ECONOMIC DEPENDENCE AND POLITICAL VIOLENCE IN LATIN AMERICA: A CROSS-NATIONAL ANALYSIS USING CAUSAL MODELING

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摘　要

在社會科學的領域裡，政治暴力的研究途徑相當的多；近年來，經濟依賴的概念逐漸地被運用於低度發展國家，尤其是拉丁美洲國家的政治經濟分析。本研究的主要目的，即嘗試建構一個因果模型，以研究拉丁美洲國家經濟依賴與政治暴力的互動關係。藉著跨國資料的統計分析，我們發現只有前期的政治暴力規模及政府強制程度兩者，對於目前的政治暴力規模具有顯著且正面的影響，而其他獨立變項如經濟依賴、經濟扭曲、經濟成長與社經不平等，皆對同時期的政治暴力規模缺乏顯著的影響力。此外，針對拉丁美洲國家的經濟依賴與政治暴力間的互動關係，爲了建構一個更爲涵蓋性的理論模型，我們也提示未來研究的可能方向。

Abstract

In the discipline of social sciences, there are many approaches in the study of political violence. In recent years, the concept of economic dependence has been applied to the less developed countries, especially the Latin American countries. The purpose of this study is trying to construct a causal model linking economic dependence and political violence in the study of Latin American Politics. Using cross-national data, this statistical analysis showed that only the previous magnitudes of political violence and the levels of governmental coercion significantly positive effects on the present magnitudes of political violence. Other independent variables—economic dependence, economic distortion, economic growth, and socioeconomic

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inequality—do not have significant effects on our dependent variable. In constructing a more comprehensive model, we suggested some directions for the further study of the relationships between economic dependence and political violence in the Latin American countries.

I. Introduction

Latin America is an area of great political turbulence. Most of the Latin American countries aren't immune from the challenge of some kinds of political violence [1], and even more often than other areas. The political arena is repeatedly interrupted by events of political terrorism and assassination. Revolutions, civil wars, guerrilla wars, and coups d'etat have been the major means of political change. Moreover, people's political grievances are often expressed in terms of demonstrations and riots (Reynolds, 1974). According to one statistic, only 9 of 26 countries in Latin America hadn't had coups d'etat during the period of 1945 and 1978 (Luttwak, 1979). Another study showed that, from 1949 to 1969, there were 626 demonstrations and 1363 riots in 22 Latin American countries (Eckhart & Young, 1977). Why do the Latin American countries exhibit such great political instability? A systematic and comprehensive exploration of this subject would provide a fascinating insight in the understanding of Latin American politics.

In the discipline of social sciences, there are many approaches in the study of political violence [2]. Undoubtedly, all these approaches have had some contributions to the investigation of political violence. In recent years, however, the concept of economic dependence has been applied with increasing frequency to the less developed countries, especially the Latin American countries. From the colonial rule of Spain, Portugal, and Britain to neocolonial domination by Western Europe and the United States, Latin America has maintained its dependent position, and this is now even more excerbated than ever before. Both colonial and neocolonial rule placed all of Latin America in a situation of growing subjection and economic dependence in the expanding capitalist world system. The development of neocolonialism has meant neodependence for Latin America and a new transformation of the contemporary economic and class structure. The dominant classes of the Latin American countries, which now includes an industrial sector, are once more the junior partner of capitalist metropolis and favor policies which increase subjection and dependence and renew the development of underdevelopment (Frank, 1972). Finally, "the generation of structural underdevelopment...organize and dominate the domestic economic, political, and social life of the people" of Latin America (Frank, 1967).

Up to now, there has not been a great of qualitative change in the relationship

between Latin America and the advanced capitalist countries. The form of dependence has undergone important transformations, but the fact of Latin American economic subordination continues to lie at the core of the Latin American developmental experience (Kaufman et al., 1975). The closer the economic and political relations between the metropolis and its satellite—dominant classes of the Latin American countries, the more the economic and political policies of the latter intensify the development of underdevelopment (Frank, 1972). As Sunkel claimed, Latin American economies have become even "more dependent, more vulnerable, and more unstable" (Sunkel, 1972). Above all, the dependent position of the Latin American countries in the world economy would contribute to economic, social, and political distortion, and eventually political violence. Is the new approach—"dependency theory"—adequate for the explanation of widespread political violence in Latin America? Are there some relationships between economic dependence and political violence for the Latin America countries? How do they interact? It would be very meaningful to investigate these questions for constructing a more comprehensive theory of political violence.

In general, most of empirical research of "dependency theory" emphasizes economic and social consequences of economic dependence. There are few studies focus on exploring the relationship between economic dependence and political characteristics (kick, 1980). Though "dependency theory" originally concentrated on the study of the effects of economic dependence on economic performances, it has recently applied to the explanation of political phenomena in the less developed countries. Except for the "dependencia project" at Yale University, no study tried to formulate a structural model of "dependency theory". They only focused on the analysis of simple relationships using bivariate or multiple regression techniques. The purpose of this study, therefore, is trying to construct a causal model linking economic dependence and political violence in the study of Latin American politics. In this model, I want to examine not only the bivariate relationship between economic dependence and political violence, but also the multiple-structural relationships between relevant variables of economic dependence and political violence.

II. Conceptual Framework

There are some diversities in the arguments of different "dependency theorists", that can only imperfectly provide a precise theoretical model. Within the diversities, however, there is reasonably clear agreement on a set of analytical concepts and basic arguments. After an overview of "dependency theory" literatures, six independent variables should be included in the causal model of political violence

for Latin America. These variables are: economic dependence, economic distortion, economic growth, socioeconomic inequality, governmental coercion, and previous magnitudes of political violence.

Economic Dependence Some of the earlier "dependency theorists" treated class conflict and political violence as the direct result of characteristics of economic dependence (Frank, 1972; Cardoso & Faletto, 1979; Schmitter, 1971). They thought that economic dependence contributes to the intensity of class conflict which in turn promotes the magnitudes of political violence. By economic dependence, in accordance with Dos Santos, we mean "a situation in which the economy of certain countries is conditioned by the development and expansion of another economy...The relation of interdependence between two or more economies...assumes the form of dependence when some countries...can expand and be self-starting, while other countries...can do this only as a reflection of that expansion, which can have either a positive or a negative effect on their immediate development" (Dos Santos, 1970). In developing but dependent countries, the influence of economic dependence was not limited to the economic sphere. The social structures reflect the double edge of the economic system: its external links and internal roots. Therefore, social dynamics and social conflicts usually express both external interests and internal pressures. Foreign interests have internal expression through internal forces which have advantages in their presence (Cardoso & Faletto, 1979). Because the modern industrial system increases marginalization, it becomes "more difficult to channel popular pressures through existing organized structures like trade unions, political parties, and the state...They present a broad range of alternatives of political actions—from the creation of centers of insurrection to the reconstitution of the mass popular movement" (Cardoso & Faletto, 1979). As Kerbo has argued, because of the dominant classes of the countries at the core of the international politico-economic system and their motivation for continued dominance of the periphery, direct and international influence can be used to create the preconditions for political violence in the periphery when it is in the interest of these core actors (Kerbo, 1978). Paige also claimed that the world economic system and the resultant forms of agricultural production in underdeveloped countries have had the unintended effect of promoting political violence in those countries (Paige, 1975). And Gurr and Duvall have argued, "the poorer a nation, the more dependent on external capital and markets, the more susceptible it is to violent internal conflict" (Gurr & Duvall, 1973).

