

Corruption in Latin America:  
Political, Economic, Structural, and Institutional Causes

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## Abstract

Lauren Biddle: Corruption in Latin America: Political, Economic, Structural, and Institutional Causes

(Under the direction of Evelyne Huber)

This work examines the causes of corruption in eighteen Latin American countries from 1994 to 2005. With Transparency International's Corruption Perceptions Index as the dependent variable, this study utilizes a pooled cross-sectional times series design to link corruption levels with a number of explanatory variables. There is evidence that economic development, inequality, trade, structural reforms index, democracy, federal structure, and ethno-linguistic fractionalization have significant effects on corruption. However, resource exports, age of democracy, and public sector size do not appear to affect corruption levels. This investigation draws on previous research on corruption but differs through having an exclusively Latin American focus and through its use of a time series design.

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## **Introduction**

With the success of the third wave of democratization in Latin America, widespread structural reforms, and second-generation reforms, there is again an emphasis on deepening democracy. Various strands in the political science literature deal with different threats to consolidating democracy and ways to overcome these threats. A term that comes up over and over again in a huge range of works is corruption. From the preliminary research on the political costs of corruption (Seligson 2002; Anderson & Tverdova 2003), it appears as though high corruption levels are detrimental to democracy because they decrease citizens' confidence in government and regime legitimacy. This is especially significant as recent major surveys have also focused on regime evaluations as a way to measure the depth and health of democracy in Latin America (UNDP 2004; Latinobarómetro 2004). Research has shown that "independent of socioeconomic, demographic, and partisan identification, exposure to corruption erodes belief in the political system and reduces interpersonal trust" (Seligson 2002, 408). As Latin America is a continent of relatively new democracies, studying the impact of corruption on these regimes has a powerful justification. In addition, several articles by economists reveal that corruption has a persistent negative impact on economic development and reform (Gupta et al. 2002; Sun 1999; Bardhan 1997; Mauro 1995). As this region continues to struggle with poverty and inequality, studying the relationship of these factors with corruption is also compelling.

Corruption is one of those long-lived, long-studied concepts in political science that simply will not go away. It has been subject to the ups and downs of each major trend within

the discipline for more than 50 years. In the strongly normative early works, corruption was thought to be a scourge leading to low levels of economic and political development among the underdeveloped nations of the world (Wraith & Simpkins 1964). Later revisions took a different stance on corruption, such as Huntington's famous statement that "in terms of economic growth the only thing worse than a society with a rigid, overcentralized, dishonest bureaucracy is one with a rigid, overcentralized, honest bureaucracy" (1968, 386).<sup>1</sup> Recently the tide has shifted yet again, with many major international organizations, such as the World Bank, International Monetary Fund, World Trade Organization and Organization for Economic Cooperation and Development, pushing governments to reduce corruption.

Political scientists' approaches to corruption have ranged from cultural explanations to institutional analysis to a political economy view, and back again a dozen times, it seems. Scholars have argued for the influence of dozens of variables on corruption levels, including economic development, democratic consolidation, neopopulism, neoliberal reforms, Protestant work ethic, colonial status, and federalism (Gerring & Thacker 2004; Montinola & Jackman 2002; Treisman 2000; Sandholtz & Koetzle 2000). From qualitative to quantitative analysis, case studies to large-N, this phenomenon has been tackled with a huge variety of approaches and techniques. This is not meant to imply that there has not been progress in understanding corruption; an astoundingly large collection of data has been amassed on the topic. Rather, this laundry list of trends, descriptions, and tools is meant to show how complex corruption is and how a variety of approaches is needed to clarify its causes, effects, and the implications for policy-making

While there are some well-researched case studies on corruption in various Latin American countries (Samuels 2001a; Samuels 2001b; Siavelis 2000), there are few

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<sup>1</sup> See also Nye (1967) and Bayley (1966).

systematic region-wide assessments of this problem. In fact, few cross-national analyses of the causes of corruption in Latin America have been published at all. There are several global cross-national quantitative analyses of corruption (Gerring & Thacker 2004; Montinola & Jackman 2002; Treisman 2000; Sandholtz & Koetzle 2000; Husted 1999); however many of the variables that are believed to be related to differences in corruption, such as Protestantism, legal system, or English colonial legacy, cannot explain differences between Latin American countries. In this paper, I seek to explore this topic. First, I will discuss definitions and explanations of corruption and their applicability to the Latin American reality. Next I will provide an overview of the available regional data. I will complete a statistical analysis of corruption and its causes and discuss the results. The paper ends with an exploration of the conclusions and opportunities for further research.

## **Definitions**

The classic definition of corruption that most political science works draw on is that outlined by Nye: “behavior which deviates from the formal duties of a public role because of private-regarding (personal, close family, private clique) pecuniary or status gains; or violates rules against the exercise of certain types of private-regarding influence” (1967, 419). This definition highlights the first crucial element to corruption, which is that it blurs the line between public and private spheres. Another element of corruption that other definitions emphasize is the “transactionary” nature of corruption; corrupt acts are exchanges between parties that offer inducements and parties that receive benefits (Manzetti & Blake 1996, 665; della Porta & Vannucci 1999, 20-23). The third component that scholars see is the sense that these exchanges are improper, deviating from some accepted norms



(Huntington 1968, 59). Thus a simple, common definition of corruption is “the improper use of public office in exchange for private gain” (Sandholtz & Koetzle 2000, 35; Treisman 2000, 399). This is the definition used in this paper, with appreciation for its simplicity and relatively straightforward nature. There is also the added benefit that this definition has previously been used in a variety of other works in political science, public policy, and economics, which helps with replication and knowledge-building. Fortunately, good empirical data exists that explicitly draws on this understanding of corruption and thus can be used to measure it.<sup>2</sup>

While this definition is necessarily limited, a broader definition is less useful.<sup>3</sup> At a more general level, corruption is the process by which something good becomes degraded, spoiled, or inferior. But applying this description to human relations is quite complex. According to one view, if corruption is the degradation of something wholesome, then how can we say that corruption has occurred in a political system, knowing that some type of corruption has probably occurred in all political systems throughout time? This view points out that it becomes difficult to judge corruption in light of the fact that human relations are never perfect, thus there is no clear standard to which any given relation should be held. This type of argument leads to cultural relativism, which defines corruption purely by what is not common in a society. If a possibly corrupt act happens all of the time and no one seems to

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<sup>2</sup> Despite the advantages of using this definition in this particular situation, I do not think that it is the final word in defining the concept. In Williams (1999), the author outlines very compelling reasons why re-examining corruption is necessary from time to time and suggests that the accepted definition has certain shortcomings. As a clear example, one type of corruption that is conspicuously missing from this concept is corporate corruption, like the recent case of Enron. However, this variety of corruption is outside the scope of this paper.

<sup>3</sup> In a recent article on the theory of corruption, Warren suggests that the definition adopted in this and many other investigations is too limiting since “it is far from necessary for corruption to involve government for corruption to be political in nature” (2004, 331). He argues that the key link between corruption and governance is that it violates the democratic norm of inclusion, and thus any theoretical definitions of the concept must build from there.

make a large fuss, then it must not be corruption, but rather some cultural norm. This sort of opinion is counterproductive to understanding and eradicating corruption. Public officials do act appropriately in some places and times. There are laws and codes of conduct that dictate what behavior should be. There are also professional norms and public opinion that state what corruption is and is not. Much of the previous literature on this subject has upheld the idea that there is a common acceptance of what constitutes corruption that transcends purely cultural variance (Sandholtz & Koetzle 2000, 35; TI 2005). In the interests of clarity, then, I utilize the concrete, technical definition of corruption rather than exploring differences in norms and linguistics here.

The list of forms of official corruption is discouragingly long and varied. Just a few of the main examples given in an article by Caiden include kleptocracy, tax evasion, illegal surveillance, sale of public office, extortion, bribery, graft, perversion of justice, misappropriation, forgery, embezzlement, intimidation, undeserved pardons, blackmail, cronyism, kickbacks, influence-peddling, perjury, and cover-ups (2001, 17). The multiplicity of forms that corruption takes on makes it exceptionally difficult to classify its manifestations into types. The phenomena can be primarily bureaucratic or predominantly political. Some branches of government or geographical jurisdictions may be steeped in corruption while others remain relatively clean. Corruption also varies hugely in both pervasiveness and intensity from country to country. However, within the confusion that the term inspires, there are also generalizations that may be made about corruption. A few of these that Caiden points out include:

1. Corruption has been found in all political systems, at every level of government, and in the delivery of all scarce public goods and services.
2. Corruption is facilitated or impeded by the societal context (including international and transnational influences) in which public power is exercised.

