The Formation of National Party Systems
Does it happen with age?

Brandon Amash

A Senior Honors Thesis
Submitted to
The Department of Political Science
University of California, San Diego

March 31, 2014

Table of Contents

List of Tables and Figures

Acknowledgements

I began this project with only a *Political Science 11: Introduction to Comparative Politics* understanding of electoral institutions and party systems. Looking back, there have been quite a few twists and turns in the development of this undertaking. It began with a questioning of Duverger's Law, but has come a long way from there. One thing has remained reliable and unchanged despite all my alterations and steps in a backwards direction: my terrific advisor, Professor Karen Ferree. Words cannot begin to explain my gratitude for her continuous assistance and guidance that gave me all the right answers for this project and beyond. This work would not exist without it, even thinking back to my days under her instruction in the introductory course.

I also thank Professors Steven Erie and David Mares for their excellent input and coaching in the Senior Honors Seminar. Their help, along with that of my fellow thesis writers, has proven to be invaluable.

I extend my gratitude to Lydia Lundgren, my TA in Political Science 11, who helped me develop my theories in the early stages of this project. Her assistance sparked my interest in and appreciation for this subject.

Finally, I must thank my family for their support throughout all the frustration and hard work, and especially my brother Mark, the computer guru who helped me figure out Stata, and who kicked me in the pants when I needed it most.

Chapter 1: Introduction

Popular elections are a fundamental component of representative democracy, and party labels play an essential role in electoral campaigns. The various parties competing in an election and the constituency races they enter are the foundation of a nation's party system, but not all national party systems are alike. Despite patent importance of party systems in most democratic states, it remains unclear why some countries have nationalized party systems, with a well-institutionalized set of parties competing in most or all legislative districts, while other countries have regionalized party systems, with various parties across the state only entering certain districts, holding weak ties to voters in many cases. In such systems, no district could be reflective of the national party system as a whole.

This phenomenon is defined as the nationalization of party systems, or the formation of national party systems. While some countries have legislative district races that exactly, or nearly exactly, resemble the national party system, others have poorly nationalized party systems. In those states, district races may include local or regional parties that are not viable or competitive in other districts. Although literature has extensively considered the factors shaping district-level party systems, the formation of national party systems is a process less understood. In spite of similar electoral rules, and often even similar ethnic distributions, there are very different party systems in different countries. The variation in the formation of national party systems is one such difference, and is the focus of this research. Specifically, the question remains why some states have highly nationalized party systems while others do not in spite of similar institutions. The purpose of this paper is to study the trends of nationalization in various countries, especially as they correlate to democratic experience and party institutionalization, in order to better understand the dynamics of a country's party system over successive elections.

The nationalization of party systems varies in the range of degrees to which each district level party system in a state is equivalent to the national party system. For example, in some states, there are parties that field candidates in most, or all, districts; a party system composed of parties viable in most or all districts has been loosely described as nationalized (Cox 1997, 1999a, 1999b; Cox and Knoll 2003; Chhibber and Kollman 1998, 2004; Moser and Scheiner 2012). On the other hand, some parties are only regional, or confined to viability in only a limited number of districts. This confinement may be described by variation in a party's vote shares in different district races, or lack of entrance in district races. The differences between the first and second cases are a simple description of the degrees of nationalization.

The purposes of this research are to first successfully quantify this variation by calculating and evaluating the covariance of the existing measures of nationalization of party systems, as well as proposing a new measure for nationalization, and second to examine the trends of variation in the degrees of nationalization of party systems across elections amongst various democracies with different degrees of democratic experience, consolidation, and party institutionalization.[1] In spite of similar electoral rules, there are very different party systems in countries; states may have the same institutional structures but varying degrees of nationalization of the party system. In general, the causes of this variation remain a puzzle. The focused question explored in this research is whether nationalization improves over time in new democracies, and if the level of party institutionalization matters. Examining the correlations between a country's levels of democratic experience and party institutionalization will help to better understand the mechanisms that cause or fail to cause the formation of national party systems, and will contribute to understanding the variation of nationalization.

[1] The discussion of various measurements of the nationalization of party systems, as well as my proposed measure, is included in Chapter 2: Measuring the Nationalization of Party Systems. The discussion of the current explanations of nationalization is included in Chapter 3: The Theory.

Relevant literature on the effects of electoral rules on party systems at the district level has a rich tradition, but the literature concerning the formation of national party systems is more limited.[2] Certainly, understanding the nationalization of party systems begins with the mechanisms understood to shape district-level party systems. Maurice Duverger provided the fundamental theories on how electoral systems shape district-level party systems, stating that single member plurality (SMP) electoral systems promote two-party systems at the district level (known as Duverger's Law), and proportional representation (PR) and two-round systems tend to permit multi-party systems (known as Duverger's Hypothesis) (Duverger 1954). Since Duverger's seminal work, many authors have examined the generalizations and applications of Duverger's analysis.[3]

Gary Cox defined the nature of Duverger's theories by describing a series of coordination games, analyzing the effects of electoral rules on individual choices (Cox 1997). Recent literature has also explored how contextual factors condition the effects of electoral rules on party systems, even in restrictive SMP systems.[4] However, as Cox noted in 1997, the question still remained why the same two parties would necessarily compete in all districts, even if the method of election ensured local bipartism in every district. Seventeen years later, this question of the causal factors of nationalization of party systems has still received relatively less attention than the study of the effects of electoral rules on district-level party systems; Cox's observation that nationalization is not fully understood is still true today.[5]

---

[2] The formation of national party systems has been defined with several terms such as linkage, party aggregation, nationalization, and centralization. Various methods of measuring the formation of national party systems have also been proposed. This literature review is intended to explore such existing research.

[3] See Rae (1967) and Lijphart (1994).

[4] Such contextual factors include democratic experience, party institutionalization, and social diversity, among many others proposed. See Moser and Scheiner (2012), and Ferree, Powell, and Scheiner (2013).

[5] Jones and Mainwaring (2003) begin their paper stating the need to address the issue of nationalization of party systems, as it is "an under-analyzed issue in the study of comparative parties and party systems" (p. 139).

Hypothetically, Duverger's Law, only applying to district-level party systems, could imply that in SMP systems, the national party system could include up to two parties for each district in the nation.[6] As Cox notes, this does not provide any useful explanation for what limits the number of national parties, and how all the district-level party systems are collectivized and linked, perhaps projected, to the national party system. Duverger argued that the limitation on the number of national parties in SMP systems was a result of a projection of local bipartism into national bipartism, resulting from "increased centralization of organization within the parties" (Duverger 1954: 228). This argument has been criticized, and better explanations for the existence of national parties and cross-district linkage have been sought.[7]

Reevaluating Duverger's projection argument for the nationalization of party systems is a substantial endeavor, but understanding the mechanisms of nationalization begins with observing the trends in variation. This paper contributes to the current understanding of the nationalization of party systems in three ways. First, I intend to evaluate the various existing conceptualizations and measurements of nationalization in a broad set of countries. Examining the existing methods of measuring the nationalization of parties and party systems in various cases will expose the strengths and weaknesses of these measures in explaining the phenomenon. Second, I propose a new measure for the nationalization of party systems, which I define as *linkage*—the extent to which parties enter constituency races. This measure will also be compared to existing measures of nationalization. Finally, I intend to examine correlations between the nationalization of party systems with several independent variables that will present trends of nationalization over time,

[6] Cox refers to this boundary on the number of national parties as (M+1)*D, where M = district magnitude and D = the number of districts. For example, in the United States House of Representatives, with 435 districts, each with M = 1, there could theoretically be a total of 870 competing parties amongst the districts. See Cox (1997), Chapter 10, p. 186. Norris (2004), Rae (1967), and Riker (1982) also discuss the possibility of having more than two parties in a national legislature in systems with local bipartism.

[7] Wildavsky (1959), Leys (1959), and Cox (1997; 1999a) essentially argue that Duverger's projection argument is a mere assertion. Leys (1959) and Sartori (1968; 1976) provide extended and more detailed projection arguments.

differing levels of party institutionalization, and democratic consolidation. The countries examined will also be grouped into eight distinct geographic regions in order to observe possible generalizations of the trends of nationalization by region. The eight geographic regions are Africa, Asia, Caribbean, Eastern Europe, Latin America, North America, Oceania, and Western Europe. Certain institutional factors shaping nationalization are also briefly explored.

It is first expected that party systems will tend to nationalize over time. The degree of nationalization, defined by the measures provided in the literature and by linkage, is generally expected to increase over time in a given country. Second, elections with a high degree of party institutionalization are expected to correlate with high degrees of nationalization. Party system institutionalization—defined as the process by which the party system becomes well established and widely known, if not universally accepted—is a key component in the process of democratic consolidation, according to Scott Mainwaring and Timothy Scully. Accordingly, measuring the correlation between levels of party institutionalization (as a factor of democratic consolidation) and nationalization will help to understand whether nationalization is a consequence of consolidation. These expectations are categorized in Figure 1.1.

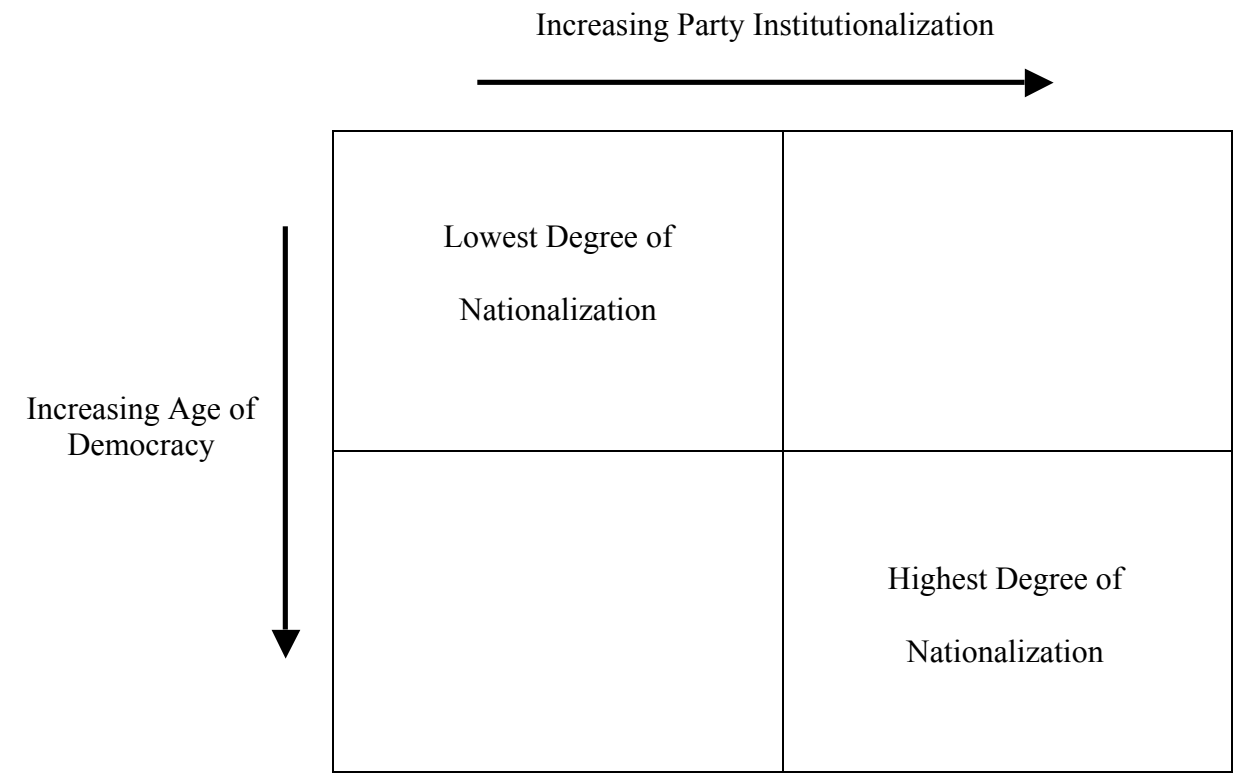


Figure 1.1 Matrix describing the expected correlations between the degree of nationalization of party systems and the age of democracy and party institutionalization in a country

In order to examine how the nationalization of party systems varies across countries in spite of similar institutions, it must be understood whether or not nationalization improves over time, and whether the level of party institutionalization matters. By studying the trends of nationalization as they correlate to these two independent variables, the mechanisms of nationalization will be better understood, a puzzle that Duverger first questioned in 1954. If the expectation is validated empirically that democratic consolidation—defined by age and party institutionalization—correlates with a high degree of nationalization, there will be a greater understanding of what shapes the linkage between district-level and national party systems in a country.

An answer to the question of how nationalization varies over time and with varying levels of party institutionalization, especially in new democracies, will further expand the existing theories suggested by the literature. Potentially, finding an increasing trend of nationalization over time will describe whether voters generally vote with a sense of affecting the formation of governments through a cohesive national party system, rather than merely the allocation of seats in their particular electoral constituencies. The controls of this study—examining the trends of nationalization within groups of similar electoral institutions, degrees of democratic consolidation, and geographic location—help to explain why the degrees of nationalization of party systems vary in general. This could thereby change the nature of strategic voting effects, which describe the formation of district-level party systems in the first place.[8] Thus, an implication of this research is how nationalization of party systems may change the character of the coordination problems at the district level.

The remainder of this paper is organized as follows. Chapter 2 concerns the measurement of the nationalization of party systems. After first discussing the various definitions and measurements of the nationalization of party systems existing in current literature, I present a new measure to capture the variation in the degrees of nationalization in different states. This measure, which I define as *linkage*, captures the average number of constituency races that parties enter in an election. Chapter 3 explores in depth the theoretical aspects of the nationalization of party systems. The existing theories in the literature that seek to explain the variation in the nationalization of party systems are first surveyed, followed by a discussion of the specific hypotheses and variables investigated in this research. Chapter 4 provides an

[8] This is a speculative implication identified by Cox (1997), Ferree, Powell, and Scheiner (2013), and Stoll (2013). The nationalization of party systems is believed to feed back into the mechanisms of contextual factors on the effects of electoral rules on party systems.

empirical study of the data set, explains the methodology used to test the hypotheses, and describes the results. Chapter 5 focuses on analysis of the hypotheses. Chapter 6 concludes.

Chapter 2: Measuring the Nationalization of Party Systems

There is a well-developed set of literature concerning the construction of an adequate measure for the seemingly elusive concept of the nationalization of party systems. Various conceptualizations have been proposed to describe the observed variation in the nationalization of different states' party systems, and several measurements have been proposed as well. Each measure captures a slightly different understanding of the phenomenon, although all are useful in examining the observed variation.

Jones and Mainwaring summarize one basic understanding of the nationalization of party systems. According to Jones and Mainwaring, a party system is "highly nationalized [… when] the major parties' respective vote shares do not differ much from one province to the next. In a weakly nationalized party system, the major parties' vote shares vary widely across provinces" (Jones and Mainwaring 2003: 140). Caramani, Cox, and Chhibber and Kollman use a similar understanding of the nationalization of party systems, although no single construct has been used ubiquitously in the literature to capture the variation. For the purposes of this study, the nationalization of party systems is similarly defined as the extent to which a party system consists of major parties entering a majority of constituency races and receiving uniform vote shares across those districts. Given these clear definitions of the nationalization of party systems, it is possible to distinguish what each measure does and how it captures the concept of nationalization.

Jones and Mainwaring introduce the *Party Nationalization Score* (PNS) to measure the nationalization of parties, rather than party systems, based on a Gini coefficient measure. The Gini coefficient is a widely-used measure of inequality across units (Shyrock et. al. 1976; Creedy 1998). As used by Jones and Mainwaring, the Gini coefficient measures the disparity of the vote

shares of a party amongst the districts in a country. To calculate the party nationalization score, the inverse of the Gini coefficient is taken:

$$PNS = 1 - Gini\ coefficient$$

A high party nationalization score indicates a high degree of nationalization for the single party. Party nationalization scores for all the parties in an election are then aggregated to create a value of nationalization in that election, a value they define as the *Party System Nationalization Score* (PSNS):

$$PSNS = \sum_{i=1}^{n} PNS_i \times p_i$$

where p_i equals the party's share of the national vote. A high PSNS indicates a high degree of nationalization. As an aggregate measure, PSNS effectively captures the definition of nationalization presented by Jones and Mainwaring. Nationalization as measured by PSNS is highest where parties' vote shares are even across districts and high overall throughout the state.

Alternatively, Chhibber and Kollman define the process of nationalization as *party aggregation* from the set of district races in an election. Party aggregation is the process by which district races in an election form the national party system as a whole. Unlike Jones and Mainwaring's conceptualization of the nationalization of party systems, party aggregation does not directly account for parties' vote shares in each district and overall. Instead, the process of nationalization is understood by the difference between the national party system and district-level party systems in a country. Although party vote shares factor indirectly into the process and measurement of party aggregation, the emphasis is on the average effective number of parties entering each district.[9] In this case, nationalization is measured by *deviation* (D). Deviation is

[9] The effective number of electoral parties is a measure used to count the number of parties in a country's party system weighted by relative strength. The effective number of electoral parties, N_v, is calculated by Laakso and Taagepera's measure:

defined as the difference between the effective number of parties at the national level and the average effective numbers of electoral parties, calculated by district (Chhibber and Kollman 1998; 2004).[10]

$$D = N_{NAT} - N_{Dist.Avg}$$

As the conceptualization of nationalization differs from that of Jones and Mainwaring, the measure also captures a different aspect of nationalization than the Party System Nationalization Score. Deviation is not based on party-specific values like the PSNS, but instead captures the disparity in an election between each district party system and the national party system. A low deviation value indicates a high degree of nationalization, since the average district party system would match the national party system in such a case.

Cox modifies the deviation measure to instead calculate *inflation* (I), equal to D/ENP_{NAT} (Cox 1999a).

$$I = \frac{N_{NAT} - N_{Dist.Avg}}{N_{NAT}}$$

Inflation is a construct for the same conceptualization of nationalization as used by Chhibber and Kollman. However, dividing by the national effective number of parties provides a percentage

---

[9] *(Continued from previous)*

$$N_v = \frac{1}{\sum_{i=1}^{n} p_i^2}$$

where for n parties, p_i represents the proportion of popular votes received by party i. N_s may be calculated by using s_i, the proportion of seats received by party i instead of p_i, but for measuring the nationalization of party systems, the proportion of votes is best because weighting the measure by the proportion of seats won by a party may exclude parties that win significant numbers of votes but no seats. See Laakso and Taagepera (1979).

[10] The average effective number of parties is calculated as an average of the effective number of parties for each constituency.

$$N_{Dist.Avg} = \frac{\sum_{i=1}^{d} N_d}{d}$$

where d is the number of districts in a country.

measure for nationalization. Just as with deviation, as inflation gets larger, nationalization is poorer.

Kasuya and Moenius (2004; 2008) provide new insight to the definition and measurement of the nationalization of party systems. They define two distinct dimensions of party nationalization, identifying factors of "inflation" and "dispersion." Inflation refers to the extent to which the average size of each district-level party system is inflated to the national level. Dispersion refers to the extent to which there is variation in the contribution of a district's party system to the size of the national-level party system. Dispersion is a measurement of each district's contribution to party system inflation to the national party system. Kasuya and Moenius argue that most definitions and measurements of the nationalization of party systems deal only with inflation, leaving out the dispersion component. Deviation and Inflation both measure the "inflation" aspect of the nationalization of party systems as defined by Kasuya and Moenius—measuring the extent to which the size of the national-level party system is inflated in comparison to the average size of the district-level party systems.

Kasuya and Moenius make two contributions to the works of Cox and Chhibber and Kollman on measuring the nationalization of party systems, beyond distinguishing the components of the definition of nationalization. They first modify Cox's inflation measure to weight for the number of votes a party receives at the national and district levels (Kasuya and Moenius 2004). This weighted measure of inflation is defined as I_W,

$$I_W = \left(\frac{N_{NAT} - \sum_{i=1}^{n} N_i W_i}{\sum_{i=1}^{n} N_i W_i} \right)$$

where N_i equals the effective number of parties in district i and $W_i = \frac{vot_i}{vot_{nat}}$, where vot_{nat} equals the total number of votes at the national level, and vot_i equals the number of votes in district i. This weighted measure of inflation, like Cox's *inflation* and Chhibber and Kollman's *deviation*, also only captures the "inflation" aspect of nationalization as defined by Kasuya and Moenius, not the "dispersion" aspect. However, the weighted measure is intended to provide a more accurate measure of inflation to the national party system by weighting each constituency according to its share of voters from the national total. Accounting for variation in district size in this manner gives smaller districts—measured by vote share—a lower impact on linkage to the national level. Like inflation and deviation, a low weighted inflation score indicates a high degree of nationalization.