In the study of the relationship between economic dependence and political violence, there are some contradictory findings. Midlarsky and Tanter, analyzing the

relationship between the colonial nature of the Latin American economies and political instability, found that there is a positive relationship between the economic presence of the United States and the likelihood of revolutions in nondemocratic Latin American countries (Midlarsky & Tanter, 1967). Also in the study of eight Caribbean countries for the period 1948-1964, Doran reported that political instability and foreign aid has a strong positive correlation. He argued that instability within recipient countries attracts foreign aid into a region, which in turn stimulates the onset of additional domestic political violence (Doran, 1978). And Eckhardt and Young's study also supported the positive effect of eocnomic dependence on political violence for Latin America (Eckhardt & Young, 1977).

However, in a study of the Latin American countries, Duff and McCamant reported that there are no consistent relationships between foreign investment, foreign trade, and foreign aid and political violence in the 1950s and 1960s for all cases (Duff & McCamant, 1976). In addition, in the study of the Latin American countries, Kaufman and others also found no consistent effects of foreign trade and foreign investment on political instability (Kaufman et al., 1975).

While our review shows no wholly consistent relationshps between economic dependence and political violence, it is quite evident, according to the arguments of "dependency theory", that the magnitudes of political violence should be markedly influenced by a country's or region's economic dependence (Stohl, 1980). In this study, I accordingly hypothesize that there is a positive relationsip between economic dependence and political violence.

Economic Distortion Most "dependency theorists" argued that the connection between economic dependence and political violence is not so direct. They claimed that economic dependence contributes to economic distortion, which in turn promotes political violence. The historical and continuing fact of economic dependence, which was characterized by the penetration of foreign finance and foreign capital, and the predominance of trade and the development of export economies has led to deficiency in economic structure. For the less developed countries, most vital sectors of production are infused by foreign capital and technology, and even controlled by foreign countries. Foreign trade became of progressively greater importance to the less developed country's economy, and that trade often became highly concentrated upon one or a few industrial countries and, in exports, upon a few commodities. Above all, some sectors whose interests are consistent with the interests of the dominant classes of the periphery and the advanced capitalist countries were rapidly growing. Otherwise, other sectors were growing in a slower rate, and even completely

stagnating. The pattern of economic dependence, therefore, promotes a special kind of structural distortion. First, development is uneven, being much greater in some sectors than in others. Secondly, the economy is poorly integrated; that is, the various sectors tend to be poorly connected or articulated. Thirdly, the economy is marked by severe sectoral heterogeneity; that is, the returns to factors of production, especially labor, will be much greater in some sectors than in others (Duvall et al., 1981). In the analysis of 57 less developed countries, Evans and Timberlake reported that there is a positive relationship between economic dependence and growth of the tertiary sector (Evans & Timberlake, 1980). Also in the study of Sylvan et al., they found that there are positive relationships between all variables of economic dependence and economic distortion (Sylvan et al., 1983).

Moreover, those structural distortions of a country's economy would create a large potential for class conflict. Under pressure from external and domestic actors, the possibility of political violence will increase. Unfortunately, there is no empirical test dealing with the relationship between economic distortion and political violence. Since economic dependence contributes to economic distortion, however, it is reasonable to argued that there is a positive relationship between economic distortion and political violence.

Economic Growth Although some "dependency theorists" see no inconsistency between economic dependence and economic growth (Cardoso & Faletto, 1979; Stallings, 1972), most influential writers argue that economic dependence, and economic distortion eventually, has negative economic consequence; that is, an exploitative, "zero-sum" metropolitan-satellite relationship stifles the prospects of the satellite's economic growth. For the dependent position of Latin America, it reveals the asymmetry of productiv estructure. These structural distortions, in turn, reflect the asymmetrical way in which the periphery is integrated in the world market. As a result, these structural distortions contribute to the conspicuous disarticulation of the underdeveloped economy, and the blocking of their economic growth (Amin, 1974). As Frank declared, satellites experience their greatest economic growth and especially their most classically capitalist industrial development if and when their ties to their metropole are weakest (Frank, 1970). Vernon also claimed that the more capitalist penetration there is in a given developing country, the worse will be the damage to that country's effort to achieve economic growth (Vernon, 1971). Therefore, dependent countries must face lagging growth rates, a drain of resources, excessive rates of capital repatriation, burdensome foreign debts, and highly unstable economies geared to the ebb and flow of the world capitalist market economy (Kaufman et al., 1975).

In an analysis by Galtung, he found that the higher a state ranks on any of economic dependence measures, the lower its GNP per capita (Galtung, 1971). But Galtung's analysis focused on the level of economic development not the rates of economic growth, which would obscure the core of "dependency theory". In a study by Walleri, he reported that the higher the level of economic dependence, the lower the rates of economic growth (Walleri, 1975). By using panel regression technique, Chase-Dunn (1975), and Rapkin (1976) found that penetration by foreign capital retards economic growth. Focusing on 18 Latin American countries from 1960 to 1965, Alschuler concluded that commodity concentration and economic growth in terms of GNP per capita are negatively correlated (Alschuler, 1976). The study of Bornschier and Ballmer-Cao also reported that there is a negative relationship between foreign investment and economic growth for all of the less developed countries (Bornschier & Ballmer-Cao, 1978).

According to the study of Kaufman et al., however, they found that the more dependent countries in Latin America experienced greater annual average increases in GNP through the 1960s than did the less dependent or less penetrated countries (Kaufman et al., 1975). In addition, the study of Bornschier, Chase-Dunn, and Rubinson reported that foreign investment and foreign aid have had the cumulative effect of decreasing the relative rates of economic growth of countries, while a short-term effect of increasing the relative rates of economic growth of countries (Bornschier, Chase-Dunn, and Rubinson, 1978). And the study of Ray and Webster also found that there is a positive relationship between economic dependence and economic growth for the Latin American countries (Ray & Webster, 1978). Even though these studies suspected that economic dependence has negative effect on economic growth, most of studies supported the arguments of "dependency theory". Therefore, I hypothesize that there is a negative relationship between economic dependence and economic growth. There is no study looking at the relationship between economic distortion and economic growth. But according to the arguments of "dependency theory", it is also quite reasonable to hypothesize that economic distortion has a negative effect on economic growth.