3. Corruption is directed at real power, key decision points, and discretionary authority. It commands a price for both access to decision makers and influence in decision making.
4. Corruption is facilitated by unstable polities, uncertain economies, maldistributed wealth, unrepresentative government, entrepreneurial ambitions, privatization of public resources, factionalism, personalism, and dependency (2001, 18).

With these generalizations and definition in hand, the measurement of the phenomenon can now be considered.

## **Measurement**

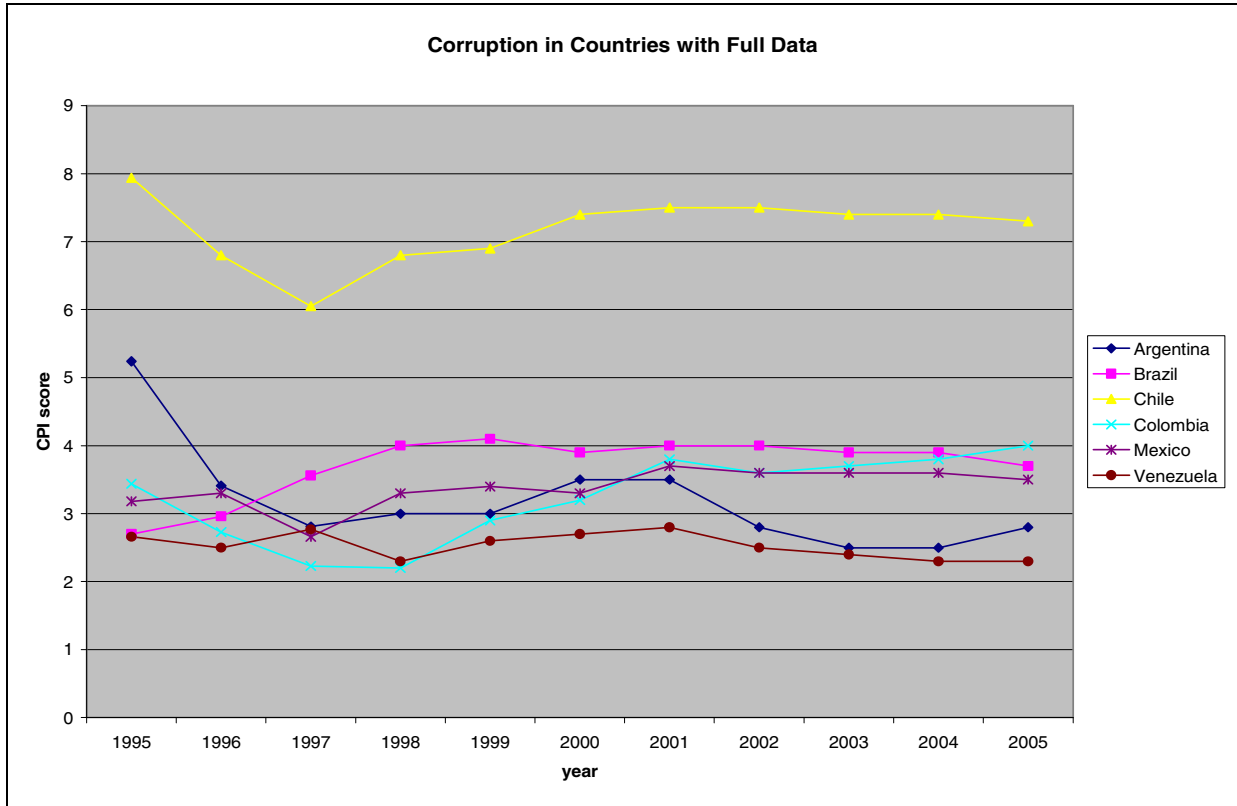
Transparency International's (TI) Corruptions Perceptions Index (CPI) has the widest coverage of countries over time of all of the publicly available data sets on corruption in the public sector. Since 1995, this organization has been collecting data from a huge variety of sources on the state of corruption in the world. Similar to the above definition, TI defines corruption as "the abuse of public office for private gain" (2005). There are no distinctions made on the CPI index between administrative and political corruption or petty and grand corruption. It simply measures the "degree to which corruption is perceived to exist among public officials and politicians" (TI 2005). The information is from surveys of businesspeople and assessments by country analysts from around the world, including some who are locals in the countries evaluated; final scores thus reflect the perceptions of thousands of knowledgeable individuals. In the first year of operation, the CPI collected data on 41 countries from 7 independent surveys for the years 1992-1994. Ten years later, the 2005 CPI drew on 16 surveys completed between 2003 and 2005 by 10 independent institutions and covering 159 countries. TI has also calculated retrospective ratings for 54 countries in the periods 1980-1985 and 1988-1992, though these ratings are less accurate than and not directly comparable to the ratings from 1995-2005.

The CPI was selected to measure the dependent variable, corruption, in this paper because its definition of the phenomenon was essentially the same as the definition reached theoretically. It also offers good, though not perfect coverage of Latin American countries; the CPI for the years 1995 to 2005 is used here.<sup>4</sup> Some researchers criticize the use of the CPI on the grounds that it measures only perceptions rather than actual occurrence of corruption. This is a valid point. However, other types of data have just as many problems. Comparing the number of prosecutions or court cases dealing with corruption in each country tells more about the stringency of laws, the willingness of prosecutors to pursue such cases, and the structure of court systems than it does about the actual existence of corruption. Comparing the frequency of reports of corruption in news media, similarly, also tells more about the relative independence of reporters or the popularity of such sensationalistic stories than about corruption. In Latin America, especially, anecdotal evidence seems to directly warn against trusting this type of data since some politicians allegedly have paid reporters to write stories accusing their political enemies of corruption. Another example of how such information can be misleading is the case of leaders who have pulled off political coups, won support by accusing the previous regime of corruption, and then turned a blind eye to bribe-taking or nepotism within their own governments. The point is that whatever problems data on perceptions of corruption have, they are favorable to the other available options. In the case of the CPI, the validity of perceptions data is increased since it is taken from the experiences of people “who are most directly confronted with the realities of corruption in a country” (TI 2005). The charts below detail the culmination of these experiences in the region.

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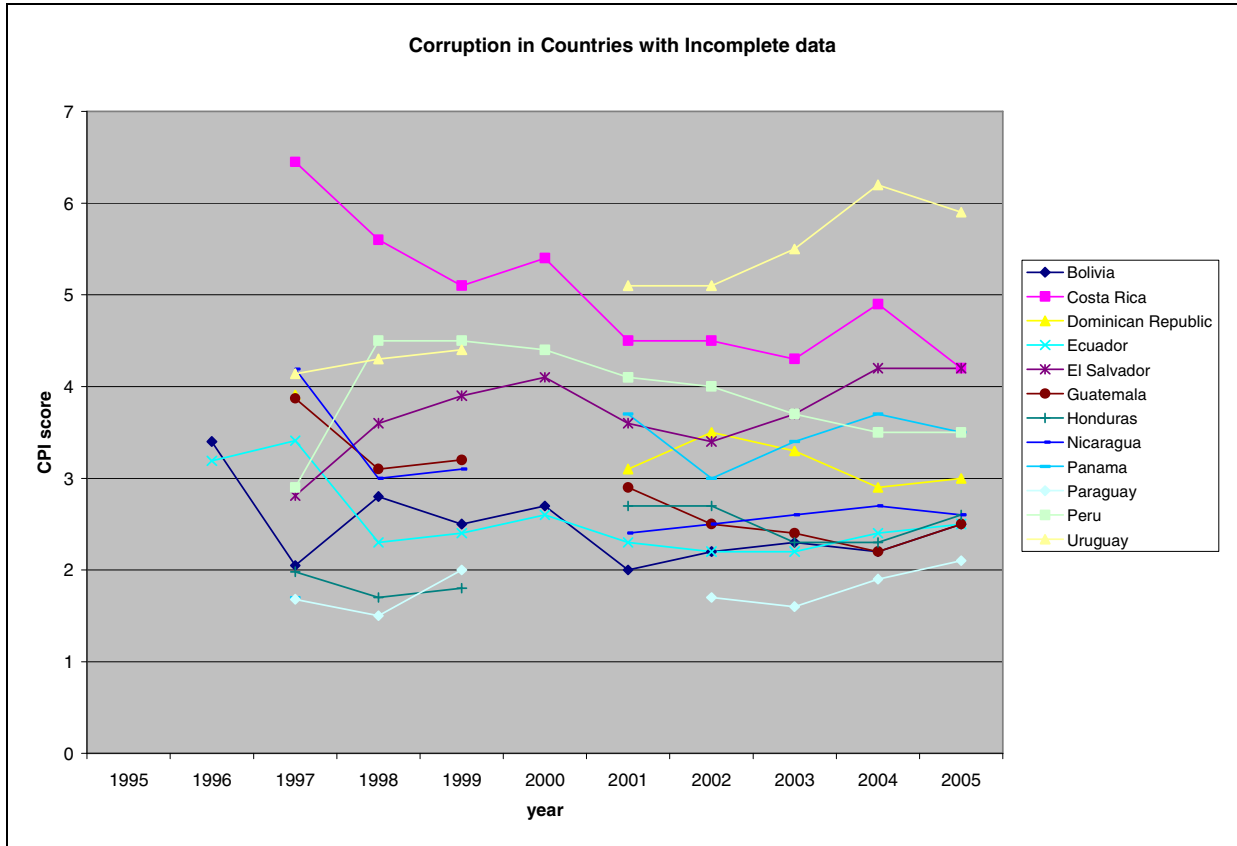
<sup>4</sup> These years are all those for which Transparency International calculated CPI scores.