Second, Kasuya and Moenius also propose a more effective measure of the nationalization of party systems to include both the dispersion and inflation factors they distinguish in defining the phenomenon, as they suggest, creating the measure *nationalization* (*NAT*), combining factors of I_W and a proposed measure of dispersion (Kasuya and Moenius 2008). Other measures have also been proposed for capturing the variation in the nationalization of party systems.[11] The details of the Kasuya and Moenius *nationalization* measure and other measures of nationalization are not relevant for the purposes of this research.

Proposing a New Measure: Linkage

In order to capture another, related aspect of the nationalization of party systems, I propose a party-based measure for the nationalization of party systems, called *linkage*. Linkage is defined as the degree to which district-level elections are a reflection of the national party

[11] See Lago and Montero (2010).

system. This variable will capture the variation of nationalization of party systems involving the entrance of parties into district races; the variation relevant for linkage exists in the degree to which every party enters district races. An indirect weight on the measure is also included to eliminate parties with insignificant vote shares. Through this measure, low variation in party vote shares across districts—the significant factor of nationalization for Jones and Mainwaring—as well as party aggregation are both included in the conceptualization and measurement of the nationalization of party systems.

To fully operationalize the linkage variable, representing the nationalization of party systems, it is critical to clearly define the limits of what linkage entails. To do this, the case of the highest degree of linkage, or perfect linkage, must be considered. The attributes of a case of perfect linkage will define the conditions of linkage. In general, I define linkage as the reflection of the national party system onto the district elections in a state. That is, in a case of perfect linkage, every district race resembles the national party system; each district race is an exact microcosm of national party competitions. In other words, if every party runs candidates in every district, there are only national parties, and thus this is a case of perfect linkage. On the other hand, if each district has a distinct party system, there are only local parties, a case of zero (failed) linkage.

Because linkage is defined as the degree to which the national parties compete in all district races in a state, the best way to measure linkage is by examining the percentage of district races that a party enters in an election. Linkage is therefore an average of the percentage of districts that each party enters. Linkage is represented by the variable *L*,

$$L = \frac{\sum_{i=1}^{n} \frac{E_i}{d}}{n}$$

where E_i = the number of districts party i enters, d = the total number of districts, and n = the total number of parties. $\frac{E_i}{d}$ equals the percentage of districts that party i enters. The value of L, an aggregated average of the percentage of districts each party enters, will range from 0 to 1. A high value of linkage indicates a high degree of nationalization. This value represents the degree to which each district party is linked to the national party system, which is one measure of the nationalization of party systems phenomenon.

One problem with L, or any measure of the nationalization of party systems, is the potential pitfall of defining parties. The question is which parties will be included in the measure of linkage—whether or not the measure should be weighted to include only viable parties or all parties. Some "parties" are parties in name only, and may not in fact constitute a viable party. To solve this problem, L will only include the n parties with overall vote share greater than 5%. This arbitrary limit will remove non-viable parties, likely present in any election, from the calculation of L. Setting this limit on the parties counted in L adheres to the definition of the nationalization of party systems, stating that a party system is nationalized if party vote shares are even across districts. It is necessary for better capturing the phenomenon of national, viable parties entering district races across a country, as opposed to a minor party with no effect on the outcome of an election.

The measures of nationalization are summarized in Table 2.1. Although one measure may be slightly more successful in capturing the variation than the others, each measure must be examined in comparison with the others to determine possible error and discrepancies in the degree of nationalization in an election.

Table 2.1 Measures of Nationalization

Measure	Equation	Comments
Party System Nationalization Score	$PSNS = \sum_{i=1}^{n} PNS_i \times p_i$	Measures the degree of discrepancies of vote shares across districts
Deviation	$D = N_{NAT} - N_{Dist.Avg}$	Measures party aggregation to the national level
Inflation	$I = \frac{N_{NAT} - N_{Dist.Avg}}{N_{NAT}}$	A percentage measure based on party aggregation
Weighted Inflation	$I_W = \left(\frac{N_{NAT} - \sum_{i=1}^{n} N_i W_i}{\sum_{i=1}^{n} N_i W_i} \right)$	Inflation weighting each constituency by national vote share
Linkage	$L = \frac{\sum_{i=1}^{n} \frac{E_i}{d}}{n}$	Measures the average percentage of districts that parties enter; only *n* parties with overall vote share over 5% are counted

Chapter 3: The Theory

Given various measures of the nationalization of party systems, the trends of variation in nationalization over time and with changing party institutionalization can be further explored. Current literature concerning the study of electoral systems offers various theories that seek to explain why there are high degrees of nationalization in some countries and not others. As suggested by the literature, factors including ethnic diversity, the nature of executive elections, and federalism all affect the degree of nationalization in a country. The purpose of this research in particular is to explore two specific factors believed to condition party system nationalization: time and democratic consolidation.

Beyond defining an adequate measure for the nationalization of party systems, however, relatively little research has been done to quantitatively identify causal variables for variation in the nationalization of party systems across states; as shown, most of the literature is focused on the measurement of the phenomenon. Nevertheless, certain aspects of the nationalization of party systems have been examined in prior literature. In the 1970s, for example, Stein Rokkan noted the structuring of democratic institutions in Western Europe, describing the mechanisms behind the nationalization of party systems in that region (Rokkan 1970). More recently, Daniele Caramani also explored nationalization of party systems in Western Europe (Caramani 2004), although through the lens of more recent literature.

Daniele Caramani (1996; 2000; 2004) and Pradeep Chhibber and Ken Kollman (1998; 2004) both study the historical processes of nationalization in western democracies including the United States, Great Britain, Canada, and India in the latter case. Caramani's and Chhibber and

Kollman's works have also inspired more comparative studies of recent elections.[12] However, the general factors influencing variation in nationalization of party systems, and the consequences of high or low degrees of nationalization, remain speculative or case-specific.[13]

In 1997, Cox speculated that arguments for nationalization of party systems must entail the same kinds of coordination mechanisms that occur at the district level, and further stresses the importance of the rules for electing the executive, as well as executive powers (Cox 1997: Chapter 10; 1999a; 1999b). Cox and Knoll examine in greater detail the coordination mechanisms, involving human discretion, shaping the projection of the district-level party system to the national party-system (2003). As suggested by Cox (1997), Cox and Knoll (2003), and Norris (2004), the geographic distribution of preferences or ethnic cleavages affects the extent to which the national party system matches the district-level party systems. Moser and Scheiner (2012) also briefly suggest that democratic experience and party institutionalization condition the nationalization of party systems, although the focus of their work concerns the conditioning of Duverger's Law and Hypothesis by the contextual factors of democratic experience and party institutionalization. According to Moser and Scheiner, where parties do not have strong ties to voters, it becomes more difficult to coordinate political actors across districts. This theory inspires the research conducted here.

The contextual factors of executive elections are also widely believed to cause variation in nationalization. As Golder (2006) and Hicken and Stoll (2007; 2011) demonstrate, the number of candidates who compete in the presidential election affects the nationalization of the party system. Moreover, Hicken and Stoll (2013) also demonstrate that the powers of the presidency,

[12] See Jones and Mainwaring (2003), Moenius and Kasuya (2004; 2008), and Alemán and Kellam (2008).

[13] Lago-Peñas and Lago-Peñas (2009) examine the consequences of nationalization of party systems on the composition of public spending, for example. Literature on the causes of the nationalization of party systems is relevant to this research, and is discussed in the main text.

which help determine the value of coordinating to win the presidency, also shape projection. The distribution of government power is also believed to have various effects on the nationalization of the party system. Chhibber and Kollman (1998; 2004) argue, for example, that federal systems promote greater nationalization of party systems. Hicken also makes a similar argument (2009).

These theories suggested in the existing literature provide an excellent starting point for examining the causal factors shaping the nationalization of party systems. In this research, I examine six specific independent variables that potentially shape the variation in the nationalization of party systems. These six variables, all related to the concept of democratic consolidation, are the election number in a country, a binary old democracy variable, party system institutionalization, geographic region, district magnitude, and the number of districts.

As a democracy ages over time, it becomes consolidated. The effects of time on the degree of nationalization are explored in order to determine if nationalization is a result of increasing consolidation. Furthermore, whether or not the degree of party system institutionalization matters is also explored, as party system institutionalization is also a component of consolidation. Correlations between nationalization and geographic region are intended to determine trends in nationalization by region, as democracies in certain regions are not consolidated. Finally, examining district magnitude and the number of districts will explore the hypothesis that nationalization is greater when entering a district is more beneficial since more seats are at stake. The model explored in this study of the process of nationalization is presented in Figure 3.1 below.

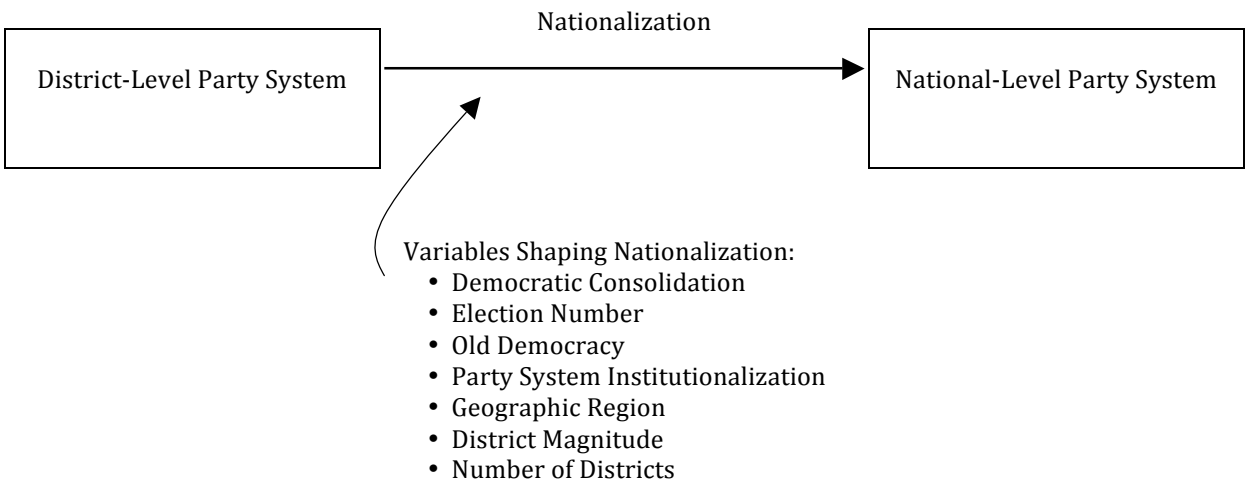


Figure 3.1 Model of the Process of Nationalization (including only independent variables explored in this study)

Studying the age of democracy is simple: subsequent elections in a single country are examined to determine trends in the degree of nationalization over time. An upward trend would indicate that as a state becomes more established, district and national party systems are better linked. Such a trend is expected. Old democracies are defined as having 15 or more elections in the dataset. The degree of party institutionalization is operationalized with the *volatility* measure. Electoral volatility is defined as the total change in the percentage of seats or votes won or lost by all parties between elections. In their study of party institutionalization, Scott Mainwaring and Timothy Scully include volatility as a key component of party institutionalization. If an election has a low degree of volatility, then the party system is described as highly institutionalized. Likewise, a high degree of volatility indicates poor institutionalization. A correlation between high institutionalization and high nationalization is expected. Countries are also organized into geographic regions to calculate regional trends in linkage. Finally, district magnitude and the number of districts are provided in the dataset.

Regardless of which measure of nationalization is used, district-level election returns will be analyzed to determine a value for the nationalization of the party system for each election. Each measure for the nationalization of party systems provides a value for nationalization in a single election. The measure of nationalization is then analyzed by simple regression to determine trends in nationalization over time, as well as with other variables including volatility and geographic region.

Nationalization Over Time

Gary Cox (1997) first speculated that the coordination mechanisms shaping party systems occur over time, for both district and national party systems. For example, the M+1 Rule limitation on the number of parties at the district level occurs over time; the number of parties competing at the district level is bounded over time by the district magnitude plus one. Although the M+1 theory concerns the limitation of parties at the district level, and not linkage to the national level, Cox reasoned that the same mechanisms shape the national party system over time. Moser and Scheiner (2012) further explored the effects of the age of democracy on party systems in general, concluding that democratic experience and party institutionalization greatly improves the success of Duverger's Law. Moser and Scheiner further note that democratic experience, along with party institutionalization conditions the nationalization of party systems, although this theory is speculative. The trends of nationalization over time and with greater party institutionalization will be explored under the methodology explained here.

The first hypothesis is that parties become nationalized—or *linked*—over time. To explore the effects of time on the nationalization of party systems, the linkage variable, along with other nationalization variables, will be calculated for each successive election in a single

country, where linkage is defined as the average number of districts that each party enters in a single election in a country in order to capture the nationalization phenomenon. It is expected that over time, the linkage value for each successive election will be greater than the previous election. Thus, when parties enter a greater number of districts on average in an election, the party system may be described as nationalized. With some other variables, as explained in Chapter 2, a downward trend indicates increasing nationalization over time.

The expectation that nationalization occurs over time constitutes one part of the model explored in this research that if democratic consolidation is achieved, nationalization improves. Democratic consolidation is defined, for the purposes of this research, by democratic experience and increasing party institutionalization. Therefore, over time, as a country becomes consolidated, it is expected that nationalization improves. If this hypothesis is proven, then nationalization of party systems can be described theoretically as a byproduct of democratic consolidation. This is expected because with increasing consolidation, parties are likelier to hold greater ties to voters and coordination problems are likelier to be solved. As a result, it is expected that there is a low chance of nationalization for new democracies. Furthermore, although theoretically nationalization is expected to improve over time, empirically this may not be the case for most democracies. The trends of nationalization over time are thus explored for countries grouped by geographic region, size, and electoral institutions. These groupings are explored in Chapter 4.

Nationalization and Party Institutionalization

The second hypothesis is that linkage is greater where party institutionalization is also greater. Current literature has yet to examine if poor linkage is a symptom, consequence, or

cause of poor institutionalization. Party institutionalization is defined as the process by which a national party system becomes well established and accepted. Like the age of democracy, party institutionalization can be considered a fundamental component of democratic consolidation. A consolidated democracy is expected to have high degrees of party institutionalization in elections. Given that nationalization is expected to increase over time, and party institutionalization increases over time as a democracy becomes consolidated, it is therefore expected that nationalization is highest when party institutionalization is also high.

As described by Scott Mainwaring and Timothy Scully, party institutionalization is operationalized by the volatility variable, measuring the total change in the percentage of seats or votes won or lost by all parties between elections. The number of independents has also been used to capture variation in party institutionalization. If an election has a low degree of volatility or a low number of independents, then the party system is described as highly institutionalized. Likewise, a high degree of volatility or high number of independents relative to the number of parties indicates poor institutionalization. While the number of independents can simply be counted in an election, volatility is typically measured in two ways: first using the Pedersen index, and second using the Birch method. For the purposes of this study, the Pedersen index suffices.[14] The Pedersen Index is calculated by summing the total change in the percentage of seats or votes won or lost by all parties between two (legislative or executive) elections and dividing by two. More formally,

$$V_{Pedersen} = \frac{\sum |p_{i,t+1} - p_{i,t}|}{2}$$

[14] See Pederson (1979).

where $p_{i,t}$ is the vote (or seat) share of party i at the first election (t) and $p_{i,t+1}$ is the vote (or seat) share of party i at the second election ($t+1$).[15] This measure of volatility has been used frequently by studies of party institutionalization, including Scott Mainwaring and Timothy Scully's study of party institutionalization of Latin America. Legislative seat volatility scores are calculated for each election to determine a degree of party institutionalization for the election. These scores are then analyzed by simple linear regression to examine correlations between party institutionalization and nationalization. This analysis is included in Chapter 5.

However, although it is expected that with high democratic experience and high party institutionalization comes high nationalization, the degree of nationalization cannot be explained exclusively by democratic experience or party institutionalization. In other words, an established democracy with poor institutionalization likely may not correlate with high nationalization. The key theoretical concern at issue in this research is how nationalization varies over time and with varying levels of democratic consolidation. Party institutionalization, as a component of democratic consolidation, may explain variation in nationalization as well. Together, time and party institutionalization describe varying levels of democratic consolidation; the trends of nationalization are observed to determine correlations with party institutionalization and time. It is not understood whether poor nationalization is a *consequence* of poor institutionalization or lack of democratic experience or both.

It may be argued that party institutionalization is equivalent to nationalization; nationalization and party system institutionalization appear to be at least related conceptually. However, in the simplest terms, nationalization refers to a situation in which each district-level party system closely resembles the national party system, while party system institutionalization

[15] For the purposes of this study, legislative seat volatility is used as opposed to executive and/or vote share volatility. This ensures that presidential and parliamentary systems may be compared and avoids complications with two-round systems. Data on seat volatility levels are also more complete than vote volatility levels.

refers to a situation in which a party system is well established and accepted ubiquitously across a nation. The two concepts, while related, are not the same. Nationalization may entail a high degree of party institutionalization, but not all institutionalized party systems are necessarily nationalized. The better question is whether nationalization is a consequence of party system institutionalization. This study will examine correlations between party institutionalization and nationalization to better understand the relationships between the two variables, beginning in Chapter 4.

Chapter 4: The Evidence

At this point, we have defined a phenomenon called nationalization, surveyed multiple measures to calculate it, created a new measure, and hypothesized several theories attempting to explain the variation in it. Now, these theories must be tested using the measures of nationalization. A dataset composed of 1,057 elections from 82 democracies is the medium for exploring trends in nationalization over time, with varying levels of party system institutionalization, in different geographic regions, and with different electoral institutions. I then use linear regressions to explore the relevant correlations. First, however, a glimpse at certain countries provides an excellent example of the variation in the phenomenon.

Ghana, Kenya, India, and the United States provide especially fine examples of variation in nationalization. Ghana and Kenya are two African countries with similar institutions and rules—even similar ethnic distributions—but very different party systems. Both countries are presidential representative democratic republics, with parliamentary seats elected by first-past-the-post electoral systems. However, while two parties dominate Ghana's politics (the New Patriotic Party and the National Democratic Congress), Kenya's party system is much more fractured, exhibiting poor nationalization compared to Ghana's relatively high degrees of nationalization. Figure 4.1 presents the linkage trends in Ghana and Kenya, illustrating the difference in nationalization between the two countries. Figure 4.2 presents the numbers of parties with overall vote share greater than 5% in Ghana and Kenya.