Some conventional developmental theorists argued that rapid economic growth enhances aspirations and therefore tends to increase the total magnitude of social frustrations faster than the capacity of a society to satisfy them, and increase the possibility of political violence (Huntington, 1968; Gurr, 1970). Were that the case, countries which have higher rates of economic growth would be less stable than countries which have lower rates of economic growth. The study of Feierabend, Feierabend, and Nesvold found that there is a positive relationship between the rates

of economic growth and political instability (Feierabend, Feierabend, and Nesvold, 1969). However, there are some contradictory findings. According to Midlarsky and Tanter's study, they found a negative relationship between the rates of economic growth and "revolutions" in four Latin American countries, while a positive relationship emerges for ten countries in Asia (Midlarsky & Tanter, 1967). For more prosperous Latin American countries, Bwy reported a negative relationship between the rates of economic growth and political violence. In countries at a lower level of economic development, however, this relationship is reversed (Bwy, 1968). And, Flanign and Fogelman also found a negative relationsip between the rates of economic growth and political violence (Flanign & Fogelman, 1970).

According to "dependency theory", economic dependence and economic distortion retard the rates of economic growth. On the other hand, economic dependence and economic distortion also enhance the possibility of political violence. Following above arguments, it seems possible that there is a negative relationship between the rates of economic growth and the magnitudes of political violence; that is, the higher the rates of economic growth, the lower the magnitudes of political violence. We presume that economic growth increases the capacity of a society to satisfy those aspirations and therefore should tend to reduce social frustrations and the consequent political violence.

Socioeconomic Inequality Though some early "dependency theorists" emphasize the effects of economic dependence on economic performance, the main distinguishing feature of contemporary "dependency theory" is the argument that particular social and political consequences result from economic dependence, economic distortion, and low rates of economic growth and stagnation. In socioeconomic aspects, economic dependence, economic distortion, and economic stagnation lead to the suppression of interests of the laboring classes, and increasing inequality among social classes. They suggest that economic dependence produces and preserves a highly unequal system of social stratification and wealth within the Latin American countries. Even if Latin American countries' national income grows, it is argued that the benefits of this growth accrue largely to upper, middle, and working class elites, while the mass of the population becomes increasingly "marginalized" (Kaufman et al., 1975). These self-reinforcing economic results lead to increased marginalization and greater income disparities between and within classes. The development of social cleavages and inequality in the economic sphere leads to the rise of grievances of class against class and group against group within society. This latent conflict will be greater the more unequal the distribution of income and will generally be aggravated by changes

in the overall national income (Duvail et al., 1981), and eventually contributes to political violence.

The studies of Chase-Dunn (1975), Kaufman et al. (1975), and Rubinson (1976) all found that there is a positive relationship between foreign investment and socioeconomic inequality. And the studies of Chase-Dunn (1975) and Rubinson (1976) reported that foreign aid has positive effects on inequality. Also Bornschier, Chase-Dunn, and Rubinson's study found that there is a positive relationship between foreign investment and foreign aid and economic inequality (Bornschier, Chase-Dunn, and Rubinson, 1978). In analysis of the less developed countries, additionally, Evans and Timberlake found that there is a positive relationship between foreign investment and income inequality. Moreover, they argued that the growth of the tertiary sector is an important mechanism through which foreign investment is positively related to higher level of income inequality (Evans & Timberlake, 1980). Based on these findings, therefore, we can argue that economic dependence and economic distortion have positive effects on socioeconomic inequality, while economic growth has a negative effect on socioeconomic inequality.

Since Aristotle, most students in the social sciences have believed that political violence results from socioeconomic inequality. Russett's study found that there is a positive relationship between land inequality and violent political deaths (Russett, 1964). Midlarsky and Tanter also reported that land inequality has positive effect on political instability (Midlarsky & Tanter, 1967). In an analysis of the determinants of political instability, Barrows found that wealth inequality of ethnic group has a significant effect on political instability (Barrows, 1976). Also in the study of Sigelman and Simpson, they found that there is a positive relationship between economic inequality and political violence (Sigelman & Simpson, 1977). Therefore, the limited empirical evidence suggests a positive relationship between socioeconomic inequality and political violence.

Governmental Coercion Basically, "dependency theory" argues that the economic dependence of peripheral countries produces economic and social distortions within them. These distortions create a large potential for conflict. Restricted opportunity for individual mobility in the private economic sectors and the social life intensifies conflict over political office and threatens the tenure of political incumbents. At the same time, the reliance of governmental elites on foreign resources and support make them more dependent on the use of coercion. Furthermore, the state can be expected to recognize the potential explosiveness of the long run build-up of latent conflict and to buttress itself against this by expanding its coercive apparatus. In general,

there are three main motivations for resorting to coercion as a means of dampening manifest conflict. First, regimes have certain goals—such as limiting political activities and keeping conditions stable for foreign investors—which they want to satisfy, and coercion is one way of so doing. Secondly, because protest may disturb their regimes, coercion becomes a less finely calibrated instrument than an instinctive response to widespread turmoil. Finally, high levels of manifest conflict threaten the regime's tenure in power either because of the threat of overthrow by enraged masses or because persistent high levels of conflict can be seen by aspiring elites as proof of incompetence by the current regime and hence as excuse for a coup d'etat (Jackson et al., 1978). In a study by Bollen, he found that there is a negative relationship between economic dependence and the emergence of democratic political systems (Bollen, 1983). Although the study of Timberlake and Williams reported no evidence that investment penetration has a direct effect on the repressive activity of national governments, they found that investment dependence has a direct positive effect on the level of political exclusion, which in turn positively associates with a greater incidence of government repression (Timberlake & Williams, 1984). There is no empirical study dealing with the relationships between economic distortion, economic growth, and socioeconomic inequality on the one hand, and governmental coercion on the other hand. According to above arguments, however, we can hypothesize that economic distortion and socioeconomic inequality have positive effects on governmental coercion, while economic growth has negative effect.

The linkage of governmental coercion and political violence seems reasonable in research on political violence. Some studies found that there is a negative relationship between governmental coercion and political violence (Adams, 1970), and even curvilinear relationships (Bwy, 1968; Gurr, 1968). However, they treated coercive potential or capacity as governmental coercion. By governmental coercion here, I suggest the actual use of coercion instead of coercive capability. In the study of Feierabend and Feierabend (1972, 1973), Markus and Nesvold (1972), and Nesvold and Martin (1974), they found that there is a positive linear relationship between the actual extent of governmental coercion and political violence. Also Hibbs (1973), Gurr and Duvall (1973), and Shin (1978) found that actual use of governmental coercion has positive effect on political violence. In this study, therefore, I hypothesize that there is a positive relationship between governmental coercion and political violence.

Previous Magnitudes of Political Voilence Some scholars have argued that there

is a reciprocal relationship between governmental coercion and political violence. And also Jackson and others argue that the interaction of governmental coercion and political violence is identified with many dependent countries (Jackson et al., 1978). In developmental sequences, however, it is quite possible that governmental coercion has a positive effect on political violence in the same period. Meanwhile, political violence of the previous period positively influences the levels of governmental coercion and the magnitudes of political violence in the following period. In the study of Gurr and Duvall, they concluded that previous magnitudes of political violence show a positive relationship to present magnitudes of political violence (Gurr & Duvall, 1973). Other studies also supported the argument of violence-breed-violence (Adams, 1970; Hibbs, 1973; Duvall & Welfling, 1973; Cooper, 1974; Lichbach & Gurr, 1981). The reason is, in such political culture people often "carry the burden of profound grievances throughout their lives and pass them on to their children" (Gurr, 1970).