Figure 1: Corruption in Latin American over time, full<sup>5</sup>



<sup>5</sup> The index runs from 0 (highly corrupt) to 10 (highly clean).

Figure 2: Corruption in Latin America over time, incomplete



As is evident in figures 1 and 2, there was no clear trend of corruption levels in Latin America from 1995 to 2005.<sup>6</sup> Judging from the available data, it appears as though Brazil, Colombia, El Salvador, Honduras, Mexico, Paraguay, and Uruguay all improved slightly, though not always uniformly. On the other hand, Argentina, Bolivia, Chile, Costa Rica, Dominican Republic, Ecuador, Guatemala, Nicaragua, Panama, Peru, and Venezuela all became slightly more corrupt. Most of the country scores do not change dramatically over the years covered in this investigation. The variation that is seen over time is also hard to analyze due to possible changes in how the index was constructed from year to year so any generalization in this respect must be cautiously advanced. In general, then, most variation is

<sup>6</sup> Regressing time on CPI confirms that there is no statistically significant linear trend.

from country to country rather than over time. This indicates that corruption is a fairly deeply-rooted problem that does not appear to change quickly in the period examined here.

## **Explanations**

As the above graphs show, there are persistent underlying differences in the amount of corruption found in different Latin American states. Many more officials appear to be misusing their power in Paraguay than in Chile, for example. Experts feel that turbulent Peru is cleaner than neighboring Ecuador. What is really driving these differences in corruption levels from country to country? Several main classes of explanations for corruption have been advanced by previous research, including economic, structural, political, and historical factors. Each of these factors is held to increase or decrease the likelihood of corruption in a given setting. In this section, most of the major explanations are explained and examined.<sup>7</sup>

The first cause that researchers have emphasized in all relevant studies on corruption is economic development, usually measured as gross domestic product per capita, which is thought to work in a variety of ways. At the simplest level, one version of this effect could be described as follows: countries with more developed economies have higher quality governments and this is associated with lower perceived corruption (Treisman 2000, 401). Countries at lower levels of development are thought to be less likely to possess the expertise or to be able to afford the proper mechanisms for government oversight of corruption.<sup>8</sup> Similarly, some argue that less economically developed countries generally have lower public sector wages, which is thought to increase the incentives for state employees to

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<sup>7</sup> For more technical information on the coding of the explanatory variables, see Appendix 1.

<sup>8</sup> There is also a possible reverse causal relationship between development and corruption, as Mauro (1995) suggests that high levels of corruption are a deterrent to foreign investment, though this is hypothesized to be less relevant than the relationships discussed above.

engage in illegal rent-seeking activities to supplement their low income (Montinola & Jackman 2002, 154).<sup>9</sup> This hypothesis can also be supported by the argument that corruption is more easily exposed and punished in a more economically developed nation because more people are educated and literate and there is a stronger public/private division (Treisman 2000, 404). Most generally, “where incomes are low, economic insecurity, if not outright poverty means that marginal additions to income can have a large impact on a family’s living conditions” (Sandholtz & Koetzle 2000, 36). For all of these reasons, economic development is included in this explanatory model of corruption.

The second variable relating to overall economic state is inequality.<sup>10</sup> Authors have found evidence that corruption can increase poverty and widen inequality (Gupta et al. 2002). In addition, other scholars suggest that income inequality can contribute to higher levels of corruption (Alam 1995, 426). The idea behind this relationship is that more equal distributions of wealth hint at the existence of a strong middle class that protects its interests and resists particularistic demands through the formation of interest groups (Scott 1972). One quantitative study on the causes of corruption found that inequality had no significant effect (Husted 1999, 350). However, this may be because good data on inequality is difficult to find; for time series analysis this is especially true, as inequality figures change slowly. I include inequality as a variable here using newer, more high-quality data than previous studies have had available.

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<sup>9</sup> Evidence for this aspect of the argument is not completely clear, however. La Porta et al. find that relatively low government wages actually lead to better government performance (1998, 239).

<sup>10</sup> A third economic variable, inflation, was also considered as possible factor affecting corruption levels. Changing inflation increases uncertainty, which may provide people with more incentives to engage in stabilizing corrupt pacts to reduce uncertainty. Economic crises and hyperinflation certainly make it easier to avoid detection and punishment of corrupt acts such as embezzlement since the price of money is changing so rapidly (Manzetti 2000, 140-141). However, when inflation was tested systematically as part of the models here, it was not significantly related to the overall levels of corruption.



The second type of variable used to explain corruption has to do with how each country relates to the international system. The first part of this argument states that openness to trade should reduce corruption. Trade, measured here as the sum of imports and exports of goods and services as a percentage of GDP,<sup>11</sup> is thought to help reduce corruption for two main reasons. One is that trade, through dealings with international finance and commerce companies with headquarters in the OECD countries, helps to socialize a country's businesspeople and governmental officials to a transnational Western business culture that discourages a broad variety of corrupt practices (Sandholtz & Koetzle 2000, 39-40). The second way in which trade is said to reduce corruption is that the competition fostered by free trade penalizes bribery and because free trade takes many decisions out of the hands of corrupt government officials (Montinola & Jackman 2002, 153). The trade variable is thus a compelling enough explanation to be included in the model.

Another related causal process is that hypothesized to exist between rents from valuable natural resources and corruption. Ales and Di Tella argue that countries with large endowments of valuable raw materials – especially fuel, ore, and metal – should have higher levels of corruption because corruption in these sectors offers greater potential gain to officials who control the rights for exploitation (1999, 992). Other works have found support for the explanation that corruption is associated with valuable natural resources through data that shows that OPEC countries have higher levels of corruption due to the structure of the organization and the incentives that oil production creates (Montinola & Jackman 2002,

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<sup>11</sup> Using the sum of imports as a share of gross domestic product is an alternate way to measure trade. However, the imports and exports method is more common; in the final regression, results are virtually the same for both measures.

154).<sup>12</sup> In this model, this variable is called resource exports and includes fuel, ore, and metal exports.

In addition to the economic outcome measures of trade volume, resource exports, and economic development, I also include an economic policy variable. The structural policy efficiency index created by Lora “summarizes the status of progress in policies in the trade, financial, tax, privatization and labor areas” (2001, 3). Trade policy reforms include the lowering of tariff barriers and exchange-rate unification. Financial reforms consist of the lowering of reserve requirements, eliminating interest rate controls, and loosening loan regulations. Simplification, administrative reform, reduction of corporate income taxes, introduction of valued-added tax systems, etc. comprise the tax reform component. The privatization area includes the sale of firms in a variety of sectors including energy, telecommunications, and financial entities. Finally, reforms in the labor area comprise lowering the cost of layoffs and facilitating the hiring of temporary workers. All of these reform measures are intended to increase competition and reduce the involvement of the government in the economy (Williamson 2000), both of which are hypothesized to reduce political corruption. For these reasons, the structural reforms index is used in combination with the outcome variables of economic policy to compare how far each country’s economic reforms have progressed during the period and the possible impact of these policies on corruption.

Next, political causal variables must be considered. The two that are most relevant to discussing corruption in Latin American countries are level of democracy and age of

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<sup>12</sup> OPEC membership, used in Montinola and Jackman (2002) is not a compelling explanation in Latin America since there is only one OPEC member, Venezuela, in the region. The measure, resources, that was utilized to test for this explanation thus was the more broadly applicable one that included fuel, ore, and metal exports as a proportion of merchandise exports.

democracy. In a democratic government, leaders must compete for re-election which means that the public is free to punish office-holders for corruption. In addition, because of the participation of a wider group of people in government, at least through elections, there is more transparency with democratic governance.<sup>13</sup> As Sandholtz and Koetzle argue, “the more extensive are democratic freedoms and the more effective are democratic institutions, the greater will be the deterrent to corruption” (2000, 38). Corruption thrives on secrecy; the relative openness of democratic societies should help to discourage corruption. In addition, it is argued that the coordination problem in bribe-collection is more difficult to solve among legislators in a democracy (Bardhan 1997, 1330). The level of democracy is conceptualized in this paper using the two dimensional (political rights and civil liberties) approach created by Freedom House since this is the approach used in the majority of the other works on corruption surveyed here (FH 2006).