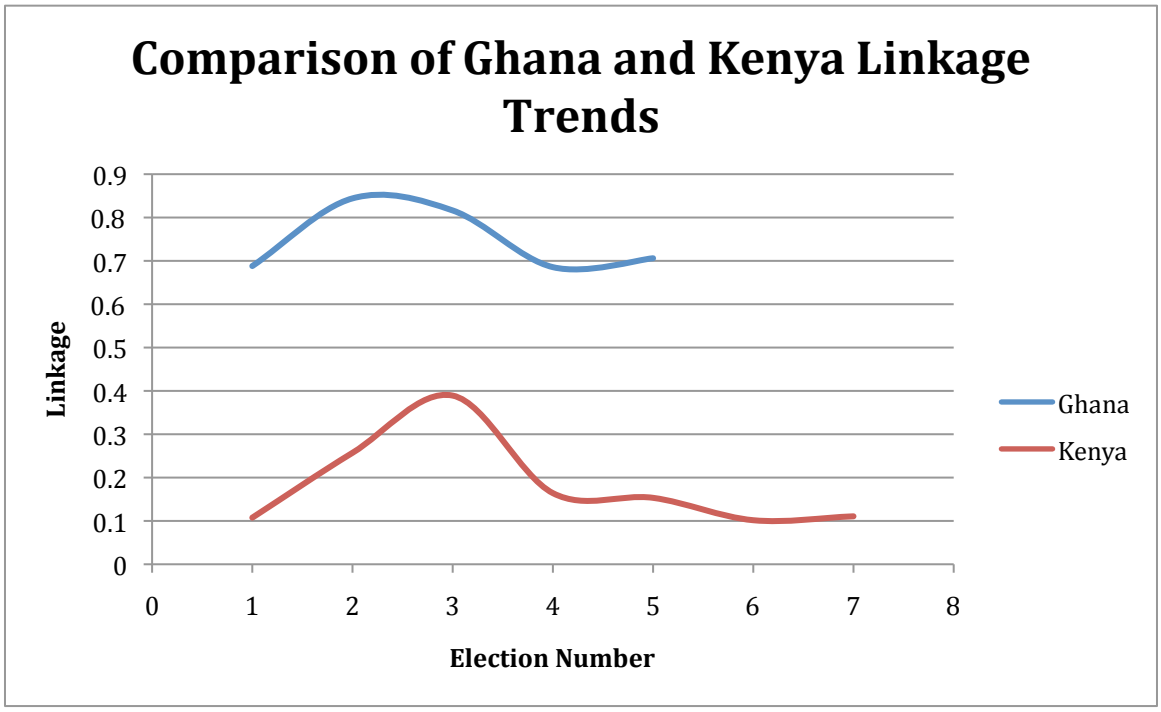


Figure 4.1 Ghana and Kenya Linkage Comparison

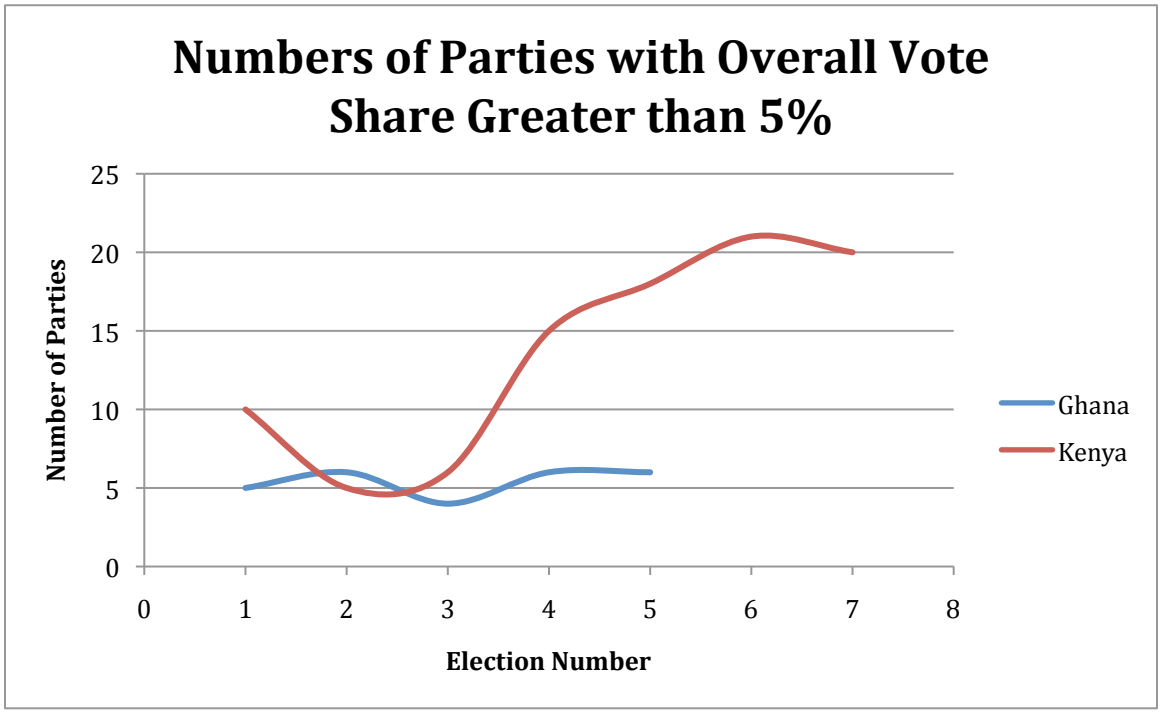


Figure 4.2 Numbers of Parties with Overall Vote Share Greater than 5%; Kenya's poorly institutionalized party system is evident, in comparison with Ghana

As shown, Ghana and Kenya provide a significant comparative case study of the variation in nationalization. Kenya's splintering party system, in comparison with Ghana's relatively nationalized system, appropriately results in a high difference in linkage scores between the two countries. This example presents the success of the linkage score in capturing the variation in the nationalization of party systems. It is apparent, examining the trends in these two countries, that the linkage variable effectively captures the concept of nationalization—that certain countries contain a party system that is ubiquitously consistent throughout most or all districts. Kenya, with the messy party system that cannot be accurately represented by looking at a single district, appropriately has a relatively low linkage trend. India is a case that goes even further than Kenya in the direction of poor nationalization, with extremely low scores, even in comparison with Kenya, as shown in Figure 4.3 below.

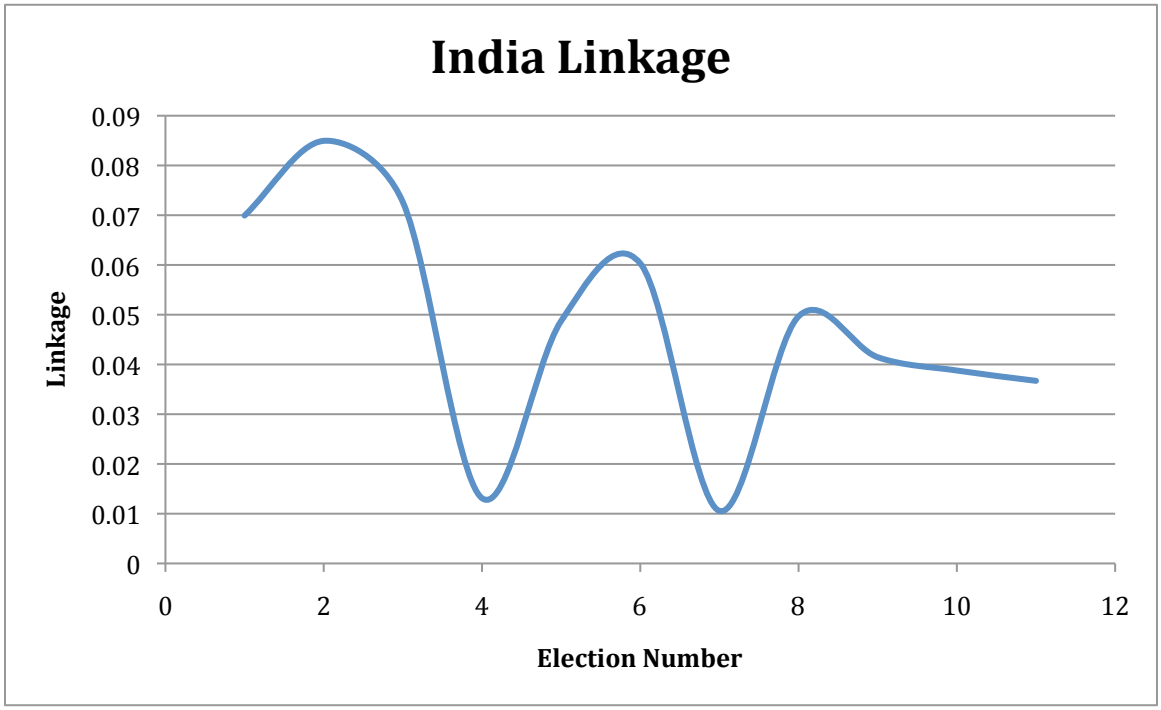


Figure 4.3 India Linkage Trend Over Time; Note that linkage scores are below 10%

Other country graphs, included in Appendix I, also present similar variations in linkage. One particularly interesting aspect of the comparison between Ghana and Kenya, however, is that even though there is a high difference in nominal linkage scores between respective elections, there is also a slightly bell-shaped curve with a right skew over time in both countries. Linkage improves in the first few elections, then drops back slightly. Geographic region or the degree of democratic consolidation may be at play, causing such similar trends. The trends in Ghana and Kenya also make a fine comparison with the United States, given the different geographic region and high degree of democratic consolidation. In fact, linkage in the United States even empirically meets the expectation that linkage improves over time, as shown in Figure 4.4 below. The case of United States linkage is further discussed in Chapter 5.

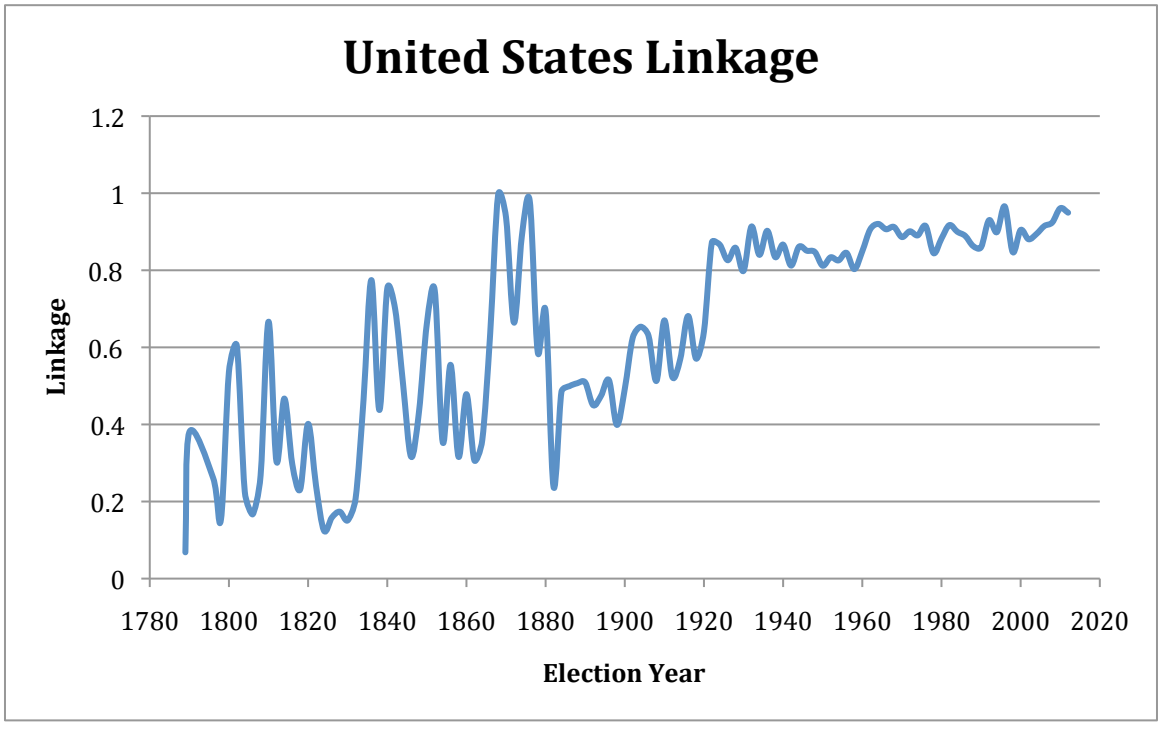


Figure 4.4 United States Linkage Trend Over Time

These examples provide a first empirical glance at the phenomenon of nationalization, as operationalized by the linkage variable. In terms of finding correlations in nationalization trends in general, however, the comparison of Ghana and Kenya provides little evidence towards finding a conclusive result for the hypotheses presented in Chapter 3. If anything, Ghana and Kenya offer support for the theory that geographic region may condition the effects of the other independent variables, especially in comparison with the United States. The United States provides an example of the expected trend in linkage, but this case does not provide evidence to generalize this main hypothesis. In order to analytically evaluate the validity of the hypotheses, regression analysis must be used to determine correlations in all the countries examined, and to do so, the data and methodology must first be explained.

Data and Methodology

The dataset used in this study is composed of 1,057 elections from 82 countries in eight geographic regions.[16] For each country, the dataset provides election returns data organized first by election year, then by constituency. Data provided by the Constituency-Level Elections Archive includes one observation for each party in each district, totaling over 687,000 observations in the dataset. Each election consists of a list of parties entering that election, organized by constituency. The countries analyzed are presented in Table 4.1, categorized by geographic region.

[16] Data accessed from the *Constituency-Level Elections Archive* and *Election Passport*. See Kollman, et. al. (2013) and Lublin.

Table 4.1 Countries examined, grouped by region
* Country defined as "Old Democracy" (data available for 15 elections or more)

Region	*Countries*	
Africa	Angola Benin Botswana Cameroon Cape Verde Equatorial Guinea Gambia Ghana	Kenya Lesotho Liberia Malawi Nigeria Seychelles Zambia
Asia	Cambodia India Indonesia Japan* Korea Nepal Pakistan	Philippines Singapore Sri Lanka Taiwan Thailand Turkey*
Caribbean	Anguilla Antigua and Barbuda Bahamas Dominica Grenada	Guyana Jamaica* Puerto Rico Saint Lucia*
Eastern Europe	Albania Bosnia and Herzegovina Bulgaria Croatia Czech Republic Estonia	Greece* Hungary Latvia Poland Romania Russian Federation
Latin America	Argentina Bolivia Brazil Colombia Costa Rica	Dominican Republic Honduras Mexico Peru
North America	Bermuda* Canada* United States*	
Oceania	Australia* New Zealand*	
Western Europe	Austria* Belgium* Denmark* Finland* France* Germany* Gibraltar Iceland* Ireland* Italy*	Luxembourg* Netherlands* Norway* Portugal* San Marino* Spain Sweden* Switzerland* United Kingdom*

The dataset provides the party names and party vote shares for each party entering a constituency. Overall party vote shares are calculated by averaging the party vote shares for individual constituencies within an election, and parties with an overall vote share less than 5% are not counted in the linkage score. To calculate linkage, the frequency of party entrance in an election is calculated by counting the occurrences of party entrance in each election. This provides E_i, the total number of districts that party *i* enters in an election. The data also provides the total number of districts in an election by counting the districts in the dataset for each election. E_i/d is then calculated for each party with overall vote share greater than 5%. The average of all E_i/d scores provides a national linkage score for each election. Linkage trends over time may then be created and analyzed. The linkage data for each country is presented graphically in Appendix I; the raw data for each election is included in Appendix II.

To test the hypotheses explained in Chapter 3 using the dataset, ordinary least squares model regressions are calculated with the relevant variables. Linkage, as described in Chapter 3, is tested to define trends and examine possible correlations with democratic experience, party system institutionalization, district magnitude, and geographic region. It is useful to define the constructs used to measure these independent variables and their calculation using the dataset. The independent variables are presented in Table 4.2 below, followed by description of the methodology used for measuring and calculating the variables.

Table 4.2 Description of variables tested
* Region variables are included to observe trends in linkage by geographic region; the hypothesis is related to studying the effects of democratic consolidation on linkage, as certain regions have few or no consolidated democracies

Independent Variable	**Description**	**Hypothesized Effect on Linkage**
Time (Election Number)	Nominal variable numbering subsequent elections	Linkage improves with increasing election number
Old Democracy	Democracies with over 15 elections in the dataset are defined as "old democracies" (binary variable)	Score of 1 is expected to correlate with higher linkage
District Magnitude	Average district magnitude in an election	Higher average district magnitude is expected to correlate with higher linkage
Number of Districts	Total districts in an election	Countries with few districts are expected to correlate with higher linkage
Volatility (Pedersen Index)	Measure of party institutionalization	Higher volatility (low institutionalization) is expected to correlate with lower linkage
Africa	Binary variable	–*
Asia	Binary variable	–
Caribbean	Binary variable	–
Eastern Europe	Binary variable	–
Latin America	Binary variable	–
North America	Binary variable	–
Oceania	Binary variable	–
Western Europe	Binary variable	–
Cox Inflation	Measure of Nationalization (See Ch. 2)	Inverse correlation with linkage
Weighted Inflation	Measure of Nationalization (See Ch. 2)	Inverse correlation with linkage
PSNS	Measure of Nationalization (See Ch. 2)	Positive correlation with linkage

As hypothesized, it is expected that linkage improves over successive elections. In order to answer the question of what exactly the effect of time is on linkage, election years must be coded by a nominal-level variable. The election number effectively captures the increasing age of democracy, providing a feasible way to measure the effect of time on linkage. As the age of democracy increases, the election number increases. In the dataset, for each country, elections are numbered beginning with the first election available. Although the dataset often does not

include the first election after democratization for some countries, the first election available suffices to show a trend in linkage over time.

Old democracies, for the purposes of this research, are those with over 15 elections in the dataset. After elections are numbered, those countries with over 15 elections are categorized as old democracies. In order to compare the linkage trends in old democracies with those of new democracies, this categorical variable is created, assigning old democracies with the value 1 and new democracies with the value 0.

In order to examine the effect on linkage of a country being in a particular geographic region, a categorical variable must be created for each region. Region variables take on a value of either one or zero—1 if the country is within that region, and 0 otherwise. Linkage scores may then be regressed with each region variable in order to determine correlations between levels of linkage and geographic region.

As used in the process of calculating the linkage scores for each election, the number of districts is also provided by the dataset, which may be used to examine trends between linkage and the number of districts in a country. A low number of districts may indicate small geographic size of a country, or features in the electoral rules of a country such as proportional representation. District magnitude is also included in the dataset accessed from the Constituency-Level Elections Archive. Volatility data for some countries examined is also available, although this data is unavailable for most countries examined.[17]

Finally, the Constituency Level Elections Archive provides complete scores for various existing measures of nationalization, including the Cox Inflation measure, Moenius and Kasuya's Weighted Inflation measure, and Jones and Mainwaring's Party System

[17] Volatility data provided by Prof. Karen Ferree; See Ferree (2010)

Nationalization Score measure. This data is used to evaluate the effectiveness and covariance of linkage with these other measures.

Results

At the end of this chapter, I include a table of summary statistics for each variable tested, including observations, means, standard deviations, minima, and maxima. To test the specific hypotheses, I use ordinary least squares regression models to evaluate trends and correlations with the linkage variable. The ordinary least squares model minimizes the sum of squared vertical distances between the observed responses in the dataset and the responses predicted by the linear approximation, and given linkage is the dependent variable for all independent variables, the ordinary least squares model is appropriate. The models created include both simple linear regressions testing sole independent variables such as election number with linkage and multiple linear regressions controlling the effects of several explanatory variables on linkage. *p* denotes statistical significance, essentially the probability of observing the values by chance. A smaller *p* indicates a higher likelihood of correlation and statistical significance. Below, the OLS models are grouped into three separate categories: first, testing the main hypotheses of democratic experience, party institutionalization, and electoral institutions; second, testing the trends of linkage in the eight geographic regions explored; third, exploring the covariance of several alternative measures of nationalization with linkage.

Country fixed effects are used in some models to deal with the potential time invariant country specific confounds. These are country level factors (such as "culture") that could correlate with both the independent variables and dependent variable, which are hard to measure and control for explicitly. Without country fixed effects in models where necessary, there can be

a falsely attributed causal effect to the independent variable that is in fact just spurious. Country fixed effects removes all of these if the independent variables are fixed for the country. Only Models 1, 4, and 5 in Table 4.3 are calculated with country fixed effects.

Testing the main hypotheses, I create nine separate models, as shown in Table 4.3 below. Models 1 through 5 are simple linear regressions, each separately testing the correlation between linkage and election number, old democracy, volatility, district magnitude, and the number of districts. Models 6 through 8 progressively combine these variables in order to estimate the impact of each variable holding the others constant. Model 9 holds all variables constant. Coefficient values for each variable are included, along with t-statistics.

Table 4.3 Ordinary Least Squares Models (Main Hypotheses), Dependent Variable: Linkage

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Election Number	0.0047 (11.61)***					0.0013 (2.91)***	0.0013 (2.80)***	0.0024 (4.71)***	0.0023 (4.51)***
Old Democracy		0.1797 (9.88)***				0.1569 (7.94)***	0.0844 (2.24)**	0.0651 (1.62)	0.0964 (2.11)
Volatility			-0.0075 (-9.11)***				-0.0053 (-5.35)***	-0.0055 (-5.17)***	-0.0050 (-4.32)***
District Magnitude				0.0048 (1.60)				0.1480 (3.41)***	0.1414 (3.24)***
Number of Districts					0.0004 (4.05)***				0.0001 (0.98)
Constant	0.5430 (59.89)	0.4954 (31.79)	0.5163 (46.59)	0.6082 (40.74)	0.5839 (46.57)	0.4897 (31.29)	0.6158 (14.86)	0.4096 (6.08)	0.4055 (5.67)
Country fixed effects?	Yes	No	No	Yes	Yes	No	No	No	No
Observations	1057	1057	567	501	1027	1057	567	489	489
R-squared	0.6155	0.0847	0.2483	0.0051	0.5600	0.0920	0.2956	0.4244	0.4227

Robust t-statistics in parentheses.
* significant at 10% level; ** significant at 5% level; *** significant at 1% level

Election number, old democracy, and volatility, when examined independently, have particularly pronounced effects on linkage. As shown, increasing election number produced

increases in linkage with a coefficient of 0.0047, with country fixed effects. There is a very high t-statistic, indicating low standard error, and the correlation is statistically significant at the 1% level, indicating that chance is unlikely to explain the correlation. Similarly, with the binary old democracy variable, "old democracies" highly correlate with greater linkage scores in simple linear regression, and the coefficient is also significant at the 1% level. The coefficient is quite high with old democracies. Model 3 indicates a high inverse correlation between linkage and volatility, also significant at the 1% level. Examining Models 4 and 5 provides insight to how institutional features correlate with linkage. The correlation between district magnitude and linkage alone is not statistically significant at the 1%, 5%, or 10% levels, indicating that the positive coefficient of 0.0048 may be produced by chance. The number of districts produces a positive correlation with linkage, significant at the 1% level, but the coefficient is low.