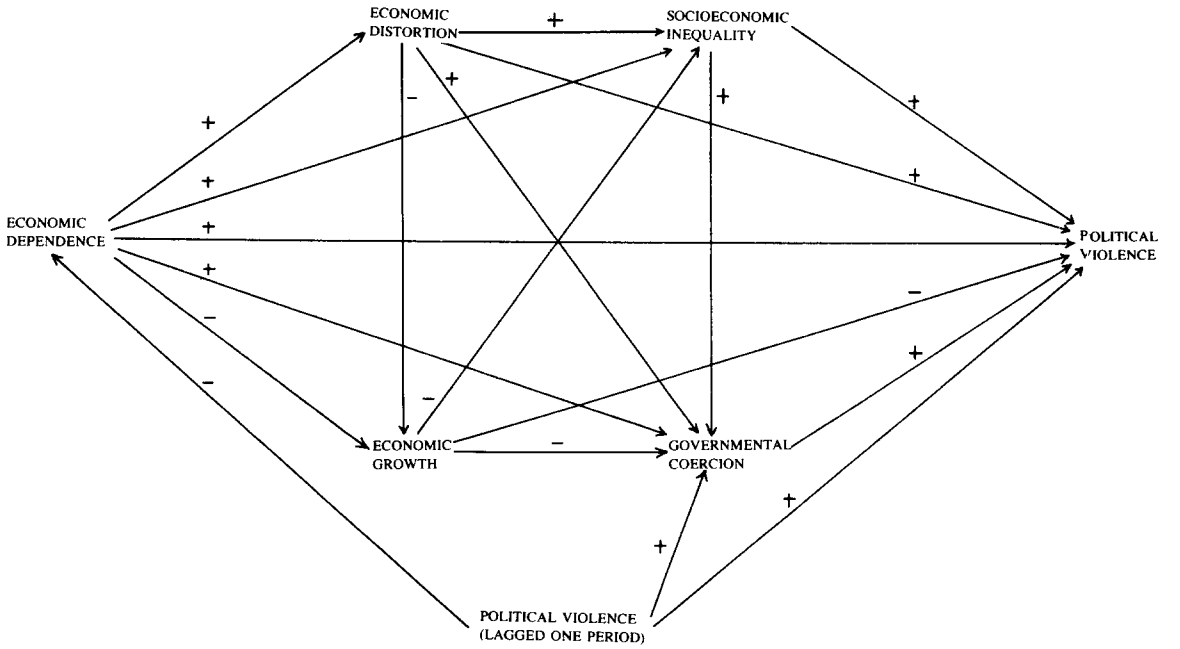
Moreover, the magnitudes of political violence will influence the level of economic dependence in the following period. For the foreign investors or actors, the stability of investment climate is an important factor for the introduction of new capital, finance, and technology. Under great magnitudes of political violence, it will reduce the intention of investment of foreign actors. For countries which have high magnitudes of political instability, the output of each economic sectors will dramatically decrease, and eventually the magnitude of exports and the importance of trade will decrease. Therefore, the greater the magnitudes of political violence, the lower the level of economic dependence for the less developed countries; that is the previous magnitudes of political violence have negative effects on the present level of economic dependence.

According to the above arguments, in sum, we can formulate a causal model of the relationships between economic dependence and political violence in the following. In this diagram, plus(+) sign indicates positive relationship, and minus(−) sign negative relationship.

III. Data and Measurement

As the title indicated, this study focuses on the Latin American countries. For lack of precise and complete data and the definitive break with the capitalist world, it seems quite reasonable to exclude Cuba. Therefore, also in consideration of completeness of data available for each country, this study choose 22 Latin American countries for cross-national analysis [3]. Except for one variable—previous magnitudes

Figure 1: Causal Diagram for Political Violence Model



of political violence—the period I collect data for this study is mainly from 1973 to 1977.

According to "dependency theory", economic dependence basically consists of trade dependence and capital dependence. Therefore, our operational measure of economic dependence was designed from a combination of five relevant indicators. These indicators are: financial penetration, capitalist penetration, partner concentration, trade centrality, and commodity concentration. In case of financial penetration, we focus on the percentage of the stock of financial resources which are provided from abroad. In measuring financial penetration, I collected data for the stock of disbursed public debt from the World Bank's *World Tables* (1980). Because there is no value for the total financial stock of a country at a given time, I have chosen to approximate this level in dividing by gross domestic product (GDP). The figures for GDP are also available in the World Bank's *World Tables* (1980).

For capitalist penetration, I want to look at the percentage of foreign capital in a given country. We measure it by collecting data for the stock of net long-term capital and divided by gross domestic capital formation. Both figures of foreign capital

and total capital are available from the World Bank's *World Tables* (1980).

The third indicator of our measurement of economic dependence is partner concentration, which indicates the concentration of a less developed country's international economic trade relations on a particular central economy. In measuring partner concentration, we want to look at the percentage of trade with the largest trading partner of a country. We collected data for GDP of trade to the largest partner from the United Nations' *Yearbook of International Trade Statistics* (1977-80). Then, we divided this figure by total GDP of Trade in a given country. The figures of total GDP of trade for each country are available from the International Monetary Funds' *International Financial Statistics Yearbook* (1981).

Another important indicator of economic dependence is trade centrality, which refers to the relative importance of foreign trade. Because we are here concerned with the impacts of both imports and exports, we conceptually take an average value of exports and imports as the size of the foreign trade sector and divided it by GDP. The figures of GDP of imports and exports are collected from the International Monetary Funds' *International Financial Statistics Yearbook* (1981).

The last indicator of our measurement of economic dependence is commodity concentration, which indicates the extent of concentration on a small number of products in the export profile of the peripheral economy. Since the largest commodity accounted for over 50 percent of total exports for many peripheral countries, we measure it only based on exports of the top three commodities relative to total exports. In measuring this indicator, we collected data for GDP of top three commodities exports and divided it by total GDP of exports for each country. These figures are available from two sources: the World Bank's *World Tables* (1980) and the United Nations' *Yearbook of International Trade Statistics* (1975-79).

For all these indicators of economic dependence—financial penetration, capitalist penetration, partner concentration, trade centrality, and commodity concentration, the data I collected for each country are all from 1973 to 1977. And I compute the scores of these indicators by averaging the values of the five years. The procedure for constructing the index of economic dependence was to sum up the scores of these five indicators of economic dependence. Becuase each indicator should equally contribute to the final index of economic dependence, however, the scores for these five indicators were transformed into Z-scores. Then, the transformed Z-scores of these five indicators were added and averaged to produce an index of economic dependence.