Not only is the current level of democracy important however, but so is the longevity of democracy. Since democracy takes time to become the “only game in town,” the longer a country has experienced democratic rule, the more likely that country is to have strong democratic institutions and deeply held democratic norms (Sandholtz & Koetzle 2000, 39). This socialization effect should then cause corruption to be lowest in those countries that have most recently experienced a long spell of democratic governance. Also, there may be a difference between those countries that have had long periods of semi-democracy in contrast to those countries that have had shorter but more meaningful experiences with democracy. Thus, a good measure of age of democracy for these purposes must capture the entrenchment

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<sup>13</sup> However, Weyland argues the converse when he points out that corruption in Latin America has increased, at least anecdotally, during the third wave of democratization. As he writes, “by dispersing power and requiring the consent of several institutions in decision making, the return of democracy has extended the range of actors who can demand bribes” (Weyland 1998, 108).

of institutions and norms, taking into account not only the most recent period of democracy but also the total historical experience with democracy, and also the extent of democracy in a given period.

Next, there are variables that deal directly with the government structure. There is a common argument in the literature, often linked to neoliberal ideas, that states that the larger the relative size of the public sector, the greater the likelihood that there will be higher corruption. This is easiest to illustrate economically: “the more contracts a government has to offer, the more incentives private sector actors have to bribe officials authorized to dispense contracts” (Montinola & Jackman 2002, 154). Neoliberal economic theory argues that a large public sector distorts competition and offers opportunities for rent-seeking by political and economic actors.<sup>14</sup> Although a portion of the degree of government regulation is already captured by the structural reforms index variable, I also include the size of public sector in this analysis, measured as general government consumption as a percentage of GDP. While related to some aspects of the reform index, public sector size may have different significance in explaining corruption since it is a measure of outcomes rather than policies.

Another explanation for corruption levels also has to do with the constitutional configuration of government. In Rose-Ackerman, the author theorizes that Westminster and party-centered parliamentary systems are superior to both party- and candidate-centered presidential systems, which in turn are better than candidate-centered parliamentary systems for avoiding corruption (2001, 40). This is expected because the first two types of parliamentary systems provide more effective checks on individual politicians by their party,

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<sup>14</sup> This argument is plausible, although as Montinola and Jackman point out using lobbying as an example, not all rent-seeking activities necessarily involve corruption (2002, 154).

constituents, and opposition. Gerring and Thacker find that presidential systems do tend to have higher corruption levels than parliamentary systems (2004, 327). Further, the authors also determine that unitary systems have less corruption than federal systems. Decentralized political systems may be more susceptible to corruption because they must find creative ways to overcome the coordination problems that come with divided authority. In addition, since corruption thrives on personal face-to-face relationships not based on concrete norms it may be more prevalent in countries where a larger proportion of government takes place at subnational levels (Treisman 2000, 407). Other authors hypothesize that federalism could, in some situations, decrease corruption levels. As Treisman points out, a federal structure of government may lower corruption since officials in different jurisdictions or levels of government must compete in the provision of public services for which kickbacks could be required in a less competitive system (2000, 407). Looking at the impressionistic evidence from Latin America and the prevalence of political bosses, local machine politics, coronelismo, etc., it appears that the first argument is more valid and that federalism in Latin America should increase corruption. While the arguments about parliamentarism and presidentialism are interesting, only the effects of federalism in Latin America can be tested as there are currently no true parliamentary systems in the region (Beck et al. 2005). Thus, I include a dummy variable for federal structure in this analysis.<sup>15</sup>

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<sup>15</sup> The key variables, parliamentarism and unitarism, from Gerring and Thacker (2004) were first used to operationalize these concepts. However, there was no variation on the parliamentarism variable in Latin America as all of the countries in this sample scored a 1 (for presidential) on their scale. The unitarism variable, which encompasses territorial government (1=non-federal, 2=semi-federal, 3=federal) and bicameralism (0=no upper house or weak upper house, 1=upper house not dominated by lower house (where some effective veto power exists, though not necessarily a formal veto), 2=same as above but also noncongruent) dimensions, was not available for all countries in the same. When unitarism was included in the model, it was not significant. Instead, following Treisman (2000, 431-433) a more basic 0-1 dummy variable for federal/unitary structure was used. This variable does achieve significance.

The final variable that plays a role in the following analysis is ethno-linguistic fractionalization. Treisman (2000) and Mauro (1995) hypothesize that corruption will be greater in countries that are more ethnically divided. This may be because bureaucrats in these societies may favor members of their own group (Mauro 1995, 693). Another possibility for the association between ethno-linguistic fractionalization and corruption perception is that the type of corruption that is found in divided polities is perceived more often by observers because it is of a more damaging type (Shleifer & Vishny 1993, 609). These authors argue that, when a society is homogenous and tightly knit, joint profit maximization in bribe collection is more likely since knowledge of deviations spreads quickly through established group ties. This leads to a relatively low bribe equilibrium and a less destructive variety of corruption (1993, 609). This variable, operationalized as the probability that two randomly selected inhabitants of a given country will not belong to the same ethno-linguistic group in 1960, is included in both Treisman (2000) and Mauro (1995). For these reasons, this variable has been included in the analysis given here.

Despite the comprehensive nature of the economic, structural, political, and institutional variables discussed above, there are some variables that have been purposely omitted from this analysis because of their lack of applicability in the Latin American context. A lot of the literature on corruption emphasizes variables such as the prevalence of Protestantism, English colonial experience, colonial experience in general, and legal system type (Treisman 2000; Sandholtz & Koetzle 2000). However, these are not particularly important variables in Latin America as they do not vary. For example, the prevalence of Protestantism is fairly low in most of Latin America. The present levels of Protestantism are also the result of a gradual and recent trend; thus over the short time period here, change over time would be

very small if even detectable. In addition, most Latin American Protestants are evangelicals. Many of these churches are not overtly political and do not tend to get involved in political debates. Thus the influence of the “Protestant tradition” in shaping public morals, political behaviors, and norms, and thereby reducing corruption is not a compelling causal argument to make for Latin America. In addition, none of the countries analyzed here were British colonies; all belonged to either Spain or Portugal and thus inherited cultural norms from the colonial period cannot explain differences from country to country here. The legal system type in all of these countries is also the same – all share civil law systems<sup>16</sup> (Treisman 2000, 449-450). For all of these reasons, these cultural-historical variables were not included in this analysis.

## Data

The main hypothesized relationships discussed above were operationalized using ten independent variables called economic development, inequality, trade, structural reforms index, resource exports, democracy, age of democracy, public sector size, federal structure, and ethno-linguistic fractionalization.<sup>17</sup> To estimate the impact of these variables on corruption, I created a dataset that includes almost all Spanish- and Portuguese-speaking

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<sup>16</sup> Although the impact of the type of legal system cannot be tested in Latin America as there is no variation, another variation in the legal system was analyzed as a potential factor. The “rule of law” index from the Government Matters IV database measures “the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence” (Kaufmann et al. 2005). However, this variable was rejected from the analysis for a number of reasons. First, it is much more of a proximate measure, almost to the point of being another measure of corruption, than any of the other explanations explored here. Second, many of the surveys used as sources for this variable were also included as sources for the measurement of the dependent variable. Again, this led me to the conclusion that these indicators of rule of law and corruption come too close to measuring the same phenomenon to be separated causally.

<sup>17</sup> More information on how each variable was measured as well as a table of summary statistics (see Table 3) can be found in the Appendix.

former Spanish and Portuguese colonies<sup>18</sup> in Latin America from the years 1994 to 2005.

These countries are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican

Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama,

Paraguay, Peru, Uruguay, and Venezuela. However, despite utilizing the fairly

comprehensive CPI dataset, there were still large amounts of missing data, as summarized in the table below.

Table 1: Countries and years with missing CPI data

Country	Year
Bolivia	1995
Costa Rica	1995 - 1996
Dominican Republic	1995 - 1996, 1998 - 2000
Ecuador	1995
El Salvador	1995 - 1996
Guatemala	1995 - 1996, 2000
Honduras	1995 - 1996, 2000
Nicaragua	1995 - 1996, 2000
Panama	1995 - 2000
Paraguay	1995 - 1996, 2000-2001
Peru	1995 - 1996
Uruguay	1995 - 1996, 2000

This data is not missing at random; those countries that had missing data tend to be smaller and poorer than those countries for which full data is available. Table 2 below summarizes the independent and dependent variable measures comparing compares those countries that have full information and those that are missing data on the dependent variable.<sup>19</sup> While this

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<sup>18</sup> Cuba is the only former Spanish colony omitted from the sample. This is due to the extremely limited amount of reliable data on this country's government and economy. In addition, most of the variables and theories advanced here rely on competition. Since it is a non-democracy, causal inferences made about other Latin American nations may not hold for Cuba. More information on sample selection is given in Appendix 1.