Despite the results of Models 1 through 5, representing simple linear correlations between single independent variables and linkage, Models 6 through 9 present a slightly different picture of the correlations in the data. Perhaps the most interesting result of progressively adding variables to the models is the disappearing statistical significance of the effect of old democracy on linkage and the decreasing coefficient value for the variable. By adding variables to the model, variation in linkage is thus likelier to be explained by those other variables than old democracy. The effect of the number of districts in a country is also diminished when all variables are included in the model. In Model 9, only election number, volatility, and district magnitude are statistically significant at the 1% level, indicating that the coefficient-value changes in linkage are not likely to be attributed to chance.

Below, in Table 4.4, I include eight ordinary least squares regression models to explore interaction effects between each other independent variable and old democracy. For example,

Model 1 represents the simple regression between election number and linkage if the old democracy variable equals 1, and Model 2 represents the simple regression between election number and linkage if the old democracy variable equals 0 (representing new democracies). These results are used to explore the idea that the results in Table 4.3 show that one variable mediates the effect of another. Multivariate models in Table 4.3 simply show the effects of *x* holding *y*, *z*, etc. constant, but these models do not represent interaction effects.

Table 4.4 Ordinary Least Squares Models (Interaction Effects); Dependent Variable: Linkage

	(1)	(2)	(3)	(4)
Election Number (If Old Democracy = 1)	0.0014 (3.69)***			
Election Number (If Old Democracy = 0)		-0.0090 (-1.55)		
Volatility (If Old Democracy = 1)			-0.0099 (-10.34)***	
Volatility (If Old Democracy = 0)				-0.0001 (-0.06)
Constant	0.6443 (56.02)	0.5360 (16.04)	0.8015 (50.65)	0.4859 (8.18)
Country fixed effects?	No	No	No	No
Observations	776	281	368	199
R-squared	0.0173	0.0085	0.3310	0.0001

	(5)	(6)	(7)	(8)
District Magnitude (If Old Democracy = 1)	0.0059 (1.58)			
District Magnitude (If Old Democracy = 0)		0.0162 (4.31)***		
No. of Districts (If Old Democracy = 1)			7.16e-6 (0.15)	
No. of Districts (If Old Democracy = 0)				-0.0011 (-6.42)***
Constant	0.6958 (46.16)	0.3466 (13.75)	0.6742 (66.72)	0.5855 (22.63)
Country fixed effects?	No	No	No	No
Observations	354	147	776	251
R-squared	0.0070	0.1135	0.0000	0.1421

In Table 4.4, it is clear that there is a strong interactive effect of old democracy with the other variables. In Model 1, compared with Model 2, the regression represents the correlation between election number and linkage for old democracies, while Model 2 represents the correlation between election number and linkage for new democracies. Model 1 has a positive coefficient, while Model 2 has a negative coefficient, and Model 1 is statistically significant at the 1% level while Model 2 is not statistically significant. Given these results, there is an implication that the old democracy variable mediates the effect of election number. Only old democracies exhibit the expected positive correlation between election number and linkage.

Models 3 and 4 present the interactive effects of the old democracy variable on the volatility variable. In Table 4.3, the regression between volatility and linkage resulted in an inverse correlation. Model 3, examining only old democracies, also fits this correlation quite well, with a high absolute t-statistic and statistical significance at the 1% level. Examining only new democracies, however, the statistical significance disappears, increasing the possibility of explaining the relationship by chance. Like election number, the old democracy variable mediates the effect of volatility on linkage. In new democracies, low linkage is present simply because the democracy is new, not because of high volatility, but in old democracies, volatility conditions the effect of age on linkage.

Models 5 through 8 also present an interesting perspective on the interaction effects of the old democracy variable. Examining both the effects of district magnitude and the number of districts on linkage with the interaction of the old democracy variable, a slightly different image forms. Model 5 indicates that there is no statistical significance—no significant correlation not attributable to chance—between district magnitude and linkage in old democracies. In new democracies, there is statistical significance at the 1% level and a high positive correlation

between the two variables; increasing district magnitude in new democracies results in increased linkage. These results indicate that the effect of district magnitude on linkage disappears over time; once again, age of democracy results in a mediating effect on other variables. The same is true for the effect of the number of districts on linkage. In Model 7, examining the correlation in only old democracies, the number of districts results in no significant correlation. In new democracies, presented in Model 8, however, there is a strong inverse correlation between the number of districts and linkage; increasing the number of districts in new democracies results in lower linkage levels. All interaction effects in Table 4.4 are further analyzed in Chapter 5.

To examine the trends and effects of geographic region on linkage, I create four separate models first using the region variables and then holding election number and old democracy constant to eliminate confounding factors. As explained previously in this chapter, eight binary variables are created for each geographic region. In forming the models to analyze geographic region trends with linkage, the Western Europe variable is left out, setting the control and making the other region variables dummy variables. While arbitrary, Western Europe is a fine control because most of the countries examined in this study are from the Western Europe region, and nationalization is generally considered to be greatest in Western Europe. Leaving Western Europe out of the four models created to examine geographic region trends allows the regression to examine each geographic region *relative* to Western Europe. A high absolute value of the t-statistic for the region variable will indicate high deviation from the Western Europe control. Low t-statistics indicate a similar trend in linkage with that of Western Europe. The models for geographic region are presented below in Table 4.5. Model 1 compares the regional correlations of linkage with that of Western Europe.

Table 4.5 Ordinary Least Squares Models (Geographic Region), Dependent Variable: Linkage

	(1)	(2)	(3)	(4)
Africa	-0.1410 (-3.81)***	-0.1023 (-2.74)***	0.1416 (2.96)***	0.1608 (3.37)***
Asia	-0.0823 (-2.91)***	-0.0524 (-1.83)*	0.1157 (3.28)***	0.1314 (3.74)***
Caribbean	0.1465 (3.92)***	0.1803 (4.81)***	0.2843 (7.25)***	0.3063 (7.82)***
Eastern Europe	-0.0769 (-2.11)**	-0.0443 (-1.21)	0.1026 (2.53)**	0.1217 (3.01)***
Latin America	-0.1519 (-4.52)***	-0.1191 (-3.52)***	0.1307 (2.87)***	0.1449 (3.21)***
North America	0.3323 (1.40)	-0.0332 (-1.24)	0.0264 (1.15)	-0.0295 (-1.14)
Oceania	0.0436 (0.99)	0.0500 (1.15)	0.0367 (0.86)	0.0425 (1.01)
Election Number		0.0026 (5.13)***		0.0022 (4.47)***
Old Democracy			0.2895 (8.86)***	0.2756 (8.47)***
Constant	0.6432 (54.55)	0.5959 (40.14)	0.3606 (10.64)	0.3342 (9.80)
Country fixed effects?	No	No	No	No
Observations	1057	1057	1057	1057
R-squared	0.0640	0.0869	0.1291	0.1454

Robust t-statistics in parentheses.
* significant at 10% level; ** significant at 5% level; *** significant at 1% level

The results in Model 1 show that countries in Africa, Asia, and Latin America have lower linkage scores relative to Western Europe, with high statistical significance at the 1% level providing evidence that the relatively low linkage scores in those regions are likely not attributed to chance. Eastern Europe has statistical significance at the 5% level. Given low t-statistics in North America and Oceania, the implication is that these regions are on par with Western Europe in terms of linkage trends. Interestingly, the Caribbean, with a high t-statistic and statistical significance at the 1% level, exhibits higher linkage than Western Europe.

In Model 2, the same experiment performed in Model 1 is adjusted to control for the effect of election number on linkage. With a high t-statistic of 5.13 and statistical significance at the 1% level, election number is shown to condition the effects of the region on linkage; the coefficients for region variables are almost all larger when election number is included as a control. Nevertheless, Africa, Caribbean, and Latin America—the three regions with the highest absolute t-statistics in Model 1—still have the highest absolute t-statistics amongst the region variables, and still have statistical significance at the 1% level. In these regions in particular, unlike the others, more than increasing election number is at play.

The results of Model 3 are similar to those of Model 2. Here, Model 1 is adjusted to control for the effect of the old democracy variable on linkage. Old democracy, like election number, has a high t-statistic of 8.86 and statistical significance at the 1% level. The results in this model present the effect of being in a particular region, controlling for old democracies. The coefficients for each region here present the expected change in linkage if the election is in that region and is an old democracy, relative to Western Europe. Again, all regions except North America and Oceania have high statistical significance, showing that the effects of being in North America and Oceania are similar to being in Western Europe, even when adding the old democracy variable. What is particularly interesting in Table 4.5 is that the signs flip from negative to positive for Africa, Asia, Eastern Europe, and Latin America between Models 2 and 3, perhaps indicating that an old democracy in any region will exhibit higher linkage.

Finally, Model 4 provides a multiple regression analysis with the region variables, election number, and old democracy. North America and Oceania are again not statistically significant because of similarity to Western Europe. All other variables are statistically significant at the 1% level, and all have high t-statistics and positive regression coefficients. The

implication here is that linkage improves in all regions (with statistical significance) when controlling for election number and old democracy.

These results in Table 4.5 provide an indication that there may be interaction effects with geographic region as well, like the interaction effects between old democracy and the other variables as shown in Table 4.4. Below, in Table 4.6, I present the interaction effects of old democracy on the relationship between geographic region and linkage. Western Europe is once again left out to set the control and create dummy variables for geographic region. Model 1 presents the correlation between geographic region and linkage for old democracies, and Model 2 presents the correlation between geographic region and linkage for new democracies.

Table 4.6 Ordinary Least Squares Models (Interaction Effects with Regions); Dependent Variable: Linkage

	(1) **If Old Democracy = 1**	**(2)** **If Old Democracy = 0**
Africa	Omitted	0.2045 (1.91)*
Asia	0.2537 (6.38)***	0.1208 (1.16)
Caribbean	0.1956 (4.69)***	0.4344 (3.74)***
Eastern Europe	-0.0246 (-0.51)	0.2350 (2.11)**
Latin America	Omitted	0.1935 (1.84)*
North America	0.0248 (1.28)	Omitted
Oceania	0.0351 (0.98)	Omitted
Constant	0.6516 (67.34)	0.2977 (3.07)
Country fixed effects?	No	No
Observations	776	281
R-squared	0.0300	0.0754

Robust t-statistics in parentheses
* significant at 10% level; ** significant at 5% level; *** significant at 1% level

In Model 1, there is statistical significance at the 1% level for Asia and the Caribbean, with high t-statistics for both regions. This indicates that in comparison to Western Europe, old democracies in Asia and the Caribbean exhibit much higher levels of linkage, as shown by the large coefficients. Africa and Latin America are omitted because there are no old democracies in those regions. North America and Oceania, as in Table 4.5, present no significant correlation, indicating similarity to Western Europe. Eastern Europe has a negative correlation, indicating that old democracies in that region have lower levels of linkage, but there is no statistical significance.

In Model 2, the relationship between geographic region and linkage is explored for new democracies. North America and Oceania are omitted because there are no new democracies in those regions. Interestingly, all coefficients are positive in Model 2, indicating that in new democracies, all regions have higher linkage levels than Western Europe. However, not all regions have statistical significance. The results in the Caribbean and Eastern Europe are particularly interesting, with very high coefficients, indicating that in new democracies in those regions, linkage is higher. This seems contradictory to the results in Table 4.5, given that controlling for old democracy in Model 3 of that table resulted in increases in linkage. But in Table 4.6, the constant in Model 2 is much lower than in Model 1, indicating that new democracies have nominally lower linkage levels.

The results of these two models indicate that there are interaction effects of the old democracy variable on region variables. Age appears to mediate the effect of region on linkage. In Asia, for example, linkage is higher only if the old democracy variable equals 1, given the lack of statistical significance in Model 2. The results here perhaps indicate that old democracies correlate with certain regions in the first place; intuitively, it should be clear that geographic

region does not *cause* higher or lower linkage, but correlations may be present because of factors that define those regions. The old democracy variable is one such factor.

The final regression models, presented in Table 4.7 below, are calculated to determine the correlations between linkage and three alternative measures of nationalization. As provided by the Constituency-level Elections Archive, Cox Inflation scores, Weighted Inflation scores, and Party System Nationalization scores are added to the dataset created for this study and regressed with linkage as the dependent variable. All three models are simple linear regressions, calculated to evaluate the effectiveness of the various measures of nationalization.

Table 4.7 Ordinary Least Squares Models (Nationalization Measures), Dependent Variable: Linkage

	(1)	(2)	(3)
Cox Inflation	-0.4324 (-6.02)***		
Weighted Inflation		-0.3750 (-6.91)***	
PSNS			0.1527 (7.38)***
Constant	0.7257 (52.17)	0.7638 (57.42)	0.6159 (75.85)
Country fixed effects?	No	No	No
Observations	986	986	975
R-squared	0.6807	0.6391	0.3874

Robust t-statistics in parentheses.
* significant at 10% level; ** significant at 5% level; *** significant at 1% level

Model 1 presents a simple linear regression between the Cox Inflation measure and Linkage. Recalling that a low inflation score (for both Cox inflation and weighted inflation) indicates a high degree of nationalization, it is expected that inflation and linkage exhibit an inverse relationship. According to Model 1, there is an in inverse relationship between Cox inflation and linkage, with statistical significance at the 1% level. For each single-unit increase in Cox inflation, linkage decreases by 0.4324. Likewise, the weighted inflation measure, shown in

Model 2, also adheres to the inverse relationship, again with statistical significance at the 1% level. Model 3 represents the correlation between party system nationalization scores and linkage, an expected positive correlation. With statistical significance also at the 1% level and a high t-statistic, for every single-unit increase in PSNS, linkage increases by 0.1527. All three models presented here indicate that linkage and these other measures of nationalization appropriately capture the variation in nationalization. Further analyses of these trends are explored empirically in Chapter 5.

Appendix to Chapter 4

Table 4.8 Table of Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Linkage	1057	0.6273309	0.2729258	0.0105634	3.6111111
Election Number	1057	17.80322	20.16084	1	111
Old Democracy	776*	-	-	0	1
Volatility	567	13.15613	14.84263	1	100.8
District Magnitude	501	2.734112	4.150793	1	25.59
Number of Districts	1027	123.2833	162.1062	1	688
Africa	57*	-	-	0	1
Asia	106*	-	-	0	1
Caribbean	56*	-	-	0	1
Eastern Europe	59*	-	-	0	1
Latin America	71*	-	-	0	1
North America	164*	-	-	0	1
Oceania	39*	-	-	0	1
Western Europe	505*	-	-	0	1
Cox Inflation	986	0.1639014	0.1224501	-0.0762918	2.6430819
Weighted Inflation	986	0.1890237	0.1424891	-0.1003452	5.3802794
PSNS	975	0.7042989	0.0843481	0.1054291	0.9032378

* Frequency of "1" (for binary variables) instead of number of observations is listed; data for these binary variables is available for all 1057 elections

Chapter 5: The Analysis

In Chapter 4, the linkage variable was evaluated by regression analyses as the dependent variable with a number of independent variables, including time (election number), volatility, geographic region, democratic experience, number of districts, district magnitude, and other measures of nationalization. The results from those specific regressions help to explain how linkage varies across different countries, and how democratic consolidation factors into the process of nationalization in general. Here, those results are analyzed in conjunction with an empirical perspective of the dataset in order to determine whether the hypotheses are accepted or rejected.

This chapter is organized as follows. First, further exploring the regression models presented in Tables 4.3 and 4.4, I study the resulting correlations found between democratic age, experience, volatility, and electoral institutions. I evaluate the observed correlations with a closer look at the results and dataset. Second, the results presented in Tables 4.5 and 4.6 are analyzed to determine effects of geographic region on linkage. Finally, linkage is compared with the other measures of nationalization, including Cox's Inflation measure, the Weighted Inflation measure, and the Party System Nationalization Score using the results presented in Table 4.7.

Linkage and Democratic Experience

As explained by the hypotheses and theory in Chapter 3, countries are hypothesized to observe an upward trend in linkage over time. The regression analysis in Chapter 4 provides useful information for analysis of this hypothesis. The positive coefficient, high t-statistic, and statistical significance at the 1% level in Model 1 in Table 4.3 indicates that an increase in the election number variable produces positive increases in linkage, changes that are not likely due

to chance. Election number is also a statistically significant variable in Models 6, 7, 8, and 9, resulting in positive coefficients for the variable. Given these results, the null hypothesis—that election number has no effect on linkage—is rejected and the alternative hypothesis is accepted. As election number increases in a country, linkage also increases.

Although this upward linkage trend is validated by regression, however, it is not always the case empirically, as shown by examining the country graphs in Appendix I. Perhaps the best example adhering to the expected upward trend in linkage is the United States, shown in Figure 5.1 below. Linkage in the United States matches the theoretical expectation, showing great improvement, as well as fewer major swings in values between elections over time.

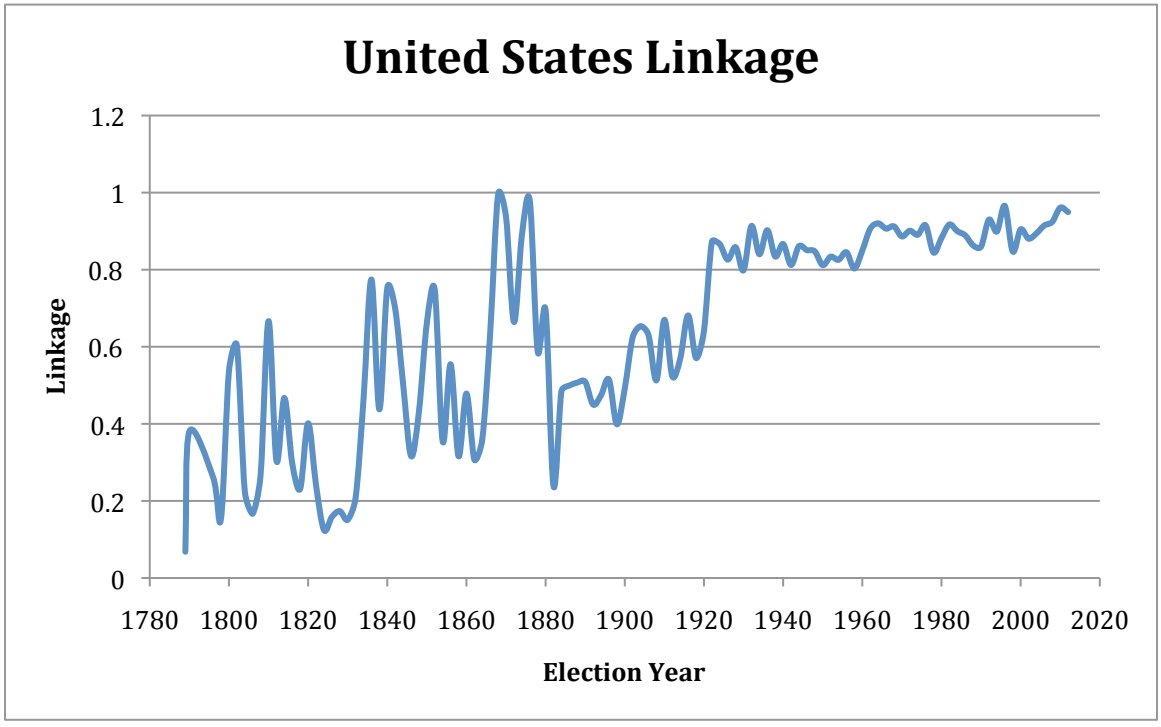


Figure 5.1 United States Linkage scores over time

In recent elections in the United States, with the Democratic and Republican parties entering nearly all districts and few, if any, other parties with overall vote share over 5%, linkage approaches 1, a perfect score indicating that all parties with overall vote share greater than 5% enter all districts. Thus, the United States provides an ideal example of the effect of time on linkage levels. The numbers of parties with overall vote share greater than 5% are plotted in Figure 5.2.

