F = \frac{Q_3/k}{Q_2/(m+n-2k)},$$

where Q_1 = ESS (Error sum of squares of the full data set)
Q_2 = ESS$_1$ + ESS$_2$ (ESS of developed countries only + ESS of developing countries only)
Q_3 = $Q_1 + Q_2$
and $n-k$ = degrees of freedom in the 'developing countries' data set,
$m-k$ = degrees of freedom in 'developed countries' data set.

If $F > F^1$ then the hypothesis that the three regressions were the same must be rejected. For 120 degrees of freedom and 8 variables, the score for $F^1 = 3.55$ at the 0.001 level of probability.

[56] Other categories of countries than these have also been suggested as being critically different from the rest. In particular, the countries of Latin America, of Africa, more narrowly of the tropical states of Africa, and more widely the 'new states' of Africa and Asia have been suggested as significantly different from other areas of the world with respect to coups. When the test for structural stability was applied in turn to these areas, in no case could a significant difference be found between the coefficients of the two subset functions and those of the model. With the score for F^1 remaining at 3.55, the results were the following: for Latin America, $F = 1.458$; for Africa, $F = 0.945$; for the new states of tropical Africa, $F = 0.858$; for the new states of Africa and Asia, $F = 1.110$. The test for structural stability applied to the new model generated by the 1970 data also showed no significant difference between them with $F = 0.364$.

of significance, examination of deviant cases, and tests for structural stability. It also produced many predictions which have already been confirmed: coups have now occurred in Rwanda, Afghanistan, Chile, Niger, Ethiopia, Chad, the Malagasy Republic, Uruguay, Southern Yemen, Mauritania and, most recently, Liberia.

The performance of the Model cannot, of course, prove the causal arguments derived from the probabilistic theory. It is hoped, however, that the fact that the testable hypothesis, with all its simplifications and problems of errors in the data, can withstand the many attempts to falsify it will be accepted as strong support for the theory.

If the theory is accepted, then a sorry conclusion must be drawn. The *coup d'état* is by no means a romantic political event. In general, it is the drastic response to an unstable and sometimes hopeless economic situation.