<sup>19</sup> Data for the majority of the variables is available for almost all years. Economic development, democracy, age of democracy, ethno-linguistic fractionalization, and federal structure all had complete data for the appropriate years. For corruption, 41 values are missing. For trade, 5 values are missing. For resource exports, 12 values are missing. For public sector size, 6 values are missing. For the structural reforms index, 108 values



table cannot provide information on the significance of these means, it is suggestive of the difference between these two groups of countries. Those countries that have missing information, in comparison with those with full information, have lower levels of development, higher trade percentages, fewer resource exports, higher levels of ethno-linguistic fractionalization, and are not federal systems. This missing data is problematic because in most methods of estimation, any country-year that is missing data on any of the independent or dependent variables is dropped from the analysis. This means that the states of Central America will be highly underrepresented, while countries like Argentina, Mexico, and Brazil will inordinately dominate the sample.

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are missing as the index in Lora (2001) only spans the years 1985-1999. For inequality, 120 values are missing due to the unavailability of high quality data.

Table 2: Variable summary contrasting full- versus missing-information countries

	Full Information Countries: Argentina, Brazil, Chile, Colombia, Mexico, Venezuela	Missing Information Countries: Bolivia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Uruguay
Variable Name	Mean (standard deviation)	Mean (standard deviation)
Corruption	3.869 (1.611)	3.259 (1.119)
Economic Development	8.370 (0.417)	7.513 (0.603)
Inequality	53.800 (5.210)	53.433 (4.948)
Trade	42.526 (15.918)	66.938 (32.524)
Structural Reforms Index	0.549 (0.042)	0.563 (0.069)
Resource Exports	34.239 (26.354)	16.162 (17.791)
Democracy	5.818 (1.654)	5.112 (1.751)
Age of Democracy	30.364 (12.012)	23.796 (14.242)
Public Sector Size	14.022 (4.156)	11.148 (3.128)
Federal Structure	0.667 (0.475)	0 (0.000)
Ethno-linguistic Fractionalization	16.5 (10.321)	32.561 (22.518)

In order to create a model that applies to all nineteen of the countries included in the analysis, I used multiple random imputation to estimate the missing values.<sup>20</sup> This was completed using Multivariate Imputation by Chained Equations (MICE), an algorithm in

<sup>20</sup> A similar method of multiple random imputations and its potential applications in political science are described in King et al. (2001). The programs designed by these authors, including Amelia and Clarify, are likely the most popular implementations of multiple random imputation algorithms in political science.

Stata 9 that generates estimates of missing values.<sup>21</sup> Using all of the available data on all variables in the data set, this program creates ten datasets with the missing values filled in. Also estimated are measures of the uncertainty introduced by the data imputation process. I then used a Stata macro that combines the ten datasets and estimates regression coefficients while taking into account the added uncertainty.<sup>22</sup> In addition to generating estimates from the imputed data, I estimated the model with the original dataset, missing points unchanged, in order to compare the results of the two methods.

The decision of which type of model to use here is a challenging one, as this type of pooled times-series cross-sectional data may exhibit both heteroskedasticity and serial correlation of the errors (Stimson 1985). One solution for these possible problems is including in the model a lagged dependent variable to deal with the autocorrelation and country dummies to deal with the heteroskedasticity (Stimson 1985, 929). Another solution is to correct these problems using OLS with panel-corrected standard errors and a lagged dependent variable to remove autocorrelation (Beck & Katz 1995, 634). Although both of these solutions are compelling, recent works in comparative politics suggest that the statistical procedures that have grown out of these authors' suggestions have become problematic de facto standards for many different types of data (Kittel 1999; Plümper, Troeger, & Manow 2005). These authors suggest that these fixes are applied without a deep examination of the underlying structure of the data at hand and the questions which the researcher seeks to answer.

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<sup>21</sup> In King, Tomz and Wittenberg, the authors write that “fully Bayesian methods using Markov-Chain Monte Carlo techniques are more powerful than our algorithms because they allow researchers to draw from the exact finite-sample distribution, instead of relying on the central limit theorem to justify an asymptotic normal approximation” (2000, 352). I elected to use the MICE program's algorithms over Amelia or Clarify because it does utilize the more powerful Markov-Chain method of imputation.

<sup>22</sup> This program, called “micombine”, was written by Patrick Royston. More information is available at <http://www.multiple-imputation.com>.

In light of these suggestions, before fitting a model, I examined the data carefully. I first checked for multicollinearity in the variables by analyzing the correlation matrices and the variance inflation factors, which gave no indication that this may be an issue.<sup>23</sup> I then calculated an ordinary least squares regression of both data sets and checked the residual plots for possible skewness. Again, there was no clear evidence of any problem. I then performed an OLS regression model on both the dataset with missing values and the imputed datasets. I chose the OLS regression model mostly for theoretical reasons. This investigation focuses mainly on accounting for differences in corruption between countries; since country dummies would remove most of this type of variance, I elected not to use them. I have tried to control for many of the historical and cultural variables that country dummies account for through careful sample selection instead. I also did not include period dummies to control for possible contemporaneous correlation as the levels of corruption in one country are unlikely to have an immediate impact on those of other countries in the region.<sup>24</sup>

In addition to the OLS model, I utilized a robust cluster error correction, a post-estimation technique that utilizes the Huber/White/Sandwich estimates of variance. This correction accounts for the possibility of autocorrelated and heteroskedastic errors within countries, problems likely to occur with this type of data.<sup>25</sup> This error correction is robust because it deals with both panel-level heteroskedasticity but also any type of correlation within the observations of each group (StataCorp LP 2005, 43-48). The resulting coefficients, significance levels, and fit statistics for both data sets are described in Table 3 below.

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<sup>23</sup> See Appendix 2 for variance inflation factors and correlation matrices of the data.

<sup>24</sup> Given the small size of the sample (11 years in 19 countries), the inclusion of period and country dummies would also have caused further problems by inordinately decreasing the degrees of freedom in the model.

<sup>25</sup> This is likely since each country's measurements were taken over a 10 year period, thus they are not independent from one period to the next (serial correlation of errors). In addition, the panel heteroskedasticity of errors is likely because units may have different variances, if, for example units with lower values have lower error variance (Plümper, Troeger, & Manow 2005, 329).

Table 3: OLS regression results

	Missing data	Imputed data
Variable name	Coefficient (robust standard error)	Coefficient (robust standard error)
Economic Development	1.950** (0.477)	1.580** (0.391)
Inequality	0.120* (0.050)	0.075* (0.028)
Trade	0.001 (0.007)	-0.017* (0.006)
Structural Reforms Index	8.319* (3.515)	5.636* (2.318)
Resource Exports	-0.008 (0.008)	0.001 (0.009)
Democracy	-0.105 (0.163)	-0.206† (0.105)
Age of Democracy	0.032† (0.017)	0.009 (0.014)
Public Sector Size	-0.120† (0.057)	-0.053 (0.043)
Federal Structure	-1.914** (0.636)	-2.031** (0.632)
Ethno-linguistic Fractionalization	-0.011 (0.010)	-0.020* (0.009)
Constant	-20.572** (5.657)	-12.561** (4.033)
N	52	198
Number of clusters	17	18
R <sup>2</sup>	0.691	0.687
Adjusted R <sup>2</sup>	0.616	0.670
Root MSE	0.931	---
† p<0.10; * p<0.05; ** p<0.01		
Results from OLS regression with robust cluster standard errors.		

## Results

The overall fit of the model is good for both the missing data and imputed data. The adjusted correlation coefficient of the set with missing data is 0.616 with 52 observations.

The adjusted correlation coefficient calculated for the combination of the ten imputed datasets is 0.670 with 198 observations. This indicates that a significant portion in the variance of the dependent variable is explained by the model for each dataset. In addition, many of the same variables obtain significance for each dataset except for trade, democracy, age of democracy, public sector size, and ethno-linguistic fractionalization. The sign of almost all of the coefficients, with the exception of trade, are the same for the datasets, both missing and imputed. As the imputed data takes into account more information about each of the countries and it appears mostly consistent with the missing dataset, I will direct the interpretation below to this model.

Of the ten hypotheses discussed above, seven of the variables appear to have significant effects on the dependent variable. In this analysis, the direction of the coefficients is more important than the actual coefficients calculated in the regression. This is due to the fact that the dependent variable is calculated as an index of perceptions. Since it is an index, there is only very limited meaning in being able to say that a 1 point increase in democracy score results in a 0.02 change in CPI score, for example. The CPI is meant to be interpreted as a comparative measure not as an absolute measure; thus, in the section below the results are emphasized more for their direction relative to the predicted effects than for the magnitude of those effects. Table 4 below presents an organized summary of these results.