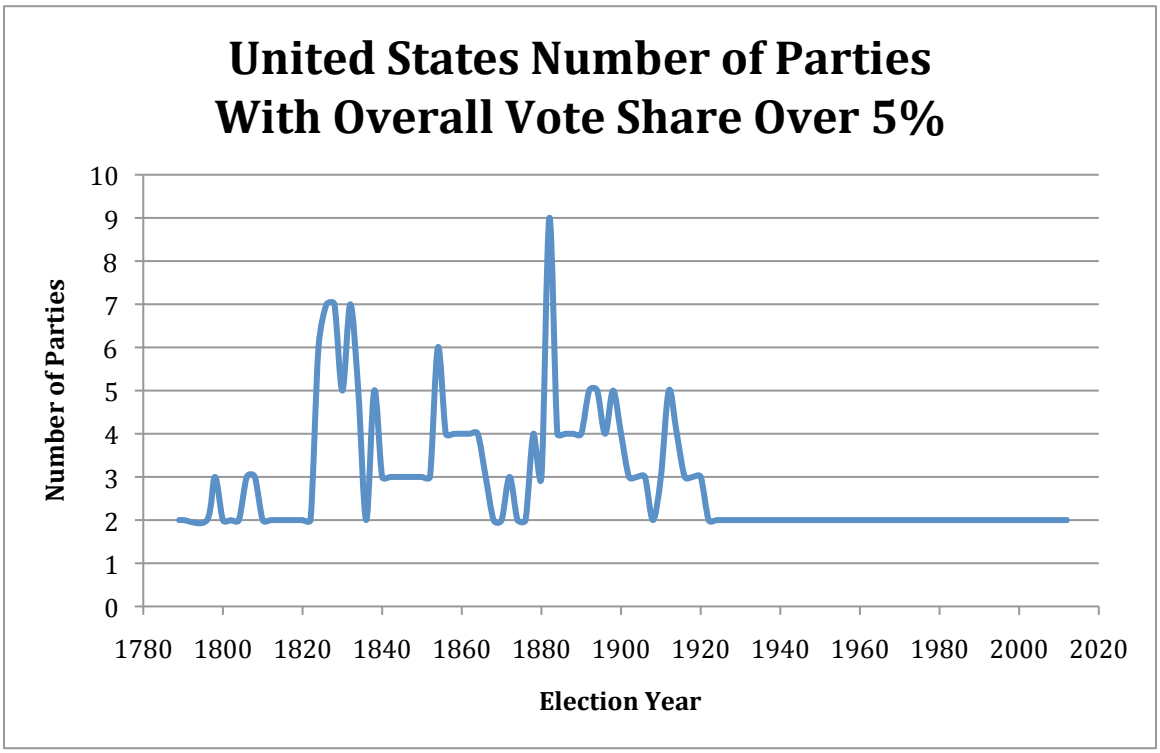


Figure 5.2 Number of parties with overall vote share over 5% in the United States

As shown by the country graphs in Appendix I, however, many countries do not adhere to the expected upward trend in linkage. Trends in Argentina, India, Philippines, Spain, and Zambia, for example, show a downward trend in linkage, and nominally low values overall in comparison with the United States. Some countries' linkage scores appear to be relatively flat over time. This observation leads to the necessary inclusion of the other variables included in this

study. While election number is certainly a significant indicator of linkage trends, it is not the only determinant.

Aside from party institutionalization, institutional, and regional variables, the old democracy variable captures another aspect of the effect of democratic experience on linkage. Empirically, the trends in linkage appear to differ between old democracies and new democracies, defined by the number of elections held since democratization. Countries defined as old democracies in Chapter 4, like the United States and United Kingdom, have more upward linkage trends than those defined as new democracies, as evidenced by the graphs in Appendix I. Furthermore, the regression analysis in Model 2 of Table 4.3 for the old democracy variable indicates that countries defined as old democracies have much higher linkage levels, with a relatively very high coefficient of 0.1797 with a high t-statistic, suggesting that old democracies linkage levels are 0.1797 units greater than new democracies. This effect of the old democracy variable is also prevalent as a control with the election number variable in Model 6. Model 6 indicates that old democracies account for greater increases in linkage than mere increases in election number, as evidenced by the sharp decline in the t-statistic for election number between Model 1 and Model 6, although both variables are statistically significant.

Given the results in Table 4.4, it is possible that while increasing election number does result in increased linkage scores, as hypothesized, the effect is conditional on other variables, with the old democracy variable being perhaps a greater indicator of higher linkage levels than increasing election number. Nevertheless, it is important to note that the old democracy variable is based on the election number variable; old democracies are defined as having 15 or more elections in the dataset. Separating the old democracy group from the rest of the countries, however, does provide a greater sense of the effect of democratic experience on linkage. In

summary, the hypothesis that linkage improves over time is accepted, even though such increases may not be apparent in new democracies; something else must be at play. To add to the picture of the determinants of linkage trends, party institutionalization, institutions, and geographic region must be analyzed.

As an aside, another important aspect is a trend in the average change of linkage in a country. The absolute change in linkage over subsequent elections provides an indication of the volatility of linkage, as opposed to the volatility of party system institutionalization, which is discussed in the following section. When linkage scores deviate significantly from election to election, the party system is likely described as poorly institutionalized. It is expected that over time, linkage scores from election to election will remain stable with fewer deviations. Therefore, a positive correlation is expected between election number, and the deviation of linkage from election to election. The nominal change in linkage from election to election may be calculated to capture this deviation, as well as the absolute change in linkage from election to election. The difference between the two measures is that the first measure captures downward swings in linkage. Both measures are expected to approach zero over time.

Empirically, this expectation is met in the United States. As shown in Figures 5.3 and 5.4, both the absolute change in linkage from election to election as well as the nominal change in linkage from election to election approach zero over time. Both of these measures indicate that there is increasingly less instability in linkage levels in the United States over time and with increasing democratic experience. Examining other country graphs in Appendix I, fluctuations in linkage over time may be greater. Further study of this phenomenon is an important task for future research.

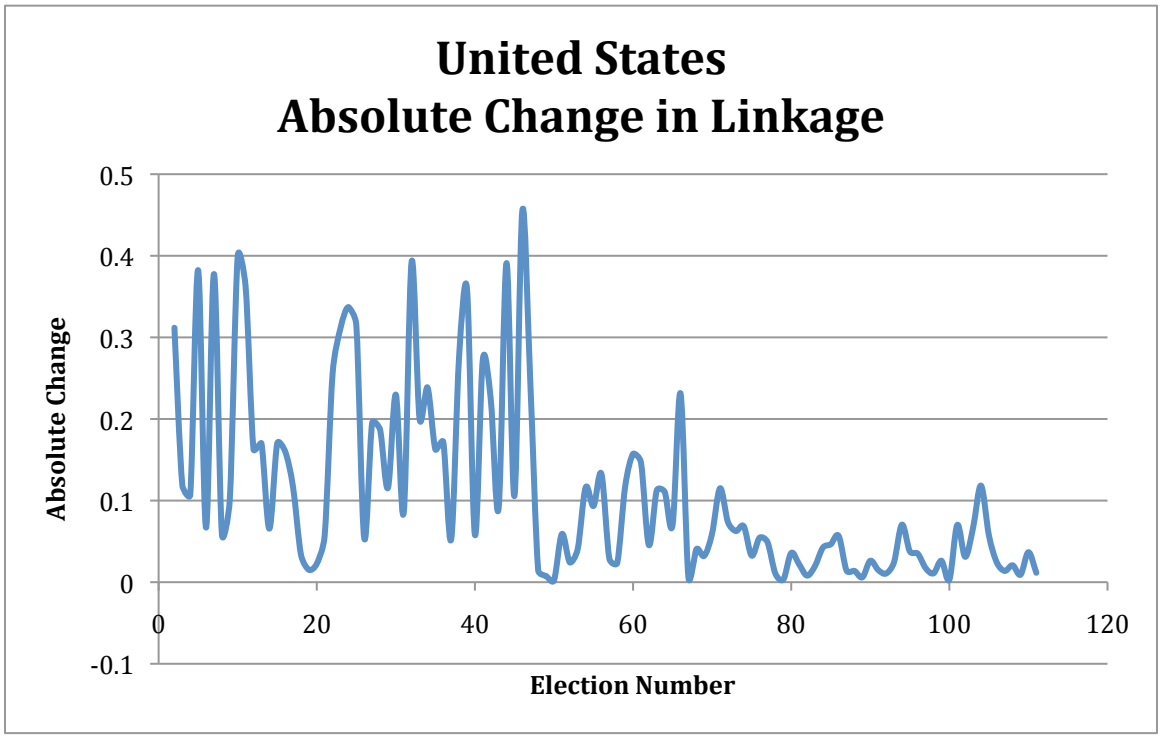


Figure 5.3 Absolute change in linkage over subsequent elections in the United States

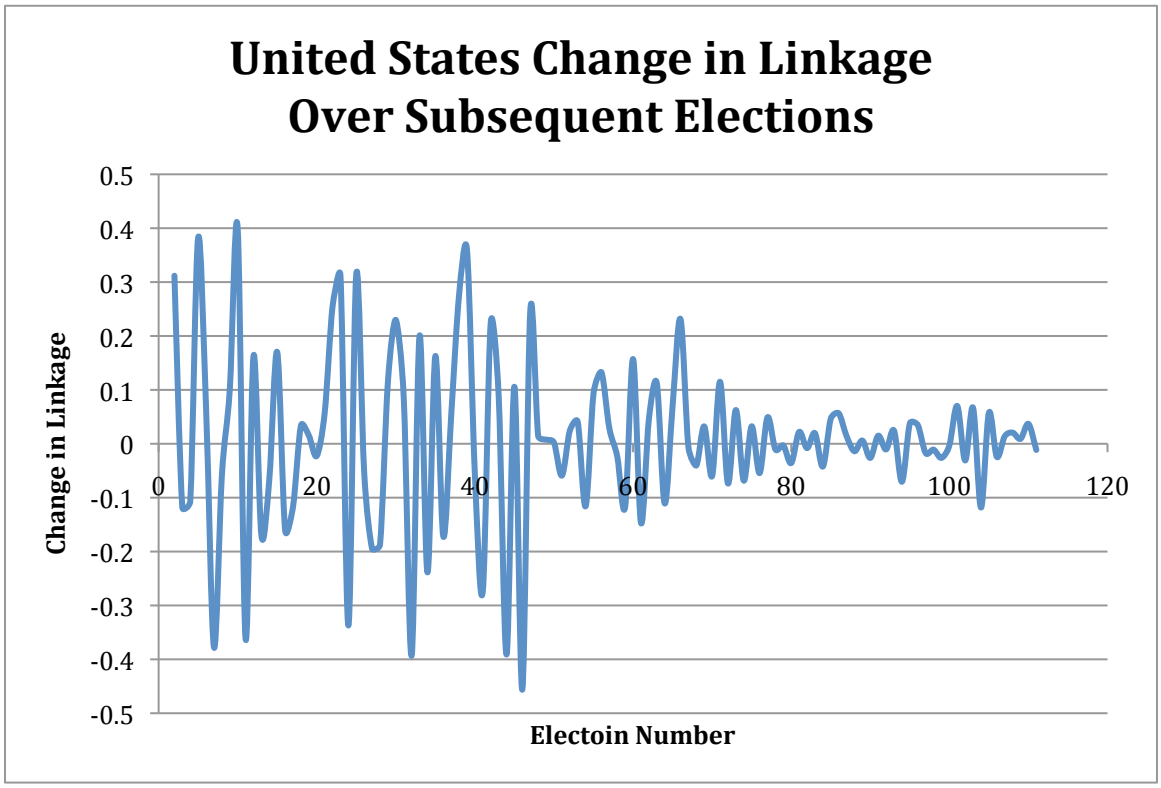


Figure 5.4 Nominal change in linkage over subsequent elections in the United States

Linkage and Volatility

High volatility, indicating low party institutionalization, is hypothesized in Chapter 3 to correlate with low levels of linkage; low party institutionalization is expected to condition the effects of time on linkage, as presented in Figure 1.1. Party institutionalization is defined as the process by which a national party system becomes well established and accepted. Like the age of democracy, party institutionalization can be considered a fundamental component of democratic consolidation. For this reason, the regression models in Table 4.3 include volatility as a variable. The results of this regression provide evidence for whether the hypothesis that low party institutionalization correlates with low linkage may be accepted.

In Model 3 in Table 4.3, it is clear that there is an inverse correlation between volatility and linkage, as hypothesized. The negative coefficient indicates that each increase in volatility results in a decrease in linkage by 0.0075. This coefficient is likely not due to chance, given the statistical significance at the 1% level. Therefore, as with the election number and old democracy variables, the null hypothesis—that there is no effect of volatility on linkage—is thus rejected, and the alternative hypothesis explained in Chapter 3 is accepted.

But like the election number and old democracy variables, volatility cannot be considered without examining the other independent variables. In Table 4.3, the volatility variable is the only variable that inversely correlates with linkage. Although the data for volatility is only available for certain countries, Models 7, 8, and 9 indicate that increasing volatility is still a significant factor for explaining low levels of linkage. The volatility variable has high absolute t-statistics in each model, and is statistically significant at the 1% level throughout. However, progressively adding variables to Model 3, as shown in Models 7, 8, and 9, results in decreases in the absolute t-statistic of the volatility variable, indicating that controlling for other variables

results in a decreasing impact of the volatility variable on linkage. The other controlling variables provide increasing linkage levels, which result in fewer decreases in linkage. The takeaway, theoretically, is that volatility is an important factor in democratic consolidation, with possible correlating fluctuations between volatility and the election number and old democracy variables. A consolidated democracy is expected to have high degrees of party institutionalization in elections. Given that nationalization is expected to increase over time, and party institutionalization increases over time as a democracy becomes consolidated, it is therefore expected that nationalization is highest when party institutionalization is also high. This is established in Model 7 in Table 4.3.

Although it is expected that with high democratic experience and high party institutionalization comes high nationalization, the degree of nationalization cannot be explained exclusively by democratic experience or party institutionalization, as shown in Models 3 and 4 in Table 4.4. An established democracy with poor institutionalization likely may not correlate with high nationalization, but party institutionalization, as a component of democratic consolidation, may explain variation in nationalization. As shown by the difference between Models 6 and 7 in Table 4.3, adding the volatility variable to the control greatly diminishes the effect of the old democracy variable on linkage. The two are certainly related, as new democracies are likelier to have higher volatility, and thus lower linkage scores. Old democracy may thus be a spurious variable, affecting both volatility and linkage.

Institutions

Two other variables—district magnitude and the number of districts—provide indications of the effects of institutional factors on linkage levels. As theorized in Chapter 3, a country with

high district magnitude is expected to correlate with higher levels of linkage, since the cost for a party of not entering a district is a greater number of seats. Likewise, where the number of districts is low, it is expected that linkage will be greater, since fewer districts may indicate a smaller country geographically (where fewer ethnic cleavages may translate into the party system) or a country with higher district magnitude. One such example is Gibraltar, which has only one at-large district, and district magnitude equal to 17 in the 2011 election. In that election, linkage equaled 1, a perfect score. District magnitude and the number of districts are included in Table 4.3, analyzed separately in Models 4 and 5, and with other variables in Models 8 and 9.

In Model 4, it is evident that although there is a positive correlation between district magnitude and linkage, the result is not statistically significant, with a low t-statistic. Therefore, the resulting correlation may likely be attributed to chance. Since this is the case, the null hypothesis—that there is no relationship between linkage and district magnitude—is accepted and the alternative hypothesis is rejected. However, in Models 8 and 9, the district magnitude variable is statistically significant at the 1% levels, with higher t-statistics and higher coefficients. Controlling for the four other variables in Table 4.3 results in a sharp increase in the effect of district magnitude on the level of linkage, as the coefficient increases and the relationship holds statistical significance at the 1% level.

It appears, given Models 4, 8, and 9, that district magnitude does have a positive correlation with linkage under certain conditions. The effects of election number and volatility are greater than district magnitude in Models 8 and 9 given the higher t-statistics for those variables. However, given the results in Models 5 and 6 in Table 4.4, the old democracy variable is a significant indicator of the effect of district magnitude on linkage. These models show that

age mediates the effect of district magnitude on linkage. As a democracy consolidates, the district magnitude factor provides less impact on linkage than it does in new democracies.

In Model 5, a slightly positive correlation exists between the number of districts and linkage, with statistical significance at the 1% level and a high t-statistic. This correlation is likely not attributed to chance given the statistical significance, so the null hypothesis that there is no relationship between linkage and the number of districts is rejected. However, the coefficient—0.0004—is positive, indicating that countries with greater numbers of districts have higher levels of linkage, contrary to the expected hypothesis that low numbers of districts correlates with high linkage. A second, opposite hypothesis might thus be valid: increasing the number of districts correlates with increasing linkage.

Nevertheless, the low coefficient indicates that the relationship, while present, is weak. Examining the dataset, only few countries have very high numbers of districts, relative to other countries. Such countries include the United States, United Kingdom, and Canada, democracies that have greater experience than others, and thus higher linkage levels. In Model 9, controlling for election number, old democracy, volatility, and district magnitude, the coefficient for the number of districts drops even further, as does the t-statistic, and there is no statistical significance. The implication is that other variables better explain variation in linkage, not the number of districts in a country, so the null hypothesis is instead accepted, even though cases like Gibraltar provide fine examples of such a correlation. However, Models 7 and 8 in Table 4.4 indicate that the number of districts does provide the expected correlation with linkage in new democracies. As it does with district magnitude and volatility, age mediates the effect of the number of districts on linkage.

Linkage and Geographic Region

While an upward trend in linkage is not always found, as described in the first section of this chapter, there may be geographic trends in the variation of countries' linkage scores overall. It is observed that certain countries have relatively low linkage scores in comparison with other countries. Comparing the United States with India, for example, shows extremely low levels of linkage in India across all elections, while the United States linkage is increasingly much higher. The same is true in comparing Ghana with Kenya, as explained in Chapter 4. Both democratic consolidation and geographic region may explain variation in levels of linkage.

Determining these relationships is the purpose of the models in Table 4.5. The results in Model 1 show that geographic region provides variation in the level of nationalization. In comparison to Western Europe, four regions have lower levels of linkage while three others have higher levels (although linkage in two of those three regions is likelier to be consistent with Western Europe, as the positive coefficient is not statistically significant). As a result, the null hypothesis that geographic region does not affect linkage is rejected in favor of the alternative hypothesis that linkage indeed does vary by geographic region.

However, as Models 2 through 4 in Table 4.5 and the models in Table 4.6 present, geographic region cannot be considered individually. Just as with the other variables, including volatility and electoral institutions, the determinants shaping linkage are not singular. Election number and old democracy variables account for a high degree of the variation in linkage, not geographic region. Election number, as a control, especially reduces the statistical significance of the region indicators, as shown in Model 2. The variation in linkage relative to Western Europe is better explained by increasing election number rather than geographic region. The old democracy variable also has a similar effect on linkage and geographic region, but with all

positive coefficients in Model 3, the implication is that an old democracy in any region will have higher linkage. Linkage is also higher in all regions when controlling for both election number and old democracy.

It is clear from these results that while certain geographic regions do not *cause* increases in linkage, linkage does vary between regions. It should be noted that most old democracies are in Western Europe, Oceania, and North America. Oceania and North America had similar linkage trends as those in Western Europe, as shown in Model 1 of Table 4.5. While the old democracy variable may better explain the variation in linkage, the region variables provide an interesting insight into the variation of region in democracies around the world. Poorly consolidated democracies are often identified by geographic region, such as in Africa and Latin America. These two regions, indeed, exhibited much lower linkage trends than Western Europe, as shown in Model 1. Therefore, the region variables help to provide evidence for the impact of democratic consolidation on nationalization, and provide indications for linkage trends that transcend single countries.

Alternative Measures of Nationalization

Finally, an examination of other measures of nationalization provides more understanding of the actual measurement of the phenomenon in different countries. The Constituency-Level Elections Archive provides data for the various measures nationalization for the countries examined, including Party System Nationalization Scores, Cox's Inflation, and the Weighted Inflation measure. This data is essential in examining the covariance of the different measures of nationalization with the linkage measure designed in this study, and evaluating the strengths and weaknesses of the various measures.

Figure 5.5 below presents the Cox Inflation trends for the United States. Recalling that a low inflation score indicates a high degree of nationalization, the empirical results here indicate that inflation decreases over time, matching the theory that nationalization improves over time. It is observed both here with the Cox Inflation measure as well as with the linkage measure in Figure 5.1 that nationalization improves over time in the United States, even though the two measures capture slightly different aspects of the phenomenon. This example indicates that linkage and Cox Inflation are both adequate measures that successfully express the concept of nationalization.