For the underdeveloped economy, the most significant characteristic of economic distortion is uneven development, which refers to the extent to which different sectors

of the economy are at different levels of economic activity and capital formation. The underlying theoretical notion is that the transformation of the peripheral economy toward a capitalist mode of production occurs at very different rates for different sectors of the economy. Because this pattern of differential growth tends to be unbalancing—capital accumulation is greatest where productive capacity is already largest—the result is ever-increasing levels of uneven development (Duvall et al., 1981). Therefore, we measure uneven development as the indicator of economic distortion by looking at output per worker for each sector. Here we collect data for three aggregated sectors: (1) agriculture, (2) industry, and (3) services. In measuring the variation among levels of output per worker across these sectors, we computed the Gini Index of Sectoral Inequality for each country [4]. The data concerning the percentage of labor force and the percentage of GDP for each sector in Latin America are based on the world Bank's *World Development Report* (1979) and the United Nations' *Yearbook of National Accounts Statistics* (1981). Because of the constriction of data available for each country, I only computed a Gini Index of Sectoral Inequality for the time point of 1977.

For measuring economic growth, we chose GDP per capita as our indicator. We computed the annual growth rates of GDP per capita from 1973 to 1977 and then averaged them. The figures of GDP per capita and annual growth rate are computed from the United Nations' *Yearbook of National Accounts Statistics* (1975-80) and the World Bank's *World Tables* (1976 & 1980).

The major problem of our measurement of variables is socioeconomic inequality. Most scholars suggested and have used income inequality as an indicator of socioeconomic inequality. Unfortunately, because accurate data on income inequality are largely nonexistent for most of the less developed countries, we need to estimate inequality from other indicators (Russett et al., 1981). As some scholars suggested, since income distribution varies substantially with different levels and patterns of economic development and has great impact on social and economic aspects of life, we can use health and population patterns, as well as national income, as indicators of income inequality. But as they also argued that the data for income distribution, which is their major variable in estimating income inequality, are unreliable for the less developed countries, it seems suspect to accept it as our measurement of socioeconomic inequality (Russett et al., 1981). In addition, Morris suggested that the Physical Quality of Life Index (PQLI), which is based on an average of life expectancy, infant mortality, and literacy rates, can be a good indicator of social and economic development (Morris, 1979). It meant that the higher the PQLI, the more wealth and equal for the people in a given society. In other words, a lower

score on PQLI would mean a higher level of socioeconomic inequality in a given society. It seems acceptable to use the PQLI as an indicator of our measurement of socioeconomic inequality. Here we use negative of the PQLI as our indicator of socioeconomic inequality. The figures of the PQLI for the Latin American countries are available from Sewel and others' *The United States and World Development Agenda 1980.* For the reason of data availability and comparability, the figures of the PQLI we used in this study only focus on 1977.

For governmental coercion, here I focus on its actual use. In constructing the index of governmental coercion, the indicator we used was imposition of sanctions. The annual data for this indicator is available from Taylor and Jodice's *World Handbook of Political and Social Indicators* (1983). The period of our data is also from 1973 to 1977. For constructing the index of governmental coercion, we summed up it for the five year period and averaged them.

In constructing the index of the magnitudes of political violence, we chose four indicators from Taylor and Jodice's *World Handbook.* These indicators are: protest demonstrations, political strikes, riots, and armed attacks. For measuring previous magnitudes of political violence, we summed up the annual events data form 1968 to 1972. In the measurement of present magnitudes of political violence, we computed the freqency of the period of 1973 and 1977. The procedure for constructing index of the magnitudes of political violence, both previous and present, are exactly the same as the index of economic dependence. We summed up each indicators for the five year period and transformed them into Z-scores. Then, we averaged the Z-scores of these four indicators in constructing the index of the previous and present magnitudes of political violence. In accordance with some scholars, moreover, two basic forms of political violence are also distinguished in our empirical study—that is, political protest and political rebellion (Lichbach & Gurr, 1981). For measuring political protest, we choose protest demonstrations and political strikes as its indicators. In the measurement of political rebellion, we use riots and armed attacks as two indicators. The procedure for constructing the index of the magnitudes of political protest and political rebellion, both previous and present, are fully the same as political violence.

IV. Findings

Using the technique of path analysis, we report the results in TABLES 1 to 6. Although we have combined five indicators of economic dependence, in our report of the statistical analysis we also separately present these indicators in substitution

for economic dependence in our equations of estimation. At first, we look at the effects of previous magnitudes of political protest (PRO72) on economic dependence—financial penetration (FINPEN), capitalist penetration (CAPPEN), partner concentration (PARCON), trade centrality (TRACEN), commodity concentration (COMCON), and economic dependence (ECODEP). From TABLE 1, we find that previous magnitudes of political protest have negative effects on all of indicators of economic dependence, while only two of them—partner concentration and trade centrality—are significant at .05 level. And for political rebellion (REB72), we find that it has negative effects on all of these indicators, while no one is significant at .05 level. In considering the effects of previous magnitudes of political violence (VIO72), we find the same negative impacts as political protest and political rebellion, and it is significant at .05 level only in the case of trade centrality. But for our combined index of economic dependence, we find a more satisfactory results; that is, there are significantly negative relationships between the previous magnitudes of political protest, political rebellion, and political violence on the one hand, and the present level of economic dependence on the other hand. Therefore, we can claim that the greater the previous magnitudes of political violence, the lower the level of economic dependence for the Latin American countries.

Table 1. Determinant of Economic Dependence

DEPENDENT VARIABLES	PRO72			REB72			VIO72		
	t	beta	R^2	t	beta	R^2	t	beta	R^2
FINPEN	−1.014	−.221	.049	− .709	−.157	.025	− .881	−.193	.037
CAPPEN	−1.883	−.388	.151	−1.562	−.330	.109	−1.761	−.366	.134
PARCON	−2.309	−.459*	.211	−1.571	−.331	.110	−1.976	−.404	.163
TRACEN	−2.205	−.442*	.196	−2.073	−.421	.177	−2.190	−.440*	.193
COMCON	−1.484	−.315	.099	−1.144	−.248	.061	−1.343	−.288	.083
ECODEP	−3.454	−.611**	.374	−2.567	−.498*	.248	−3.074	−.566**	.321

* Significant for $\alpha = .05$
**Significant for $\alpha = .01$

Is the level of economic distortion (ECODIST) positively influenced by the level of economic dependence? From TABLE 2, among five indicators of economic dependence, it is found that only partner concentration and commodity concentration have positive effects on the levels of economic distortion at .05 significant level. The extent of capitalist penetration has a positive impact on economic distortion,

but not significant at .05 level. In addition, financial penetration seems to have no effect on economic distortion (beta=.001), while trade centrality has weakly negative effect on economic distortion. For economic dependence, we also find that it has a positive effect on economic distortion, though it is not significant at .05 level.