Table 4: Hypotheses and results with imputed data

Variable Name	Hypothesis	Hypothesized Coefficient	Observed Coefficient	Significance
Economic Development	As economic development increases, corruption should decrease.	+	+	**
Inequality	As inequality increases, corruption should increase.	-	+	*
Trade	As trade increases, corruption should decrease.	+	-	*
Structural Reforms Index	As the level of structural reforms increases, corruption should decrease.	+	+	*
Resource Exports	As resource exports increase, corruption should increase.	-	+	
Democracy	As level of democracy increases, corruption should decrease.	-	-	†
Age of Democracy	As age of democracy increases, corruption should decrease.	+	+	
Public Sector Size	As the size of public sector increases, corruption should increase.	-	-	
Federal Structure	Unitary systems should have less corruption than federal systems.	-	-	**
Ethno-linguistic Fractionalization	As ethno-linguistic fractionalization increases, corruption should increase.	-	-	*
† p<0.10; * p<0.05; ** p<0.01				
Note that for the dependent variable, 0 indicates highly corrupt and 10 indicates perfectly clean.				

Economic development has a strong relationship in the predicted direction with the dependent variable. This finding is supported by all of the major cross-national studies on corruption (Gerring & Thacker 2004; Montinola & Jackman 2002; Treisman 2000; Sandholtz & Koetzle 2000; Husted 1999). As the level of development of a country increases (while controlling for the other variables), that country is much less likely to suffer high levels of corruption. Since the economic development variable was calculated as a logged value, this also lends support to the hypothesis that this effect would diminish at high levels of development. Though most of the countries here are not at extremely high levels of development, there is still some evidence for diminishing returns on development.

Inequality does not function in the model as predicted. While Husted (1999) finds that the effect of inequality on corruption is not significant, here the effect of the variable is significant. However, the sign of the coefficient is not in the expected direction. Surprisingly, the positive sign here indicates that as inequality increases, the level of corruption should decrease! There are several possibilities for why this may be so. One immediate suspicion is the data itself – good indicators of inequality in Latin America are difficult to compute and to use. In this analysis, the highest quality Gini coefficients were carefully selected from eight different sources, a process that introduces the possibility of differences in the level of accuracy and the types of measurement error across the pooled time series. These measurement issues may be obscuring the true relationship between inequality and corruption. Another strong possibility is that the level of inequality in Chile is substantially driving the results for this variable. Chile is the least corrupt country in every year and it also has a higher than average level of inequality compared to the other countries surveyed here. When Chile is excluded from the analysis, the effect of inequality on corruption changes direction. This indicates that in most of Latin America, higher inequality is associated with increased corruption, as hypothesized. Further research could clarify the relationship between inequality and corruption and help to explain what makes Chile different.<sup>26</sup>

The coefficient of the trade variable is significant, though it is not in the predicted direction. In contrast to the findings of Sandholtz and Koetzle (2000, 45), this indicates that

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<sup>26</sup> The statistical techniques usually utilized to test for influential points (such as residuals, leverage, DFFITS, DFBETAS, Cook's d, etc.) were not available for this analysis. Because this project incorporates multiple random imputation, many post-estimation techniques must be modified. Future revisions and advances in programming should be able to clarify the significance of Chile's inequality levels on corruption further.



increasing trade does not decrease corruption.<sup>27</sup> Part of this result could be an artifact of the tendency for smaller countries to have a higher percentage of their economy based on trade. Thus the effect of this variable may not be accurately controlled for across all countries in this model. However, the effect of the variable capturing policy progress, structural reforms index, is significant and the coefficient is in the expected direction. These results indicate that there may be complex relationships between reform policy, results, and corruption that need further investigation. This is especially true since trade policy is one of the few causes of corruption analyzed here that government policy-makers do have some control over.

The coefficient for the effect of mineral and fuel resource exports is neither significant nor in the expected direction. This suggests that there may not be a straightforward relationship between the proportion of a country's exports from metal, fuel, and oil wealth and the level of corruption in that country. This conclusion is supported by Treisman's analysis, which determines that the effect of resource exports changes both direction and significance level from year to year (2000, 415). In addition, it indicates that the empirical evidence found by Montinola and Jackman (2002, 166) for OPEC membership fostering corruption may not be generalizable to other highly valuable natural resource exports. A possible explanation is that the proportion of these materials as a share of exports may not accurately reflect their share in the domestic economy so rent-seeking is not truly represented by the figures chosen (Treisman 2000, 429).

The level of democracy variable narrowly achieves significance at the 0.10 level and the coefficient is in the expected direction. This indicates that there is only weak evidence that the level of democracy diminishes corruption while controlling for all the other variables.

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<sup>27</sup> Treisman's (2000, 415) findings, although he uses a slightly different measure of trade, also contradict Sandholtz and Koetzle (2000). He finds that the effect of trade on corruption small and insignificant in most years.

Previous research has also found that the current level of democracy does not strongly affect corruption (Treisman 2000, 438-439). The age of democracy variable has a very small, not significant, though positive as predicted, coefficient. This may indicate that the longevity of democracy can have contradictory effects. Although previous research suggests that older democracies should be less corrupt (Treisman 2000, 415; Sandholtz & Koetzle 2000, 44; Gerring & Thacker 2004, 310), this effect may not be uniform across all countries. This could be due to a number of reasons. One purely technical reason for the empirical results is that the correlation between age of democracy and level of democracy (calculated to be -0.463) may be distorting the effect that each might separately have on the dependent variable in the model. A more theoretical reason is offered by Rose Ackerman:

Democracies based on strong legal foundations provide a stable framework for economic activity. For this framework to operate efficiently, however, politicians must seek reelection and must feel insecure about their prospect, but not too insecure. This leads to a 'paradox of stability'. Too much security of tenure can further corrupt arrangements. Too much insecurity can have the same effect (1999, 127).

This peril could be exemplified by the recent case of Venezuela. A similar idea is expressed by Montinola and Jackman, who argue that "corruption is typically a little higher in countries with intermediate levels of political competition than in their less democratic counterparts, but once past the threshold, higher levels of competition are associated with considerably less corruption" (2002, 167). Another possibility is suggested by Huber, Rueschemeyer, and Stephens: Latin American democracies could be falling into the trap of consolidating formal democracy while moving away from fully participatory democracy and equality (1997, 323).

Public sector size also behaves differently than theorized. Similar to the performance of this variable in Husted (1999, 350-351), Montinola and Jackman (2002, 166), and Treisman (2000, 436), the effect of government size is not significant. In this analysis, the direction of

the effect is as hypothesized. Thus, a healthy role for government may not be as negative as the Washington Consensus suggested. Some governments in Latin America, at least, do not appear to be increasing corruption through spending – although this is no guarantee that government consumption is an unqualified useful good, either. This finding may provide support for previous research which suggests that higher wages for public sector workers can improve governance (Montinola & Jackman 2002, 169).

Next, the analysis supports the hypothesis that a federal structure is likely to increase corruption. The coefficient is in the predicted direction, negative, and highly significant. This lends credit to the hypothesis that the more politics takes place on a local level, the higher the likelihood of corruption. Previous studies also have reached the same conclusions on this variable (Treisman 2000, 430-432; Gerring & Thacker 2004). It is supported by anecdotal evidence as well, since the four federal states of Latin America, Mexico, Venezuela, Brazil, and Argentina, do appear to have abnormally high levels of corruption given their values on the other explanatory variables. However, it is likely that this measure of federalism is a proxy for political fragmentation. Systems that are highly fragmented are likely to have more corruption since there are more veto points in which other players can join the game and demand payoffs. This hypothesis may be interesting to investigate in future research. However, attempts to test it here were unsuccessful due to the lack of high quality data on fragmentation or veto points for the countries and years required.<sup>28</sup>

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<sup>28</sup> I did try to test this aspect of the theory using the variables legislative fractionalization, which captures “the probability that two deputies picked at random from the legislature will be of different parties” and Herfindahl Index from the Database of Political Institutions (Beck et al. 2005). However, there was a large amount of missing data and the relationship of these variables to corruption was unclear. These effects never achieved significance.

Ethno-linguistic fractionalization was the last variable included here. In his analysis, Treisman finds that this variable is insignificant once the model also controls for development (2000, 429). He argues that any effect of ethno-linguistic fragmentation is indirect and probably mediated by its effect on GDP per capita. Surprisingly, though both economic development and ethno-linguistic fractionalization are included in this model, ethno-linguistic fractionalization has a direct effect. As ethnic division increases, corruption also increases; this effect is highly significant. However, as with federalism, the process behind this variable's effect cannot be narrowed down to a single certain causal path. Federal structure and ethno-linguistic fractionalization are somewhat endogenous, making it difficult to separate out their independent effects. Overall, both fit into the general perception of corruption as a solution to which people resort when faced with uncertainty or in order to overcome obstacles to coordination.