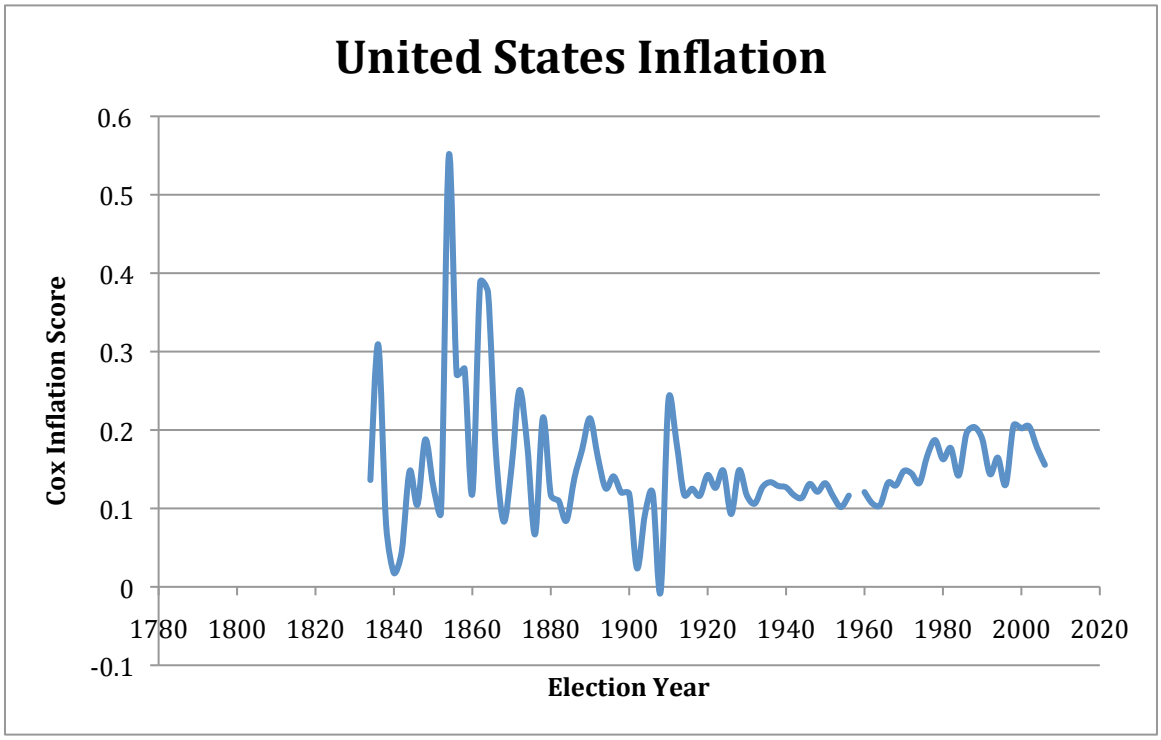


Figure 5.5 United States Cox Inflation scores over time

The same is true for the Weighted Inflation measure devised by Moenius and Kasuya, as shown in Figure 5.6. Like Cox's measure of inflation, a low weighted inflation score indicates a higher degree of nationalization. Again, nationalization is found to improve over time in the

United States. However, the weighted measure, intended to provide a more accurate measure of inflation to the national party system by weighting each constituency according to its share of voters from the national total, reveals greater variation in inflation levels, especially between 1840 and 1880. Accounting for variation in district size in this manner gives smaller districts (measured by vote share) a lower impact on projection to the national level.

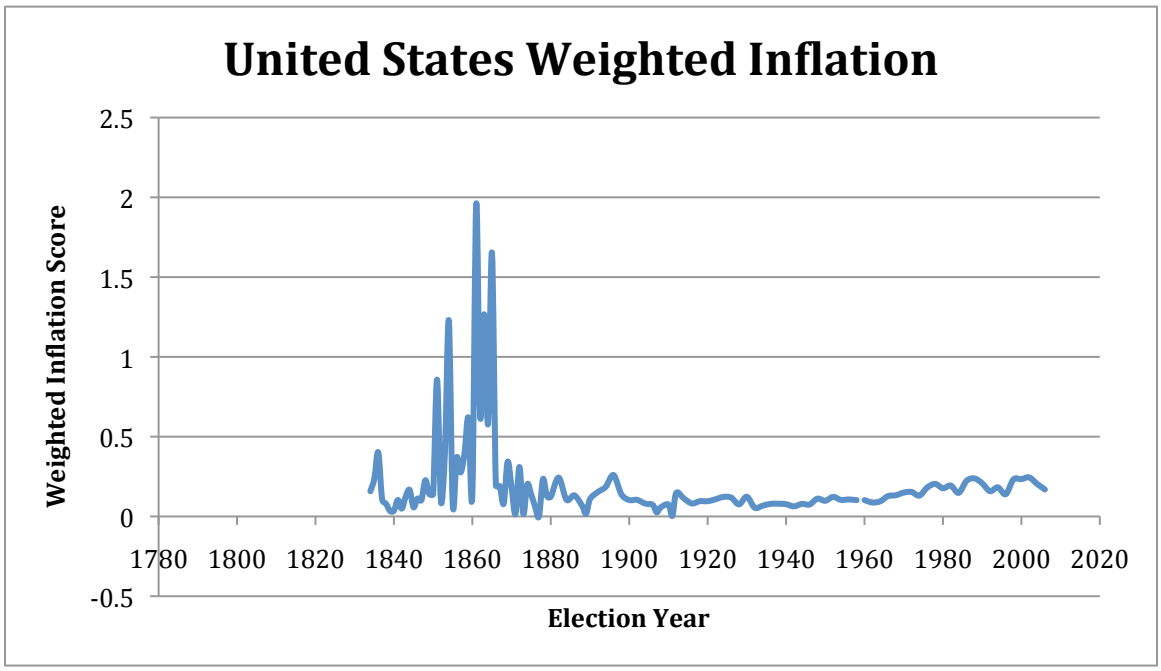


Figure 5.6 United States Weighted Inflation scores over time

Finally, party system nationalization scores are also analyzed. Measuring the degree of discrepancies of party vote shares across districts, a high PSNS score indicates a high degree of nationalization. Although PSNS in the United States, as shown in Figure 5.7, is not calculated for years before 1852, the upward trend with less variation between elections is noticeable. Like inflation and weighted inflation, PSNS does indeed adequately capture the concept of nationalization, as evidenced by the United States example.

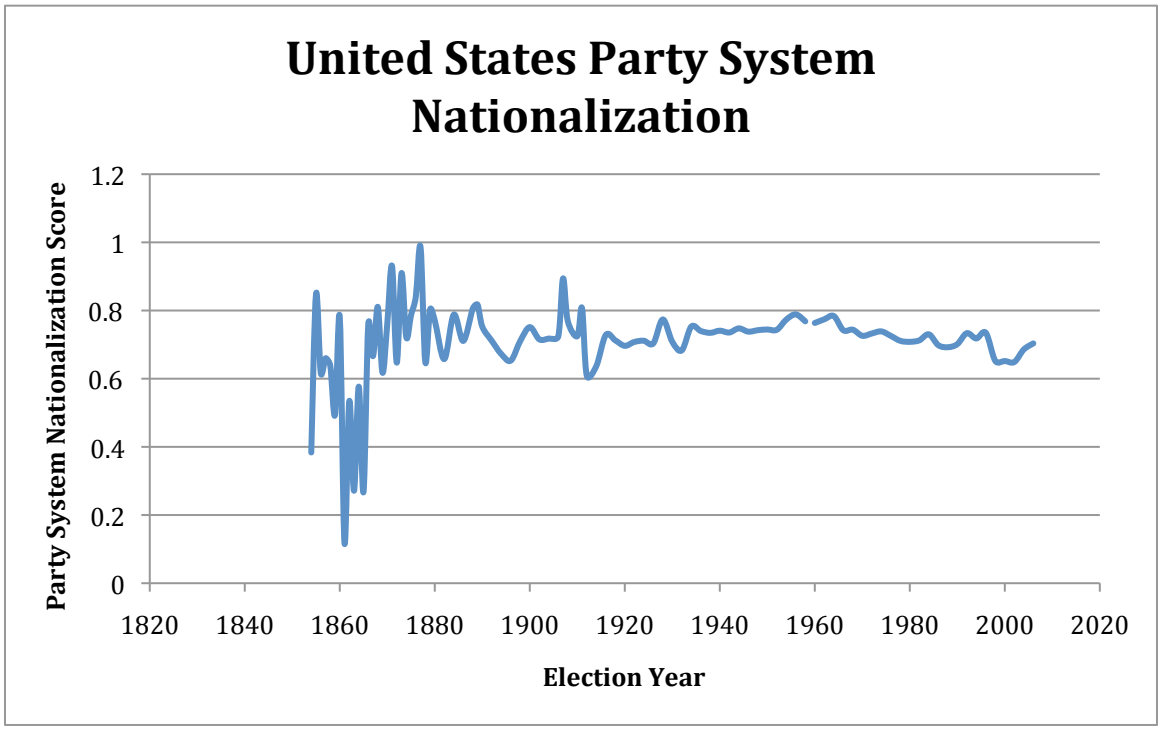


Figure 5.7 United States Party System Nationalization Scores over time

Covariance of these measures with linkage is analyzed by regression in Table 4.7, with each model representing a simple linear regression with linkage as the dependent variable. With inverse correlations found between the Cox Inflation and linkage, and the Weighted Inflation measure and linkage, the expectation is met that these measures are adequate constructs of the nationalization concept, even though their measurements and conceptualizations are slightly different. The same is true for the PSNS measure, which, as expected, exhibits a positive correlation with linkage.

Chapter 6: Conclusion

In spite of similar electoral rules, and often even similar ethnic distributions, there are very different party systems in different countries. With the results of this study, this postulation is validated both empirically and statistically. At the start, the issue at hand was why some states have highly nationalized party systems while others do not in spite of similar institutions. The purpose of this paper was to study the trends of nationalization in various countries in order to better understand the dynamics of a country's party system over successive elections. Given the results in Chapters 4 and 5, mostly conclusive evidence has painted a fine picture detailing the formation of national party systems.

I began this study describing the notion of nationalization with its many abstract definitions and theoretical conceptions. Current literature, providing various measures of the concept but mostly lacking of quantitative studies of trends in nationalization across a wide variety of democracies, was the starting point to developing the theories tested in this study. I formulated a new measure of nationalization, called linkage, which I used in this study. With election data from 82 countries, I created several ordinary least squares regression models to test the correlations between linkage and six independent variables: election number, a binary old democracy variable, volatility, district magnitude, the number of districts, and geographic region variables. The results of these regressions provided the evidence for successfully analyzing the hypotheses in Chapter 3.

With the six independent variables, six separate hypotheses were tested. First, an increase in election number was expected to correlate with an increase in linkage. Countries defined as old democracies were expected to correlate with higher linkage levels. I expected high volatility—indicating low party institutionalization—to correlate with low linkage. High district

magnitude was expected to correlate with higher linkage, and low numbers of districts were expected to correlate with higher linkage as well. Finally, linkage was expected to vary in some way across geographic region.

For four out of six of these hypotheses, it is clear that each variable, taken independently, (including election number, old democracy, volatility, and geographic region) has some effect on linkage. For election number, old democracy, volatility, and geographic region, the hypotheses have all been accepted and the null hypotheses have been rejected. Models 1, 2, and 3 in Table 4.3 and Model 1 in Table 4.5 provide evidence by regression for acceptance of those hypotheses, as explained in Chapter 5. Even for the institutional factors of district magnitude and the number of districts, there appears to be certain limited effects on linkage. However, in general for all six variables, the regressions controlling for multiple independent variables indicate that no single variable may be the sole determinant of linkage levels. It is a complex matrix of factors that determine how well district-level party systems aggregate and perhaps project to the national level.

The Impact of Democratic Consolidation

If the results of this study mean anything, taken as a whole, it is this: democratic consolidation, with its many factors including time and party institutionalization, improves the likelihood for higher levels of nationalization. The initial overlaying theory of this study was that democratic consolidation is expected to shape variation in nationalization. As a democracy ages over time, it becomes consolidated. The effects of time on the degree of nationalization were explored in order to determine if nationalization is a result of increasing consolidation. Furthermore, whether or not the degree of party system institutionalization matters was also

explored, as party system institutionalization is also a component of consolidation. Correlations between nationalization and geographic region were intended to determine trends in nationalization by region, as democracies in certain regions are not consolidated.

Given the results, it seems clear that democratic consolidation does indeed shape nationalization. Perhaps the best evidence for this is Model 2 of Table 4.3, showing the correlation between the old democracy variable and linkage. The list of countries counted as old democracies are by most definitions consolidated, and Model 2 proves that those old democracies have the highest difference in nationalization as compared to the group of new democracies. While the old democracy variable may not capture every aspect of democratic consolidation, it is an effective construct for the concept, providing a fine method to explore the effects of democratic consolidation on linkage.

Nationalization of party systems might be described theoretically as a byproduct of democratic consolidation given these results. The most prominent explanation for the difference between old and new democracies' levels of linkage is that in new democracies, electoral parties have only weak ties to voters, and coordination problems persist because of poor information. This is expected because with increasing consolidation, parties are likelier to hold greater ties to voters and coordination problems are likelier to be solved. As a result, it is shown that there is a low degree of nationalization in new democracies. Although theoretically nationalization is expected to improve over time, empirically this is not the case for new democracies, as shown in this study, because democratic consolidation takes more time than has passed for these countries, like India and Kenya. These democracies, even though considerable time has passed since democratization, are not consolidated by most definitions, and thus nationalization is poor.

As shown by the region variables, geographic regions like Western Europe, North America, and Oceania have the highest linkage scores, and most of those countries are coded as old democracies and generally defined as consolidated. Linkage is lower in Africa, Asia, Latin America, and Eastern Europe, where consolidation has not yet occurred. Controlling for the election number and old democracy variables in Table 4.5 shows that consolidation, defined using those variables, increases the chance of higher linkage even in those regions where linkage is currently poor. The volatility variable also indicates that high party institutionalization, an aspect of democractic consolidation, correlates with higher nationalization.

Correlation Does Not Mean Causation

In summary, the results of all the variables in this study indicate that democratic consolidation—measured by election number, the old democracy variable, volatility, and examined by region—correlates with higher nationalization. But an important limitation of these findings must be noted: correlation does not mean causation. This is true not only in general for the idea that democratic consolidation correlates with higher nationalization, but also for the specific regression models presented in Chapter 4.

There are positive relationships between election number, old democracy, district magnitude, and the number of districts and linkage, each taken individually. An inverse relationship is found between volatility and linkage. Each of these results indicate correlation, rejecting the null hypothesis for most. But the bigger picture, when controlling for multiple variables in the regression models and examining interaction effects, presents the fact that no single variable alone could explain the cause of nationalization. Spurious variables are inescapable in this study, as Models 6 through 9 indicate in Table 4.3. Nevertheless, correlations

are significant enough to indicate trends in nationalization, which was the purpose of this study to begin with. The finding that democratic consolidation correlates with nationalization is still a major step in understanding the process of nationalization of party systems, even though other factors such as electoral institutions may be at play. After all, causal arguments start with correlations. That said, developing such a causal argument might be an endeavor for future research.

Closing Remarks and Future Research

Duverger began with a simple theory on the development of district-level party systems, providing the impetus initiating a rich discipline in comparative politics. Today, with Duverger's theories well accepted, even if not ubiquitously observed in democracies because of various contextual factors, the process of nationalization is at the forefront of the field. Given various existing measures of nationalization as well as newly proposed measures such as linkage, the study of the factors shaping nationalization is effectively limitless. This research provides one such perspective on the phenomenon, exploring six simple independent variables and their correlations with linkage.

The future of the field of nationalization would first and foremost benefit from further study of the effects of time and party institutionalization on linkage. The number of observations available limits the results in this study, especially in the case of party institutionalization where data is only available here for certain countries. While this study is conclusive in finding relationships between linkage and election number and volatility, case studies may be useful in exploring other factors in the process of nationalization.

Second, exploring changes in linkage over time and with varying levels of party institutionalization is an important topic that must be further examined. In this study, I provided examples of how changes in linkage vary over time in the United States, both in absolute and nominal terms (see Figures 5.3 and 5.4). As shown, the fluctuations in linkage are smaller as election number increases. This trend may be unique to the United States, or perhaps may be generalized, but the question still remains in general what causes such increasing stability in linkage levels. Perhaps the time factor itself is the explanation, or perhaps party institutionalization or electoral institutions play a role. Future research would benefit from further exploration of the factors shaping such a trend in various countries.

Finally, further exploring the institutional factors shaping linkage is perhaps the most significant endeavor for future research. Duverger's theories, as well as most subsequent theories, for the process of forming district level party systems begin with electoral institutions. An institutionalist in the field of comparative politics certainly finds the importance of institutions to be unsurpassed by any other factor. Certainly, the process of nationalization likely cannot be explained without further studying the effect of institutions. In this research, I examine the correlations between linkage and district magnitude and the number of districts. While significant, these independent variables are merely a starting point for breaking into institutional factors for nationalization.

As explained in past research, such as by Chhibber and Kollman (1998; 2004), certain institutional features are already believed to factor into the process of nationalization. The distinction between federal and unitary systems may be an important factor for nationalization, as Chhibber and Kollman argue. Likewise, there may be certain trends that correlate with presidential and parliamentary systems in general, as well as trends that correlate with different

electoral systems. District magnitude, as explored in this study, does not provide a conclusive answer to the question of how nationalization in single-member district systems compares with proportional representation systems, for example, and the results here likely will not satisfy any institutionalist, nor do they intend to. This vast branch of the study of nationalization is a topic for future research to explore.

Once these areas are further explored in future research, the general implications of nationalization can also be further explored. As explained in Chapter 1, the nationalization of party systems is believed to feed back into the process of forming district-level party systems. The idea is that a national party system, especially a two-party national system, further promotes the mechanisms leading to bipartism at the district level. The perpetuating effects shaping district-level party systems are a significant implication of research in the field of the nationalization, and this consequence cannot be fully understood without further exploring the factors shaping the formation of national party systems.

On a final note, the results in this study are limited as a mere glimpse into the process of nationalization over time in 82 democracies. Here, I have presented various trends in nationalization that may be generalized in certain cases, especially by region. This exploratory study is but the beginning of a promising future in the study of the nationalization of party systems. Duverger's projection argument for nationalization from district level to national level is by no means the end of the line.

References

Alemán, Eduardo and Marisa Kellam. 2008. "The Nationalization of Electoral Change in the Americas." *Electoral Studies* 27: 193-212.

Caramani, Daniele. 1996. "The Nationalization of Electoral Politics: A Conceptual Reconstruction and a Review of the Literature." *West European Politics* 19: 205-224.

———. 2000. "Elections in Western Europe since 1815." *Electoral Results by Constituencies*. London and New Tork: McMillan-Grove's Dictionaries.

———. 2004. *The Nationalization of Politics. The Formation of National Electorates and Party Systems in Western Europe*. Cambridge: Cambridge University Press.

Chhibber, Pradeep and Ken Kollman. 1998. "Party Aggregation and the Number of Parties in India and the United States." *American Political Science Review* 92: 329-342.

———. 2004. *The Formation of National Party Systems: Federalism and Party Competition in Canada, Great Britain, India, and the United States*. Princeton: Princeton University Press.

Cox, Gary W. 1997. *Making Votes Count: Strategic Coordination in the World's Electoral Systems*. New York: Cambridge University Press.

———. 1999a. "Electoral rules and electoral coordination." *Annual Review of Political Science* 2: 145-161.

———. 1999b. "Electoral Rules and the Calculus of Mobilization." *Legislative Studies Quarterly XXIV*, 3: 387-419.

Cox, Gary W. and Jonathan S. Knoll. 2003. "Ethnes, fiscs, and electoral rules: the determinants of party-system inflation." Paper presented at the Annual Meeting of the American Political Science Association, Chicago.

Creedy, John. 1998. *The Dynamics of Inequality and Poverty: Comparing Income Distributions*. Northhampton, MA: E. Elgar.

Duverger, Maurice. 1954. *Political Parties: Their Organization and Activity in the Modern State*. N.Y.: John Wiley.

Ferree, Karen. 2010. "Social Origins of Electoral Volatility in Africa." Cambridge University Press.

Ferree, Karen, G. Bingham Powell, and Ethan Scheiner. 2013. "Context, Electoral Rules, and Party Systems." (forthcoming).

Golder, M. 2006. "Presidential Coattails and Legislative Fragmentation." *American Journal of Political Science* 50: 34-48.

Harbers, Imke. 2009. "Decentralization and the Development of Nationalized Party Systems in New Democracies. Evidence from Latin America." *Comparative Political Studies*.

Hicken, Allen. 2009. *Building Party System in Developing Democracies*. Cambridge: Cambridge University Press.

Hicken, Allen and Heather Stoll. 2007. “Presidents, Powers and Parties: The Sources of Legislative Electoral Coordination in Presidential Regimes.” Paper presented at the Annual Meeting of the American Political Science Association, Chicago.

———. 2011. “Presidents and Parties: How Presidential Elections Shape Coordination in Legislative Elections.” *Comparative Political Studies.* 44: 854-883.

———. 2013. “Are All Presidents Created Equal? Presidential Powers and the Shadow of Presidential Elections.” *Comparative Political Studies.* 46.

Jones, Mark P. and Scott Mainwaring. 2003. “The Nationalization of Parties and Party Systems: An Empirical Measure and an Application to the Americas.” *Party Politics* 9: 139-166.

Kasuya, Yuko and Johannes Moenius. 2004. “Measuring Party Linkage across Districts: Some Party System Inflation Indices and Their Properties.” *Party Politics* 10: 543-564.