Table 2. Determinant of Economic Distortion

FINPEN		CAPPEN		PARCON		TRACEN		COMCON		ECODEP			
t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	F	R^2
.005	.001											.000	.000
		1.118	.243									1.250	.059
				2.209	.443*							4.880*	.196
						−.937	−.205					.878	.042
								2.224	.445*			4.946*	.156
										1.461	.311	2.135	.096

*Significant for $\alpha=.05$

In considering the determinants of economic growth (GROWTH), we found that both economic dependence and economic distortion are not good predictors of it. Except that commodity concentration has a positive effect on economic growth, as shown in TABLE 3, we find that there is a negative relationship between other four indicators of economic dependence and economic growth. However, they are all not significant at .05 level. In the case of economic dependence, we also find that it has negative effect on economic growth, though not significant at .05 level. Unexpectedly, though it is also not significant at .05 level, we find that there is a positive relationship between economic distortion and economic growth. In general, economic dependence and economic distortion don't have significant influences on economic growth for the Latin American countries, which challenge our hypotheses.

Table 3. Determinants of Economic Growth

FINPEN		CAPPEN		PARCON		TRACEN		COMCON		ECODEP		ECODIST			
t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	F	R^2
−1.229	-.265											1.043	.224	1.298	.120
		−1.491	−.325									1.389	.303	1.673	.150
				−1.263	−.302							1.495	.358	1.341	.124
						−1.118	−.247					.783	.173	1.160	.109
								1.594	.374			.246	.058	1.840	.162
										−1.228	−.278	1.371	.310	1.296	.120

All not significant for $\alpha=.05$

In the explanation of socioeconomic inequality (INEQUALITY), more diverse results are found regarding "dependency theory". As shown in TABLE 4, we find that financial penetration, capitalist penetration, and trade centrality have negative effects on socioeconomic inequality, while partner concentration and commodity concentration positively contribute to socioeconomic inequality. With regard to economic dependence, we find that there is a negative relationship between it and socioeconomic inequality; that is, the higher the level of economic dependence, the lower the level of socioeconomic inequality. However, they are all not significant at .05 level.

Table 4. Determinants of Socioeconomic Inequality

FINPEN		CAPPEN		PARCON		TRACEN		COMCON		ECODEP		ECODIST		GROWTH			
t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	F	R^2
−.562	−.101											3.771	.669**	.096	.018	5.197**	.464
		−.358	−.068									3.645	.684**	.127	.024	5.082*	.459
				.099	.020							3.181	.653**	.274	.051	5.010*	.455
						−.717	−.130					3.611	.643**	.074	.013	5.318**	.450
								.721	.147			3.165	.608**	−.004	−.001	5.322**	.470
										−.311	−.059	3.576	.684**	.163	.030	5.063*	.458

* Significant for $\alpha = .05$
**Significant for $\alpha = .01$

Moreover, we also find that economic distortion has a positive effect on socioconomic inequality in every equation, and all are significant at .01 level. However, economic growth don't have significant impact on socioeconomic inequality. Except for the equation using commodity concentration as a substitution of economic growth, economic growth has a positive effect on socioeconomic inequality in other equations, while the relationships are very weak and not significant at .05 level.

For governmental coercion (COERCION), only one variable has a significant effect. From TABLE 5, we find that, except for the equation including trade centrality, the previous magnitudes of political protest, political rebellion, and political violence have positive effects on the levels of governmental coercion at .05 or .01 significant level. In addition, financial penetration, capitalist penetration, and commodity concentration all have positive effects, while partner concentration and trade centrality have negative effects on governmental coercion. The combined variable of economic dependence has a negative impact on governmental coercion; in other words, the lower the level of economic dependence, the higher the levels of governmental coercion.

Table 5. Determinants of Governmental Coercion

PRO72		REB72		VIO72		FINPEN		CAPPEN		PARCON		TRACEN		COMCON		ECODEP		ECODIST		GROWTH		INEQUALITY			
t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	F	R^2
2.654	.627*					.613	.129											.038	.011	.753	.160	.250	.067	1.987	.383
2.670	.640*							.656	.146									−.049	−.015	.786	.169	.224	.060	2.004	.385
2.284	.541*									−.917	−.214							.290	.088	.417	.087	.211	.055	2.134	.400
1.034	.276											−1.962	−.475					−.590	−.170	.432	.082	−.155	−.038	3.087*	.491
2.745	.646*													.872	.210			−.024	−.007	.257	.057	.015	.004	2.109	.397
2.127	.585*															−.094	−.024	.067	.020	.599	.127	.168	.045	1.871	.369
		3.053	.623**			.570	.113											−.368	−.099	1.251	.250	.326	.083	2.499	.438
		3.122	.647**					.773	.163									−.485	−.132	1.337	.270	.318	.080	2.594	.448
		2.805	.562*							−1.091	−.236							.040	.011	.827	.162	.290	.072	2.801	.467
		1.672	.367									−1.958	−.427					−.737	−.182	.719	.130	−.090	−.022	3.723*	.538
		3.071	.623**											.658	.150			−.429	−.116	.846	.173	.138	.035	2.537	.442
		2.583	.584*													−.215	−.049	−.264	−.073	1.031	.208	.235	.060	2.401	.429
				2.926	.636**	.617	.125											−.115	−.032	.992	.202	.288	.075	2.328	.421
				2.972	.656**			.617	.160									−.218	−.062	1.053	.217	.270	.069	2.388	.427
				2.602	.562*					−.982	−.219							.207	.059	.606	.121	.246	.062	2.525	.441
				1.394	.339							−1.894	−.438					−.600	−.160	.554	.102	−.119	−.029	3.409*	.516
				2.981	.644**									.794	.184			−.185	−.052	.527	.111	.069	.018	2.412	.430
				2.422	.600*											−.098	−.024	−.061	−.018	.812	.167	.202	.053	2.203	.408

* Significant for = .05

**Significant for = .01

For economic distortion, we find some diverse results. In the case of the previous magnitudes of political protest, also from TABLE 5, it is found that there is a weakly negative relationship between economic distortion and governmental coercion for the equations including capitalist penetration, trade centrality, and commodity concentration as a variable; a insignificantly positive relationship for financial penetration, partner concentration, and economic dependence. For political rebellion and political violence, except for the equation including partner concentration as a variable, there is a weakly negative relationship between economic distortion and governmental coercion.

In addition, neither economic growth or socioeconomic inequality have significant influences on governmental coercion. Also from TABLE 5, it is found that economic growth has a insignificantly positive effect on governmental coercion. And we also find that, except for the equations including trade centrality as a variable, there is a positive relationship between socioeconomic inequality and governmental coercion, while not significant at .05 level in all equations. In sum, except for the equations including trade centrality as a variable, these five independent variables are not significant at .05 level in the explanation of governmental coercion for the Latin American countries.