Since so many of the variables appear to be related and have insignificant effects, I also calculated a trimmed model that only includes the variables with strong explanatory power. The portion of variance explained by the more parsimonious model, with an adjusted correlation coefficient of 0.659, is nearly as great as the variance explained by the full model. None of the directions of the effects of the independent variables change from the full to the trimmed model. However, democracy, which is only marginally significant in the full model, is more significant in the trimmed model. The change in the level of significance is likely due to dropping age of democracy from the model, with which it is moderately correlated.

Table 5: Trimmed model results

	Imputed data
	Coefficient

Variable name	(robust standard error)
Economic Development	1.661** (0.404)
Inequality	0.058* (0.027)
Trade	-0.016* (0.007)
Structural Reforms Index	4.633* (2.136)
Democracy	-0.205* (0.095)
Federal Structure	-2.161** (0.604)
Ethno-linguistic Fractionalization	-0.017* (0.007)
Constant	-12.191* (4.638)
N	198
Number of clusters	18
R <sup>2</sup>	0.671
Adjusted R <sup>2</sup>	0.659
† p<0.10; * p<0.05; ** p<0.01	
Results from OLS regression with robust cluster standard errors.	

Table 6: Trimmed model hypotheses and results with imputed data

Variable Name	Hypothesis	Hypothesized Coefficient	Observed Coefficient	Significance
Economic Development	As economic development increases, corruption should decrease.	+	+	**
Inequality	As inequality increases, corruption should increase.	-	+	*
Trade	As trade increases, corruption should decrease.	+	-	*
Structural Reforms Index	As the level of structural reforms increases, corruption should decrease.	+	+	*
Democracy	As level of democracy increases, corruption should decrease.	-	-	*
Federal Structure	Unitary systems should have less corruption than federal systems.	-	-	**
Ethno-linguistic Fractionalization	As ethno-linguistic fractionalization increases, corruption should increase.	-	-	*
† p<0.10; * p<0.05; ** p<0.01				
Note that for the dependent variable, 0 indicates highly corrupt and 10 indicates perfectly clean.				

## Conclusions

This investigation is different from previous quantitative work on the causes of corruption in two main ways. One, the focus of this work is exclusively on explaining corruption in Latin America. Most of the previous research projects examined here draw their samples from the entire world. In these global cross-national studies, due to lack of information, several countries in Latin America are simply dropped from the analysis for most years.<sup>29</sup> This means that any conclusions that these authors make may not be generalizable to Latin America as a whole. Two, this paper is unique because it examines the causes of corruption using a pooled time series design. The previous similar works in the field all rely on between

<sup>29</sup> In Montinola and Jackman (2002), Bolivia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, and Uruguay were dropped from one or more cross-sections of their model. Treisman (2000) drops these countries plus Ecuador from one or more cross-sections of his model. Sandholtz and Koetzle (2000) only include Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, and Venezuela in their sample. Husted (1999) states only that 44 countries are in his sample. Gerring and Thacker (2004), since they also utilize multiple random imputation of missing data, do include the Latin American countries in their sample.

one and three cross-sections taken from the late 1980s to the late-1990s to make causal inferences. In contrast, this work encompasses data on the independent and dependent variables stretching from 1994 to 2005. Thus, any differences in the conclusions reached here may be due to the different focus, scope, design, and time of the project. Further research must be done to determine the limitations and commonalities of the inferences made by various works in this area.

In studying corruption, there is inherently a desire to understand the causes of this ugly pathology so that it may be destroyed. Throughout this paper runs the normative assumption that corruption is an undesirable and negative phenomenon, especially in a continent so plagued by the problem. To this end, I identified and tested ten main explanations of corruption levels in Latin America. There is some evidence that seven of the ten, economic development, inequality, trade, structural reforms index, democracy, federal structure, and ethno-linguistic fractionalization, have significant effects on corruption, although not all of the mechanisms of causation are fully understood. These findings, especially those on inequality and trade, cast doubt on several common assumptions made about the causes of corruption in Latin America that have had real consequences in shaping public policy in the region. For example, the argument that neoliberal economic reforms do impact corruption finds some supporting evidence here although the full relevant period is not captured by this dataset.<sup>30</sup> But neither lower levels of government spending nor increased trade are linked to lower corruption, contrary to the hopes of some neoliberal theories. However, extending policies of structural reforms does seem to decrease corruption. From this analysis, it is clear

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<sup>30</sup> This relationship appears to be especially strong when discussing the sale of public companies. Privatizations, driven by the push for economic reform, have been plagued by corruption allegations throughout Latin America.

that more study on reforms and corruption in the context of the particular realities of Latin American states is necessary.

Another direction for future research on corruption in Latin America is to examine the links between corruption and party politics. While most Latin American countries are presidential and use some form of proportional representation electoral systems, there are variations on whether systems have closed or open lists. Rose Ackerman hypothesizes that these and other rules of competition and the resultant degree of party- or candidate-centered politics will affect the level of corruption found in the system (2001, 39). Similarly, Weyland argues that the decline of party systems and neopopulism, a governing mode that arose from the weakening of elite control and the economic crises of the past few decades, is particularly related to corruption in Latin America (1998, 133-114). Neither Weyland's nor Rose-Ackerman's assertions have been empirically tested yet, but the strength and organization of party systems, reform efforts, and corruption could provide an interesting and important nexus in the future for understanding politics in Latin America.

As noted throughout this paper, research on corruption has covered a huge range of topics already. A vast array of knowledge has been collected by generations of skilled academics. However, this is no reason to close the book on this type of research. On the contrary, here is a topic where the field can truly advance rapidly and meaningfully. Scholars in this area have a rich body of previous works upon which to build, a multiplicity of leads for future investigation, and most importantly, an urgent need for the work to progress.



## **Appendix 1: Variable Descriptions and Sources**

### **Country**

All of the Spanish- and Portuguese-speaking former colonies of Spain and Portugal except for Cuba were included in this data set. Cuba was excluded due to its long history as a non-democracy and a restricted economy. The remaining countries were chosen because of their common histories, legal systems, religions, etc. These commonalities allow this investigation to control for some of the cultural differences that have been used in previous research to explain differing levels of corruption. For example, Treisman (2000) utilizes dummy variables for common law system and former British colony or UK. None of the countries included in my sample had common law legal systems or British heritage. Another variable utilized in Sandholtz and Koetzle (2000), the percent of the population that is Protestant, was also eliminated by my choice of countries since none of the countries in my sample has a large, influential Protestant community that has historically had enough influence to make a difference for corruption levels.

### **Corruption**

The corruption measure used in the study is the Corruption Perceptions Index (CPI) produced by Transparency International (TI). The scores were from the 1995-2005 ratings. For these countries, the CPI was constructed from between 4 to 12 sources from 4 to 8 independent institutions (including the World Economic Forum, World Bank, Freedom House, the Economist, Columbia University, PricewaterhouseCoopers, European Bank for Reconstruction and Development, and Gallup International) that collected data over the period from 1993 to 2005. The CPI ranges from 0 (highly corrupt) to 10 (fully clean).

CPI data was available for Argentina in the years 1995 to 2005; Bolivia from 1996 to 2005, Brazil from 1995 to 2005, Chile from 1995 to 2005; Colombia from 1995 to 2005; Costa Rica from 1997 to 2005; Dominican Republic from 1997 and 2001 to 2005; Ecuador from 1996 to 2005; El Salvador from 1997 to 2005; Guatemala from 1997 to 1999 and 2001 to 2005; Honduras from 1997 to 1999, and 2001 to 2005; Mexico from 1995 to 2005; Nicaragua from 1997 to 1999 and 2001 to 2005; Panama from 1997 and 2001 to 2005; Paraguay 1997 to 1999 and 2002 to 2005; Peru from 1998 to 2005; Uruguay from 1997 to 1999 and 2001 to 2005; and Venezuela from 1995 to 2005. The CPI data for 1997 was taken from Lambsdorff (1998, 104-7) for Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, and Peru. All of the CPIs for other years were taken from Transparency International (1995-2005).

### Economic Development

This variable was assessed using the Gross Domestic Product per capita at constant market prices, constant 2000 dollars. The data was transformed logarithmically to account for its positive skew. In addition, this transformation models a theoretical expectation as well since the positive effect of economic development on corruption is theorized to have diminishing returns at higher and higher levels of development (Montinola and Jackman, 2002). The data for this variable was lagged by one year (relative to the CPI) to account for possible problems of endogeneity (since data from the CPI released in 2005 is collected during the year 2004). The GDP data is for the years 1994-2004 and is taken from the Economic Commission for Latin America (ECLAC, 2006) and the Caribbean Social Indicators and Statistics database.