———. 2008. “The Nationalization of Party Systems: Conceptual Issues and Alternative District-Focused Measures.” *Electoral Studies* 27: 126-135.

Kollman, K., Hicken, A., Caramani, D., and Backer, D. 2013. Constituency-Level Elections Archive [data file and codebook]. Ann Arbor, MI: Center for Political Studies, University of Michigan [producer and distributor].

Kuenzi, Michelle and Gina Lambright. 2001. “Party System Institutionalization in 30 African Countries.” *Party Politics* 7: 437-468.

Laakso, Markku and Rein Taagepera. 1979. “‘Effective’ Number of Parties: A Measure with Applications to West Europe.” *Comparative Political Studies* 12: 3-27.

Lago, Ignacio and Jose R. Montero. 2010. “The Nationalization of Party Systems Revisited: A New Measure Based on Parties’ Entry Decisions, Electoral Results, and District Magnitude” Paper presented at the annual meeting of the Canadian Political Science Association, Concordia University, Montreal

Lago-Peñas, Ignacio and Santiago Lago-Peñas. 2009. “Does the Nationalization of Party Systems Affect the Composition of Public Spending?” *Economics of Governance* 10: 85-98.

Leys, Colin. 1959. “Models, Theories and the Theory of Political Parties.” *Political Studies* 7: 127-146.

Lijphart, Arend. 1994. *Electoral Systems and Party Systems*. New York: Oxford University Press.

Lublin, David. “Election Passport.” American University. http:///www.electionpassport.com.

Mainwaring, Scott and Timothy R. Scully eds. 1995. *Building Democratic Institutions: Party Systems in Latin America*. Stanford: Stanford University Press.

Morgenstern, Scott and Richard F. Potthoff. 2005. “The Components of Elections: District Heterogeneity, District-time Effects, and Volatility.” *Electoral Studies* 24: 17- 40.

Moser, Robert G. and Ethan Scheiner. 2012. *Electoral Systems and Political Context: How the Effects of Rules Vary Across New and Established Democracies*. New York: Cambridge University Press.

Nikolenyi, Csaba. 2009. “Party Inflation in India: Why has a Multiparty Format Prevailed in the National Party System.” In *Duverger’s Law of Plurality Voting. The Logic of Party Competition in Canada, India, the United Kingdom and the United States,* eds. Bernard Grofman, André Blais, and Shaun Bowler. New York: Springer.

Norris, Pippa. 2004. *Electoral Engineering: Voting Rules and Political Behavior*. New York: Cambridge University Press.

Pedersen, Mogens. 1979. “The Dynamics of European Party Systems: Changing Patterns of Electoral Volatility.” *European Journal of Political Research*. 7: 1-26.

Rae D. 1967. *The Political Consequences of Election Laws*. New Haven: Yale University Press.

Riker, WH. 1982. “The Two-Party System and Duverger’s Law: An Essay on the History of Political Science.” *American Political Science Review.* 76: 753-766.

Rokkan, Stein. 1970. *Citizens, Elections, Parties*. Oslo: Universitetsforlaget.

Sartori, Giovanni. 1968. “Political Development and Political Engineering.” In John D. Montgomery and Albert O. Hirschman, eds., *Public Policy*. Cambridge: Cambridge University Press

———. 1976. *Parties and Party Systems: A Framework for Analysis*. Cambridge: Cambridge University Press.

Shryock, Henry S., Jacob S. Siegel, and Associates. 1976. *The Methods and Materials of Demography*. New York: Academic Press, Inc.

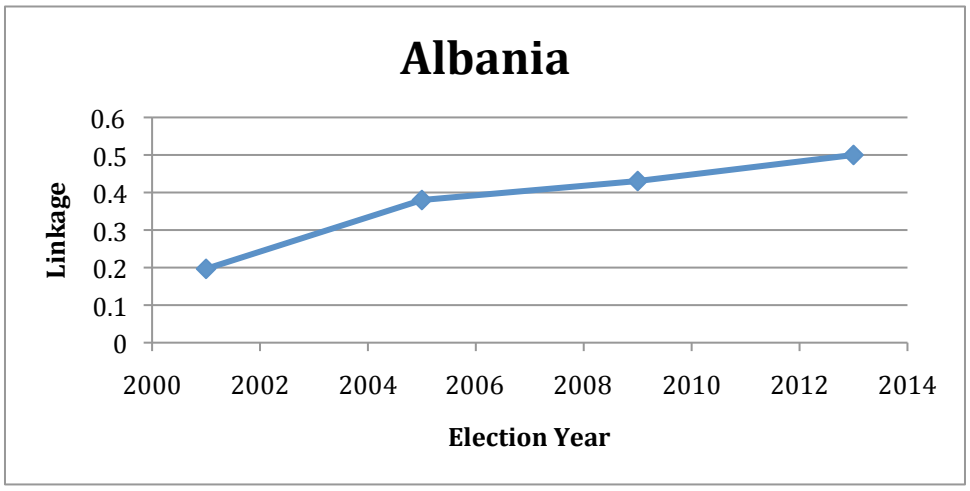
Stoll H. 2013. *Changing Societies, Changing Party Systems*. New York: Cambridge University Press.

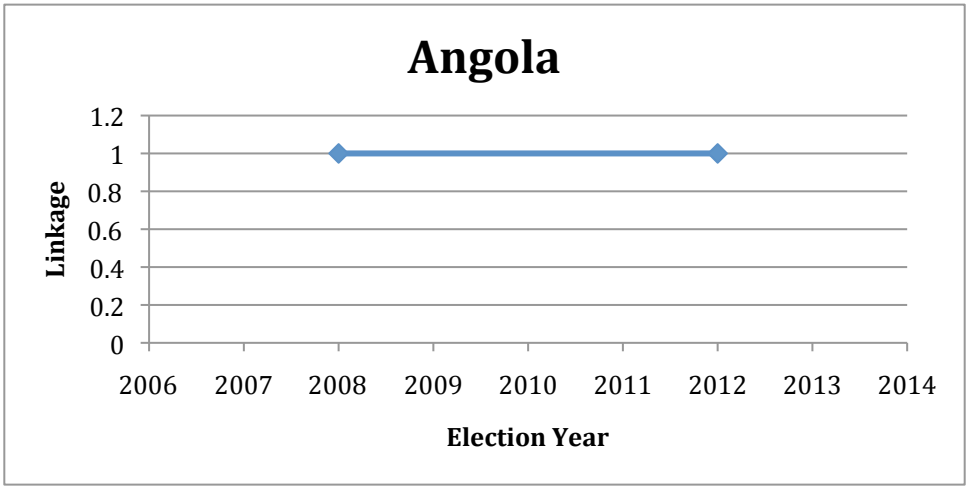
Taagepera, R. and Shugart MS. 1989. *Seats and Votes: The Effects and Determinants of Electoral Systems.* New Haven: Yale University Press.

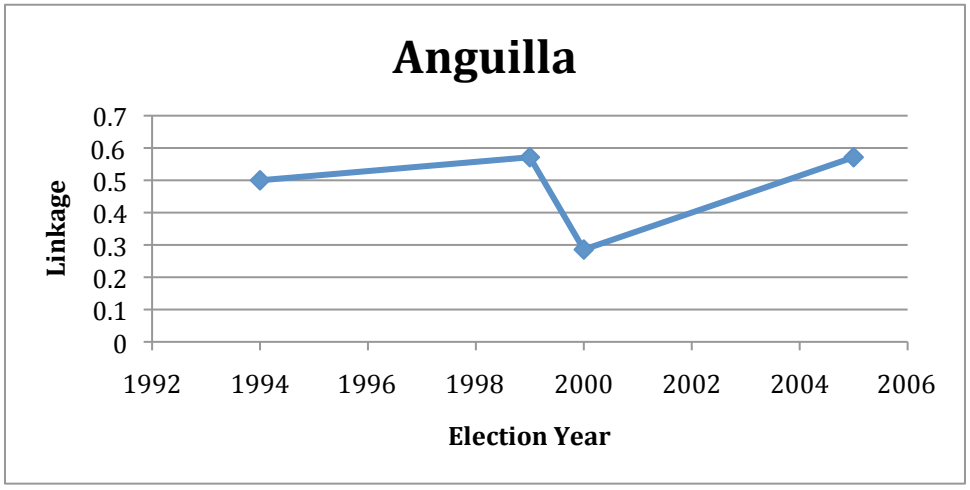
Wildavsky, Aaron. 1959. “A Methodological Critique of Duverger’s *Political Parties*.” *Journal of Politics* 21: 303-318.

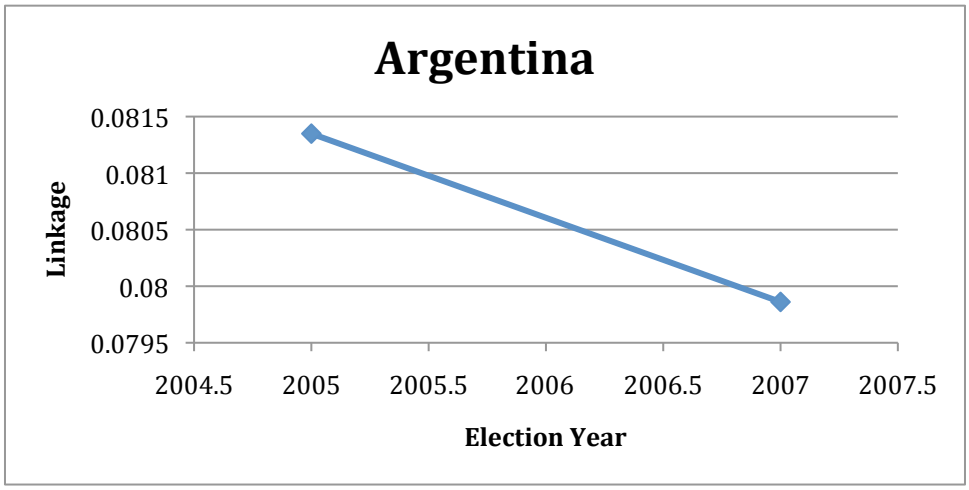
Appendix I: Linkage Graphs by Country

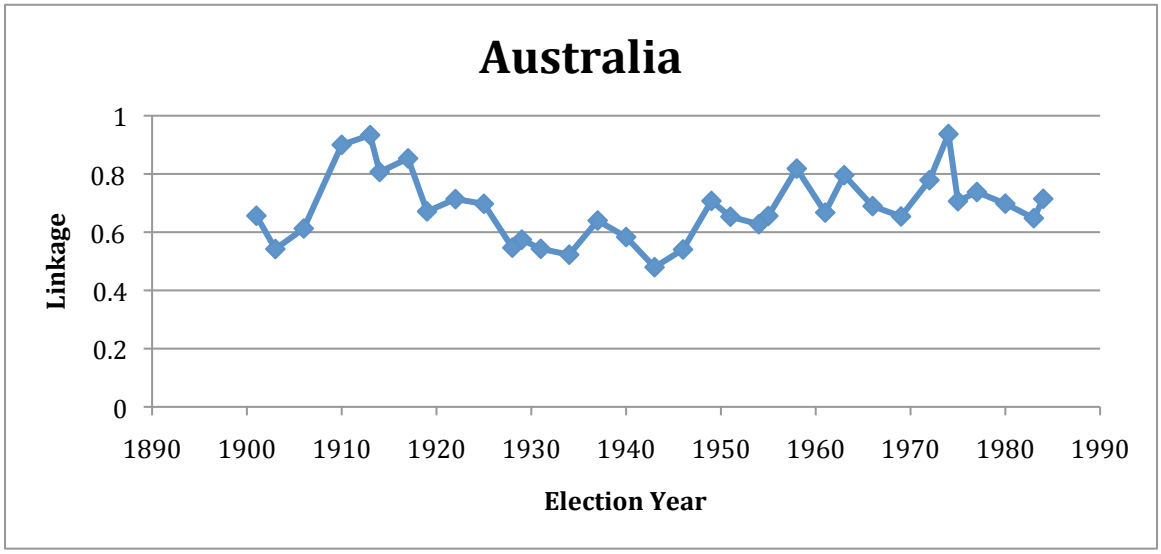
Each graph represents linkage over time for each country. Countries where data is only available for one election are omitted.

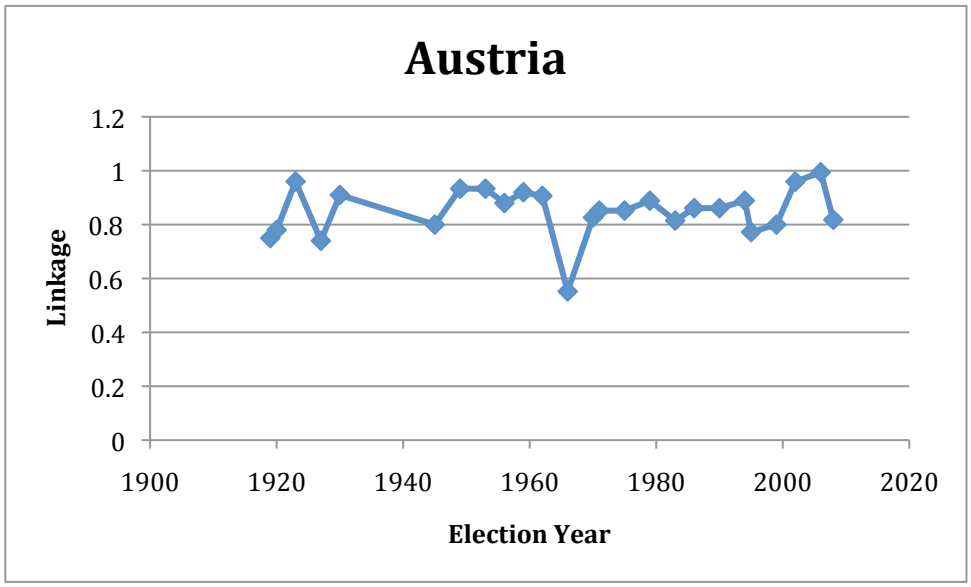


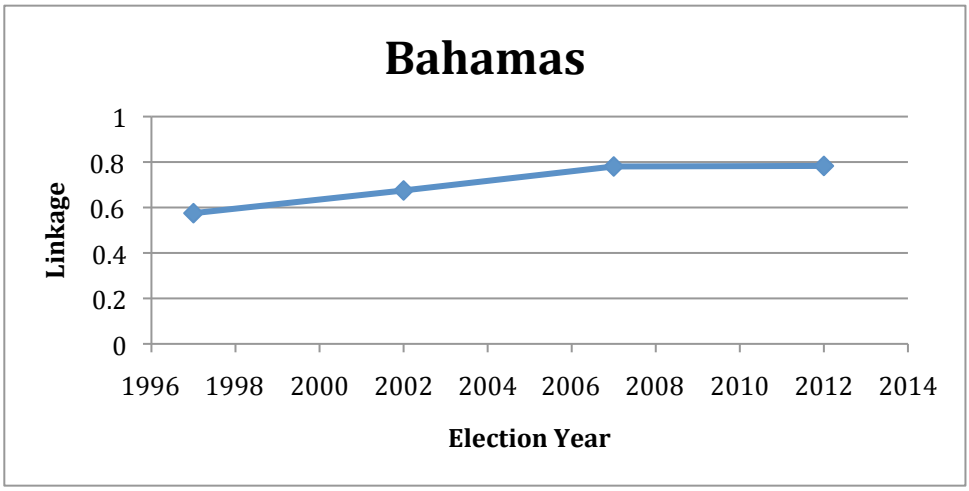


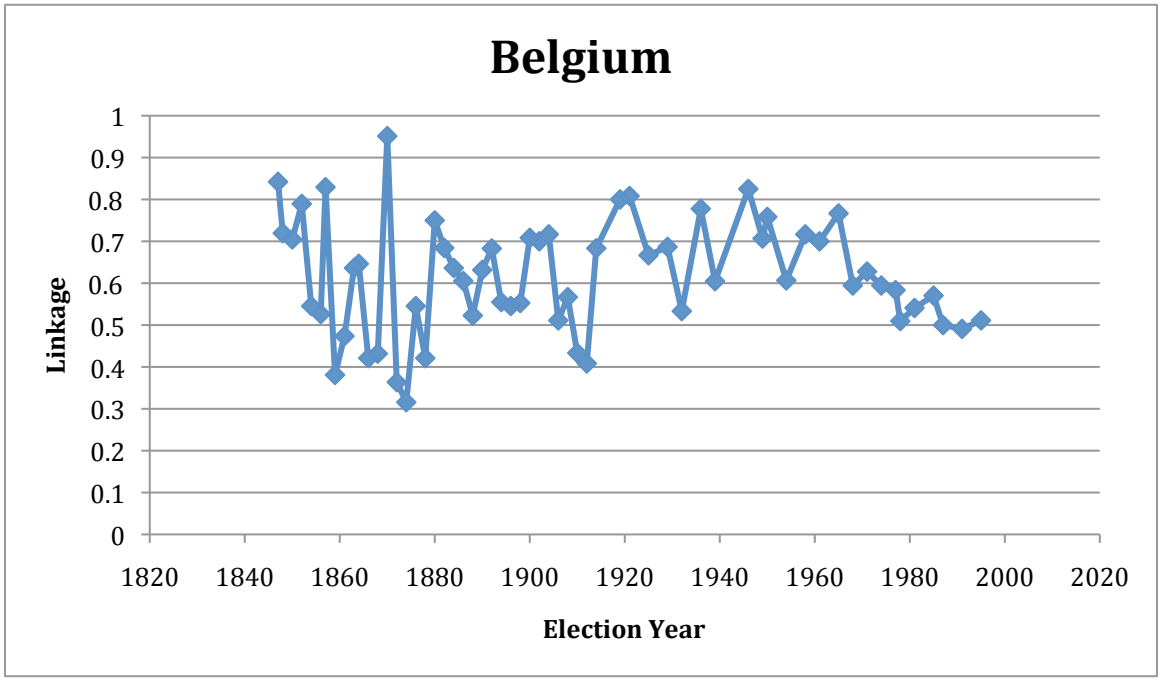


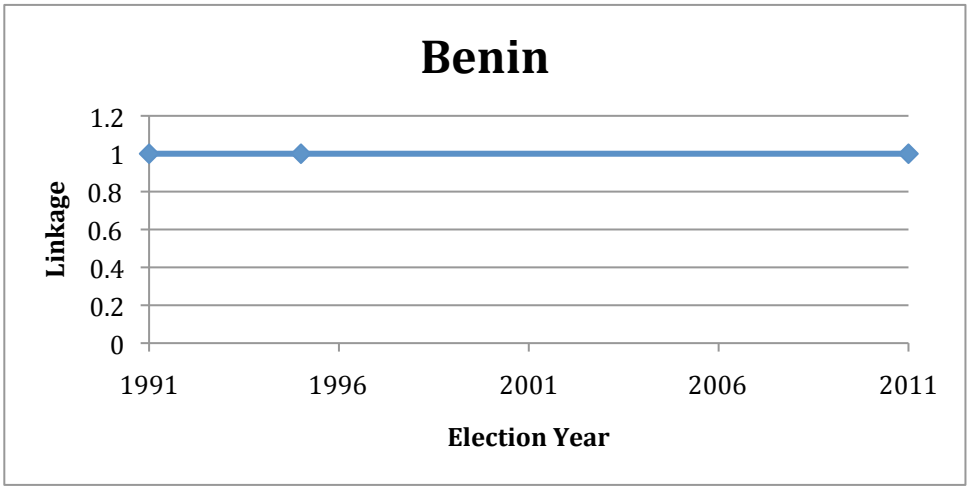

Argentina
0.0815
0.081
0.0805
0.08
0.0795
Linkage
2004.5
2005
2005.5
2006
2006.5
2007
2007.5
Election Year

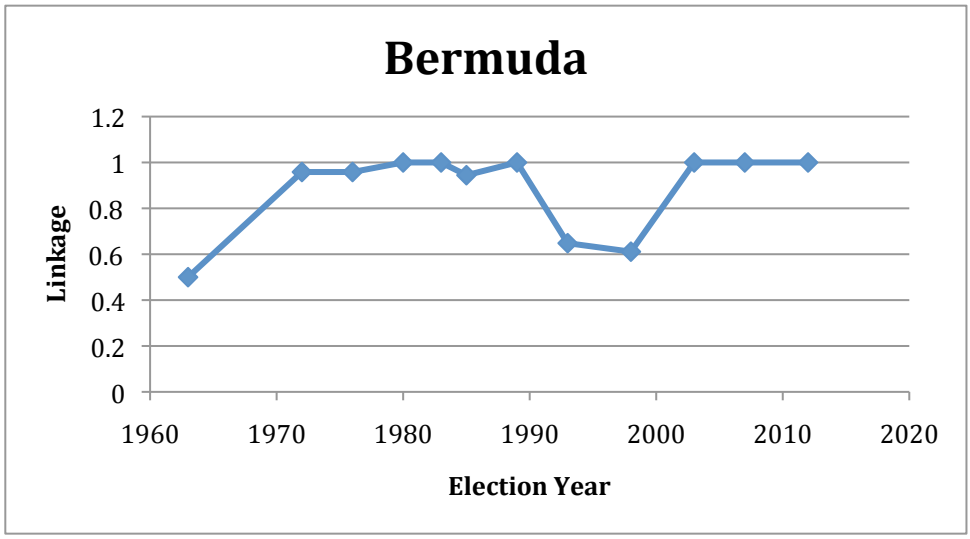

Australia
1
0.8
0.6
0.4
0.2
0
Linkage
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
Election Year