At last, we consider the whole model of political violence for the Latin American countries. From TABLE 6, it is discovered that only the previous magnitudes of political protest, political rebellion, and political violence, and the present levels of governmental coercion have significantly positive effects on the present magnitudes of political protest (PRO77), political rebellion (REB77), and political violence (VIO77) and are significant at or above .05 level in all equations. All five indicators of economic dependence, except for financial penetration and trade centrality in the case of political rebellion, have positive effects on the present magnitudes of political protest, political rebellion, and political violence. And the combined variable of economic dependence also has a positive impact on the present magnitudes of political protest, political rebellion, and political violence. However, they are all not significant at .05 level.

Additionally, it is noteworthy that both economic distortion and economic growth have negative effects on the present magnitudes of political protest, political rebellion, and political violence, while they are not significant at .05 level in all equations. And also from TABLE 6, we find that there is a very weakly positive relationship between socioeconomic inequality and the present magnitudes of political protest, political rebellion, and political violence. From this model, therefore, we find only political variables—the previous magnitudes of political protest, political rebellion, and political violence, and the levels of governmental coercion—have significant

Table 6. Determinants of Political Violence

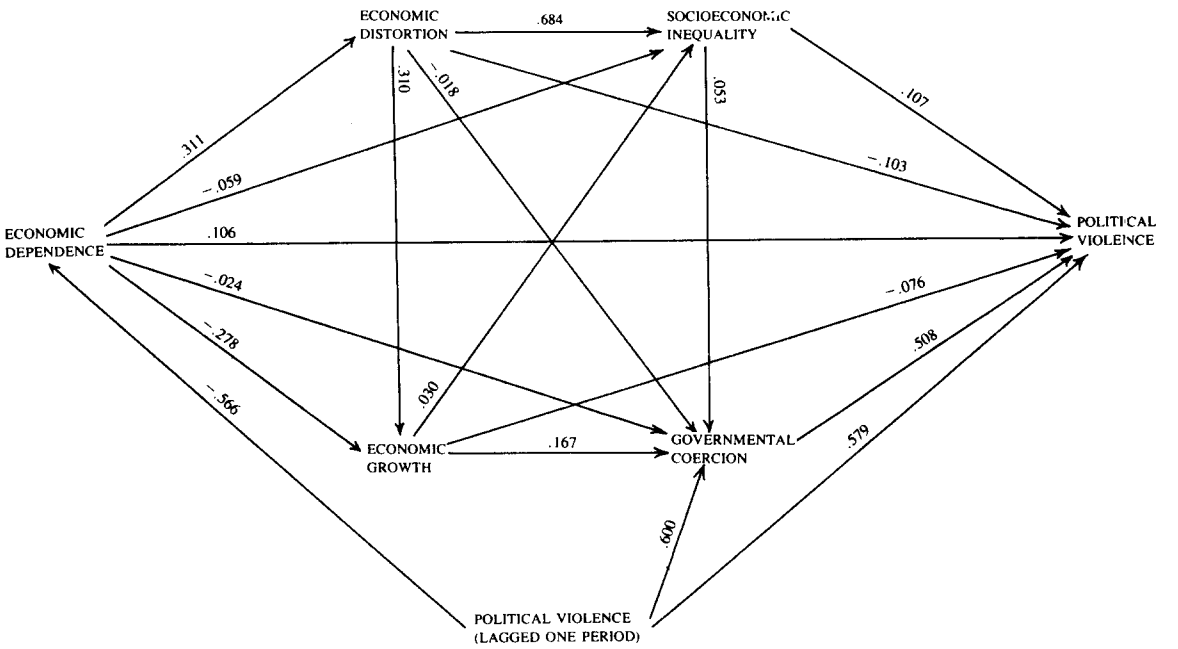
PRO72		REB72		VIO72		FINPEN		CAPPEN		PARCON		TRACEN		COMCON		ECODEP		ECODIST		GROWTH		INEQUALITY		COERCION			
t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	t	beta	F	R^2
4.165	.537***					.655	.063											−.898	−.122	−.649	−.064	1.465	.179	4.521	.514***	18.431***	.881
3.971	.527**							.271	.028									−.899	−.125	−.709	−.072	1.392	.171	4.515	.520***	17.949***	.878
4.048	.516**									.002	.000							−.835	−.119	−.806	−.079	1.370	.168	4.492	.525***	17.849***	.877
4.108	.563***											.805	.108					−.535	−.077	−.782	−.074	1.520	.186	4.580	.569***	18.727***	.882
4.525	.568***													1.358	.147			−1.042	−.136	−1.301	−.127	1.189	.140	4.482	.493***	20.350***	.891
4.244	.581***															1.056	.119	−.990	−.132	−.660	−.062	1.479	.176	4.800	.528***	19.362***	.886
		2.899	.480*			−.431	−.056											−.254	−.044	−.940	−.127	.068	.011	2.996	.483**	8.914***	.781
		3.008	.515**					.364	.051									−.374	−.067	−.666	−.092	.164	.027	2.837	.462*	8.875***	.780
		3.320	.496**							1.683	.230							−.834	−.140	−.557	−.068	.064	.010	3.542	.541**	10.905***	.814
		2.782	.469*									−.536	−.092					−.425	−.076	−.925	−.120	.033	.005	2.436	.431*	8.991***	.782
		3.120	.514**											.560	.083			−.396	−.069	−.985	−.133	.037	.006	2.847	.459*	9.011***	.783
		3.060	.525**													.516	.076	−.401	−.071	−.699	−.093	.166	.027	2.996	.478**	8.975***	.782
				4.056	.530***	.074	.007											−.620	−.084	−.930	−.095	.794	.100	4.152	.504***	17.074***	.872
				4.096	.546***			.429	.045									−.691	−.095	−.798	−.082	.832	.104	4.087	.495***	17.307***	.874
				4.368	.536***					1.077	.118							−.926	−.127	−.778	−.075	.772	.093	4.502	.535***	18.580***	.881
				3.895	.532**							.077	.010					−.562	−.080	−.971	−.096	.793	.101	3.840	.509**	17.075***	.872
				4.454	.564***									1.098	.122			−.789	−.104	−1.328	−.133	.625	.076	4.080	.480***	18.640***	.882
				4.292	.579***											.943	.106	−.772	−.103	−.783	−.076	.874	.107	4.356	.508***	18.227***	.879

* Significant for = .05
** Significant for = .01
***Significant for = .001

influences on the present magnitudes of political protest, political rebellion, and political violence, while economic and social variables—economic dependence, economic distortion, economic growth, socioeconomic inequality—don't have significant effects on the present magnitudes of political protest, political rebellion, and political violence.

For a comprehensive understanding of our findings, I put these standardized regression coefficients or beta weights into the causal model of political violence; that is FIGURE 2. In this figure, we exclude the five components of eocnomic dependence and separate forms of political violence—political protest and political rebellion, and only provide the combined variable of economic dependence and political violence.

Figure 2: Path Diagram for Political Violence Model



V. Summary and Conclusions

Does this model suitable to the explanation of political violence for the Latin American countries? From the above evidence of statistical analysis, we can summarize our findings in the following:

(1) First of all, the effects of two distinguished forms of political violence—political protest and political rebellion— are similar to the effects of political violence.