## Inequality

This variable was measured using the Gini coefficients compiled in the World Income Inequality Database (WIDER 2005). The data was lagged by one year relative to the CPI, so values are only for the years 1994-2004. As with all Gini coefficients, larger numbers indicate higher levels of income inequality. These particular Gini coefficients were chosen for their quality (based on ratings in the WIID) and are all based on household per capita disposable income. The majority cover the entire country's population except for those data for Argentina and Uruguay, where only data covering urban or metro areas was available. The table below details the specific sources of each inequality score as documented in the WIID.

Table 7: Gini coefficient sources

Source	Country and Years
Cerisola et al. (2000)	Argentina 1994-1998
Deininger & Squire (2004) <sup>a</sup>	Bolivia 1996-1997, 1999-2000; Brazil 1995-2001; Chile 1995, 1996, 1998-2000; Colombia 1995-2000; Costa Rica 1994-2000; Dominican Republic 1995-1998; Ecuador 1994, 1995, 1999, 2000; El Salvador 1995-2000; Guatemala 1998; Honduras 1994-1998; Mexico 1994, 1996, 1998, 2000; Panama 1995-1998, 2000; Paraguay 1995, 1997, 1999; Peru 1994, 1997; Venezuela 1995-1998, 2000
Gasparini (2003)	Argentina 2001; Guatemala 2000; Nicaragua 1998; Uruguay 2000
IADB (1999)	Colombia 1994; El Salvador 1994; Paraguay 1994
Luxembourg Income Study <sup>b</sup>	Mexico 2002
Székely (2003)	Bolivia 1995; Ecuador 1998; Honduras 1999; Panama 1999; Peru 2000; Uruguay 1997, 1998; Venezuela 1999
Székely and Hilgert (2002)	Chile 1994; Uruguay 1995
WDI (2006)	Nicaragua 2001
<sup>a</sup> Deininger, Klaus and Lyn Squire. 2004. Unpublished World Bank data based on unit record data.	
<sup>b</sup> Luxembourg Income Study (LIS). 2005. Restricted online database used by WIID.	

## Trade

Trade was measured using the sum of exports and imports of goods and services as a share of gross domestic product for the years 1994 - 2004. The measure was lagged by one year

relative to the CPI to account for possible endogeneity. The data was accessed in the World Development Indicators database of the World Bank.

#### Structural Reforms Index

This variable is Lora's Structural Reforms Index (2001, 20). It is a composite measure of structural policy efficiency as an average of calculations made in several areas: trade policy, financial policy, tax policy, privatization, and labor legislation. The index ranges from 0 to 1 where 0 corresponds to the "worst reading for any year and any country in the period and the countries considered, and 1 to the best" (28). The number thus generated summarizes the progress of the economic reform project in each country. As with the other economic variables, this data was lagged by one year.

#### Resource Exports

This measurement is the proportion of merchandise exports that are made up by fuel, ore, and metal exports following Treisman (2000, 413) and Ades and Di Tella (1999). As with the other economic measures, this variable was lagged by one year relative to the CPI. The data was obtained from the World Development Indicators database for the years 1994-2004.

#### Democracy

This measure was calculated from the Freedom in the World reports 1994-2004 by Freedom House, and recorded lagged by one year relative to corruption score. Freedom House ranks the level of democracy in a country on two dimensions, political rights and civil liberties. The score for a country on each dimension ranges from 1 (free) to 7 (not free). The

overall democracy score for each country is the sum of the political rights score and the political liberties score. Scores on this variable thus range from 2 (highly democracy) to 14 (highly restricted). Treisman (2000, 413) and Sandholtz and Koetzle (2000, 41) also utilize this measure to operationalize democracy.

#### Age of Democracy

This measure is the number of continuous years of democracy since 1945 each year from 1995-2005. It was determined using the classification detailed in Mainwaring and Hagopian (2005, 3). Their classification is of Latin American political regimes beginning in 1945 and rates each country year as authoritarian, semi-democratic, or democratic. The data entered for 1995 – 2005 is the sum of the years of democracy (1 point) and semi-democracy (0.5 point) for each country since 1945.

#### Public Sector Size

Public sector size was measured using the general government final consumption expenditure as a percentage of the country's GDP in the years from 1994 to 2004 following Montinola and Jackman (2002, 158). As with the other economic measures, this variable was lagged by one year relative to the CPI due to the fact that data for each year of the CPI was actually collected in the year before its release. This data was obtained through the World Development Indicators database by the World Bank.

## Federal Structure

This was a dummy variable that was valued at 1 for federal states and 0 for unitary states. The definition of federal is that given by Riker (1964, 11): “(1) [at least] two levels of government rule the same land and people, (2) each level has at least one area of action in which it is autonomous, and (3) there is some guarantee (even though merely a statement in the constitution) of the autonomy of each government in its own sphere.” Argentina, Brazil, Colombia, Mexico, and Venezuela were all classified as federal states based on the information given about their government structures in the Database of Political Institutions (Thorsten et al. 2005).

## Ethno-linguistic Fractionalization

This variable was included following from both Mauro (1995) and Treisman (2000). Scores on ethno-linguistic fractionalization reflect the probability that two randomly selected inhabitants of a given country will not belong to the same ethno-linguistic group as of 1960. The data was originally published in the Atlas Narodov Mira (1964) and reproduced in Taylor and Hudson (1972, 271-273). The data was transformed from Taylor and Hudson’s original measure into a percent measure following Mauro (1995).

## Appendix 2: Summary Statistics and Information on Missing and Imputed Datasets

Table 8: Correlation matrix of original dataset (with missing values)

	Corruption	Economic development	Inequality	Trade	Structural reforms	Resource exports	Democracy	Age of democracy	Public sector size	Federal structure	ELF
Corruption	1.000										
Economic development	0.395	1.000									
Inequality	-0.113	-0.536	1.000								
Trade	0.058	-0.416	-0.071	1.000							
Structural reforms	0.117	-0.223	0.295	-0.199	1.000						
Resource exports	-0.018	0.134	-0.027	-0.163	0.089	1.000					
Democracy	-0.445	-0.126	0.329	-0.383	-0.081	0.122	1.000				
Age of democracy	0.435	0.426	-0.276	-0.097	-0.145	0.413	-0.382	1.000			
Public sector size	-0.094	-0.037	0.409	-0.496	0.203	-0.023	0.251	0.264	1.000		
Federal structure	-0.192	0.653	-0.013	-0.515	-0.125	0.204	0.222	0.047	0.084	1.000	
ELF	-0.198	-0.345	0.099	-0.095	0.569	0.053	-0.057	-0.355	-0.186	-0.136	1

Table 9: Variance inflation factors of original dataset

Variable name	VIF	1/VIF
Economic Development	4.84	0.207
Inequality	2.08	0.482
Trade	3.31	0.302
Structural Reforms Index	2.05	0.487
Resource Exports	2.12	0.473
Democracy	2.46	0.407
Age of Democracy	4.01	0.250
Public Sector Size	3.22	0.311
Federal Structure	2.65	0.377
Ethno-linguistic Fractionalization	2.56	0.407
Mean VIF	2.93	

Table 10: Correlation matrix of imputed datasets

	Corruption	Economic development	Inequality	Trade	Structural reforms	Resource exports	Democracy	Age of democracy	Public sector size	Federal structure	ELF
Corruption	1.000										
Economic development	0.498	1.000									
Inequality	-0.179	-0.500	1.000								
Trade	-0.090	-0.115	0.041	1.000							
Structural reforms	0.055	-0.221	0.259	-0.090	1.000						
Resource exports	0.040	0.118	-0.004	-0.305	0.158	1.000					
Democracy	-0.494	-0.400	0.319	-0.305	0.093	0.174	1.000				
Age of democracy	0.507	0.513	-0.364	-0.180	-0.180	0.383	-0.463	1.000			
Public sector size	0.083	0.019	0.315	-0.247	0.262	0.109	0.020	0.300	1.000		
Federal structure	-0.079	1.576	-0.144	-0.384	-0.082	0.237	0.113	0.111	0.201	1.000	
ELF	-0.233	-0.279	0.161	-0.210	0.336	0.187	0.160	-0.283	-0.214	-0.163	1

Table 11: Variance inflation factors of imputed datasets

Variable name	VIF	1/VIF
Economic Development	3.20	0.312
Inequality	1.79	0.560
Trade	1.77	0.566
Structural Reforms Index	1.47	0.680
Resource Exports	1.95	0.512
Democracy	2.16	0.463
Age of Democracy	3.77	0.265
Public Sector Size	2.05	0.490
Federal Structure	2.64	0.378
Ethno-linguistic Fractionalization	1.67	0.599
Mean VIF	2.25	



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