(2) Though the previous magnitudes of political violence don't have significant effects on separate indicators of economic dependence except in the case of trade centrality, it has a significant effect on composite economic dependence.

(3) Economic dependence doesn't have a significant influence on economic distortion. For its five indicators separately, only partner concentration and commidity concentration have positively significant effects on economic distortion, which support our hypothesis.

(4) In the determinants of economic growth, no independent variables in our equations have significant effects on it. However, economic distortion has a positive effect on eocnomic growth, which is opposite to our argument.

(5) For socioeconomic inequality, only economic distortion has a significant influence among all independent variables. Moreover, eocnomic dependence has a negative effect and economic growth a positive effect on socioeconomic inequality which are in opposition to our hypotheses, though not significant at .05 level.

(6) Considering the determinants of governmental coercion, only the previous magnitudes of political violence have significantly positive effects. When including all five independent variables, there is no significant evidence supporting our argument. Moreover, economic distortion unexpectedly has a negative effect on governmental coercion.

(7) For the determinants of political violence, finally, only the previous magnitudes of political violence and the levels of governmental coercion have significantly positive effects on the present magnitudes of political violence. Other independent variables—economic dependence, economic distortion, economic growth, and socioeconomic inequality—don't have significant effects on the present magnitudes of political violence. Moreover, the infulence of economic distortion on political violence is negative, which is opposite to our hypothesis.

Based on these findings, it is found that some results are support for our model of political violence for the Latin American countries, but others do not. These contradictory findings may result from some weakness of our political violence model. First, let's look at the formulation of model. In our model, the biggest problem lies in the effects of eocnomic distortion. From our preliminary test, we find that the

effects of economic distortion on economic growth, governmental coercion, and political violence are in opposition to our hypotheses. In the short-term, economic distortion may contribute to economic growth since it increases the total GDP of a society as a whole in spite of uneven development of economic structure. Its negative impact on economic growth may be present only in the long-term. In looking at the relationships between economic distortion and governmental coercion and political violence, we may have oversimplified their relationships. It may be possible that there are no direct relationships between economic distortion and governmental coercion and political violence, or even that they are correlated.

On the other hand, the impact of economic dependence on socioeconomic inequality may be negative in the short-run, because economic dependence will contribute to total growth of national income and personal income. Its positive influence on socioeconomic inequality may effect only in the long-run. For economic growth, we find that it has positive effects on socioeconomic inequality and governmental coercion. Huntington argued that rapid economic growth may increase but not decrease the level of socioeconomic inequality in a given society (Huntington, 1968). Moreover, it is also possible that there is a curvilinear relationship between economic growth and socioeconomic inequality; that is, economic growth increases the level of socioeconomic inequality first and thereafter decrease it. In consideration of the effect of eocnomic growth on governmental coercion, we find that there is a positive relationship between these two variables. For rigid and authoritarian political systems, economic growth may enhance the ability of governing and therefore contribute to the levels of governmental coercion. Certainly, economic growth may also have a negative effect on governmental coercion in the long-term, since economic growth may increase the autonomy of people and the extent of democratic participation. In addition, the previous magnitudes of political violence may have negative effect on economic growth, which we also must deal with in our future study.

Moreover, we only consider recursive relationships between independent and dependent variables in our model. It may be a great mistake. As Jackson et al. argued, governmental coercion and political violence interact with and reinforce each other in the dependent countries (Jackson et al., 1978). Therefore, though governmental coercion contributes to political violence, political violence also increases the levels of governmental coercion. In addition, because the higher the level of governmental coercion in a society is, the dominant classes or government will more dependent on foreign resources and support. Therefore, it will enhance the level of economic dependence; that is, the levels of governmental coercion have positive effects on the level of economic dependence. In this case, we must take into account the non-

recursive relationships between variables in order to constructing a more comprehensive theory of political violence.

Moreover, we may miss some important variables in our model of political violence. In criticism of "dependency theory", Smith argued that we need to consider internal forces as well as external forces in the study of politics of the less developed countries (Smith, 1979, 1981). Among these internal forces, the role of state is the most important one. It may intervene in the relationships between economic dependence, economic distortion, and economic growth (Caporaso, 1980; Sloan, 1977). On the other hand, we also need to take account some non-economic dependencies such as military, political, and cultural dependence, which may intervene in the relationships between economic dependence and its alleged conseguences (Kaufman et al, 1975).

Certainly, the weakness of our model may result from the operationalization of concepts. Some concepts may require refinement and redefinition in future study. For example, uneven development may not a good indicator of economic distortion. Economic distortion may be more complicated than we thought before. As Amin argued, there are threefold "structural distortions" of the dependent countries: (1) a distortion toward export activities, which absorb the major part of the capital arriving from the center; (2) a distortion toward tertiary activities, which arises from both the special contradictions of peripheral capitalism and the original structures of the peripheral formations; and (3) a distortion in the choice of branches of industry, toward light branches, and also, to a lesser degree, toward light techniques (Amin, 1974). In addition, the indicator of socioeconomic inequality is also a weakness of this study. The negative value of the PQLI may not be a good indicator of socioeconomic inequality. Under the circumstances of sufficient data available for the less developed countries, we need to find more powerful indicators for both economic distortion and socioeconomic inequality in future study.

Above all, we need to use longitudinal rather cross-sectional data in our future study of Latin American politics. Moreover, case studies and in-depth comparison are also suggested in its future study because of its complex cultures of heterogenous origins in Latin America.

In sum, in future study, we need to formulate our model of political violence more precisely; that is, considering all possible variables and their both recursive and non-recursive relationships. Additionally, some concepts also require refinement and redefinition in a more precise way. Finally, using longitudinal in stead of cross-national data in the future study in constructing a comprehensive theory of political violence.

Endnotes

1. In accordance with Nieburg, I defines political violence as "acts of disruption, destruction, injury whose purpose, choice of targets or victims, surrounding circumstances, implementation, and/or effects have political significance, that is tend to modify the behavior of others in a bargaining situation that has consequences for the social system". See H. L. Nieburg, *Political Violence: The Behavioral Process* (New York, N.Y.: St. Martin's Press, 1969), p. 13. Moreover, I only focus on domestic political violence rather than international political violence in this study.

2. A more detailed overview of these approaches see: E. Zimmermann, *Political Violence, Creses, and Revolution: Theories and Research* (Cambridge, Mass.: Schenkman Publishing Co., 1983), especially chap. 5.

3. These countries are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, and Venezuela.

4. To compute Gini Index of Sectoral Inequality, I use the formula suggested by Taylor and Jodice's *World Handbook of Political and Social Indicators: Vol. 1*, 3rd ed., p. 139. The formula is:

$$\text{Gini} = \sum_{i=1}^{n} X_i Y_{i+1} - \sum_{i=1}^{n} X_{i+1} Y_i$$

where X are cumulative percentage of labor force and Y are cumulative percentage of GDP for economic sectors, and n equals the numbers of sectors.

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