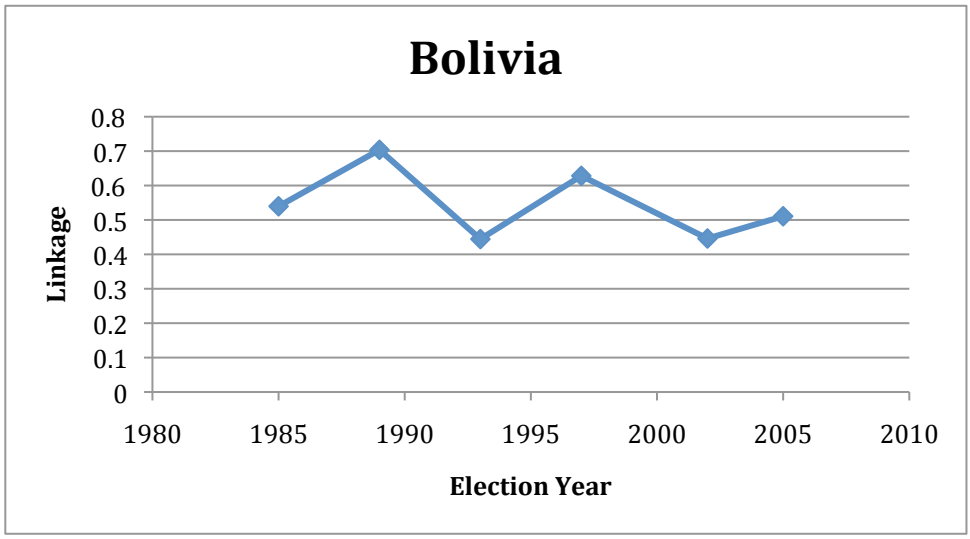

Austria
1.2
1
0.8
0.6
0.4
0.2
0
Linkage
1900
1920
1940
1960
1980
2000
2020
Election Year

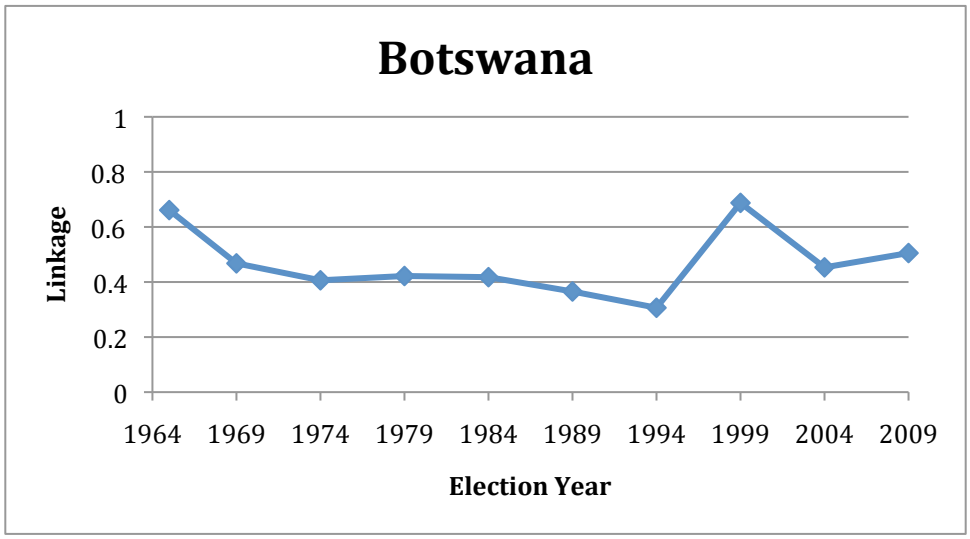

Bahamas
Linkage
1
0.8
0.6
0.4
0.2
0
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Election Year

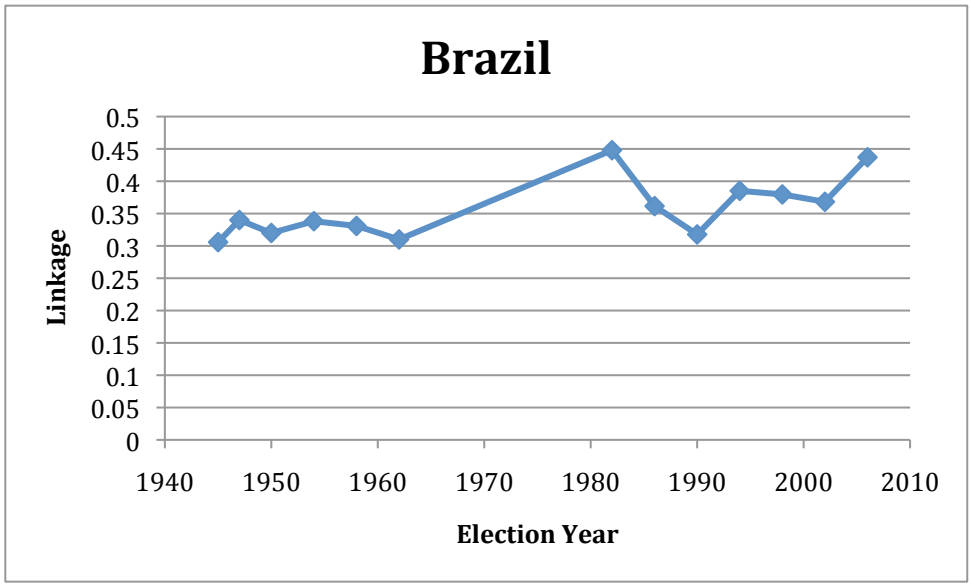

Belgium
Linkage
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1820
1840
1860
1880
1900
1920
1940
1960
1980
2000
2020
Election Year

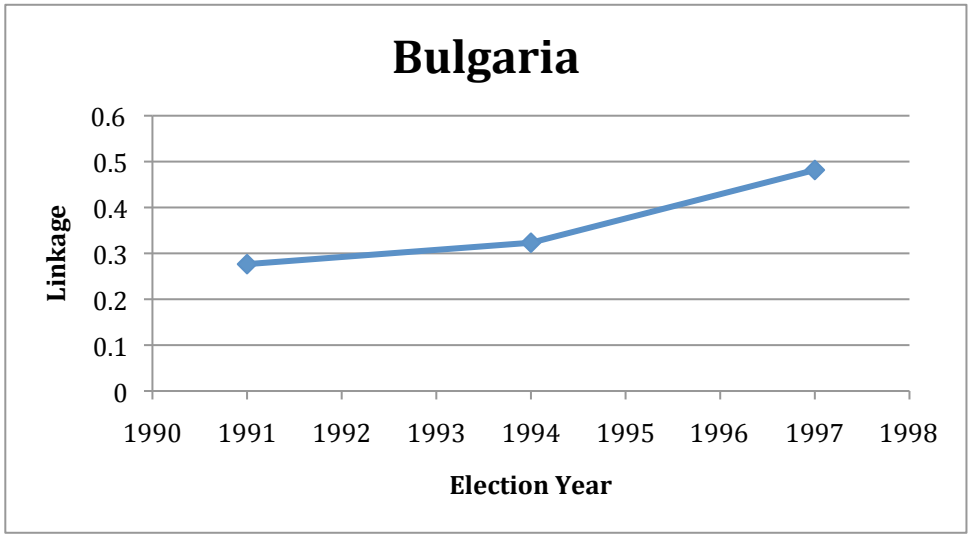

Benin
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1991
1996
2001
2006
2011
Election Year

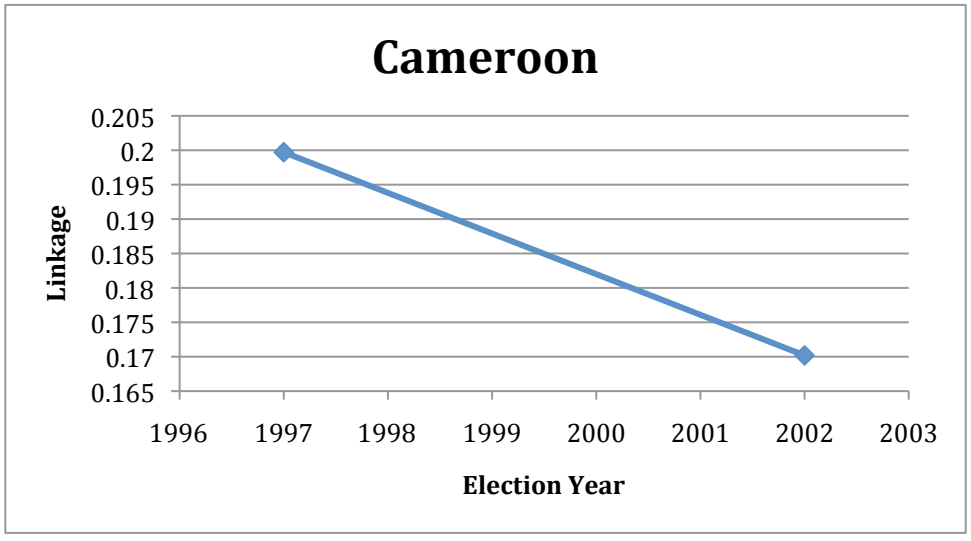

Bermuda
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1960
1970
1980
1990
2000
2010
2020
Election Year

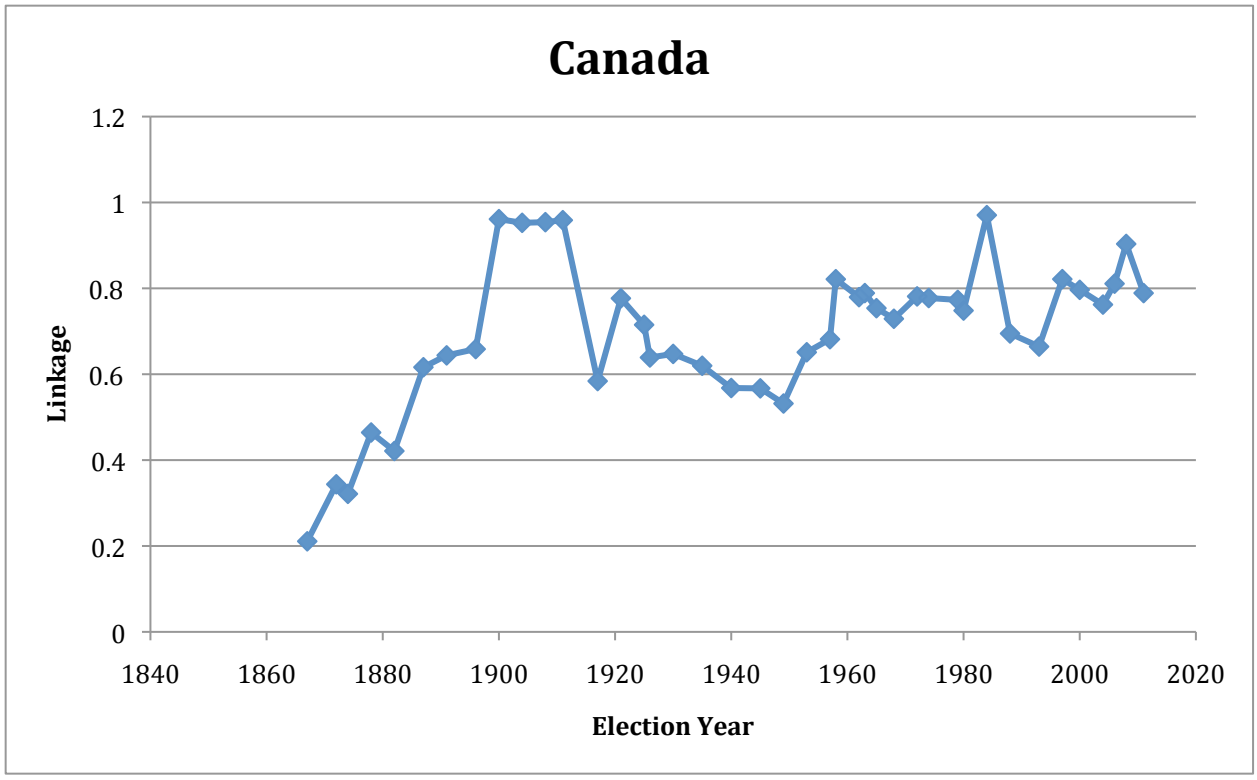

Bolivia
Linkage
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1980
1985
1990
1995
2000
2005
2010
Election Year

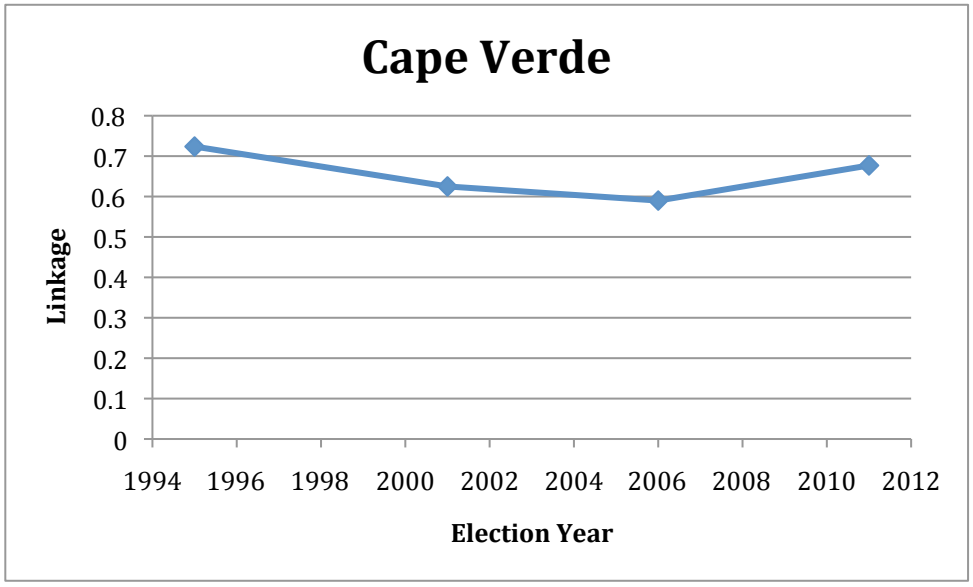

Botswana
Linkage
1
0.8
0.6
0.4
0.2
0
1964
1969
1974
1979
1984
1989
1994
1999
2004
2009
Election Year

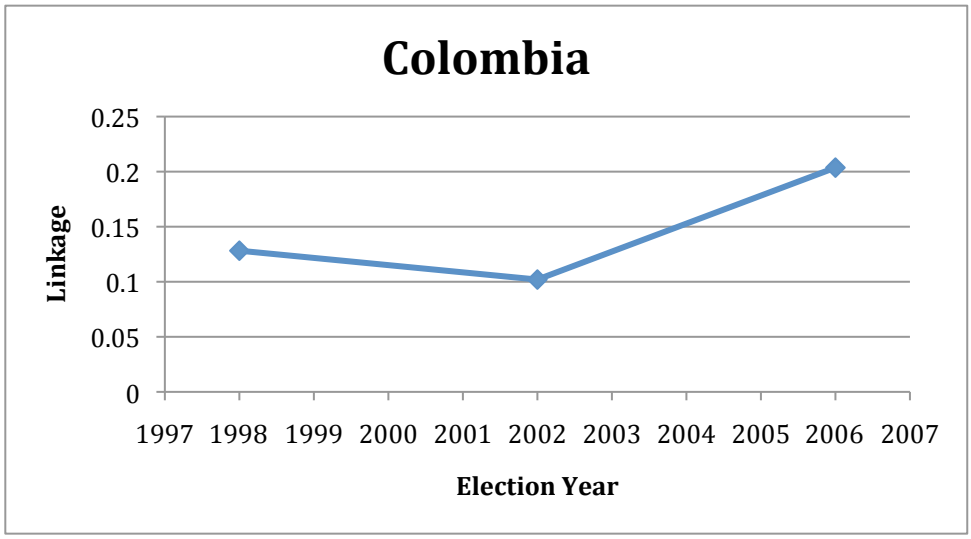

Brazil
Linkage
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1940
1950
1960
1970
1980
1990
2000
2010
Election Year

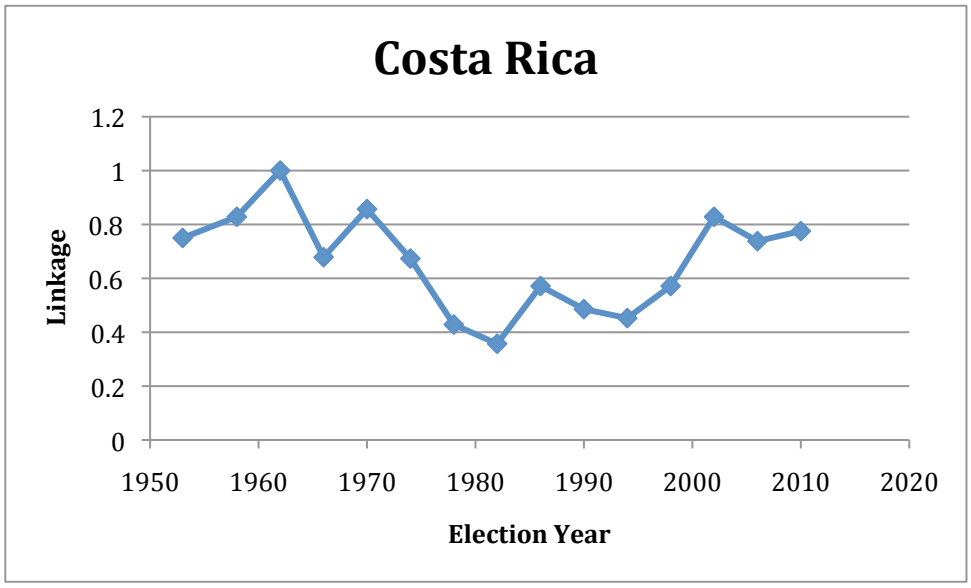

Bulgaria
Linkage
0.6
0.5
0.4
0.3
0.2
0.1
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
Election Year

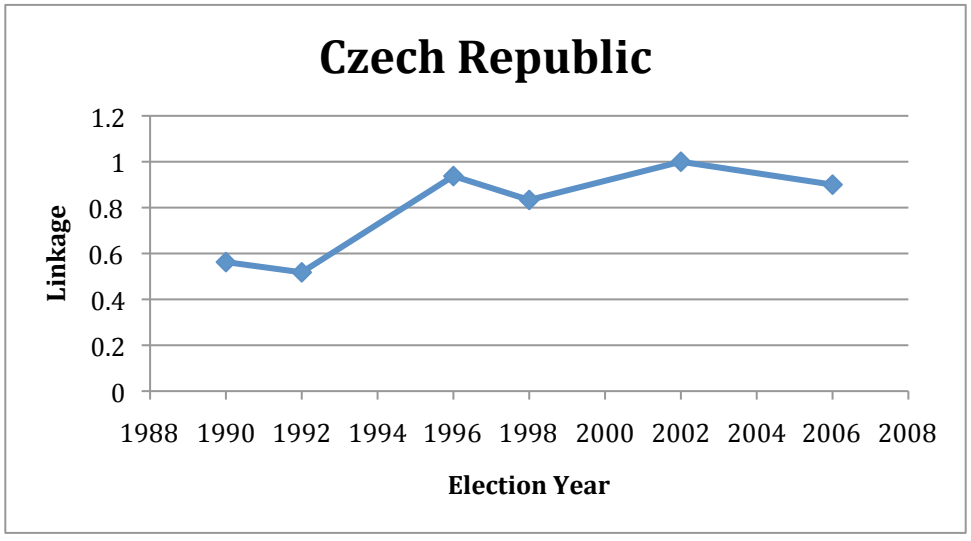

Cameroon
Linkage
0.205
0.2
0.195
0.19
0.185
0.18
0.175
0.17
0.165
1996
1997
1998
1999
2000
2001
2002
2003
Election Year

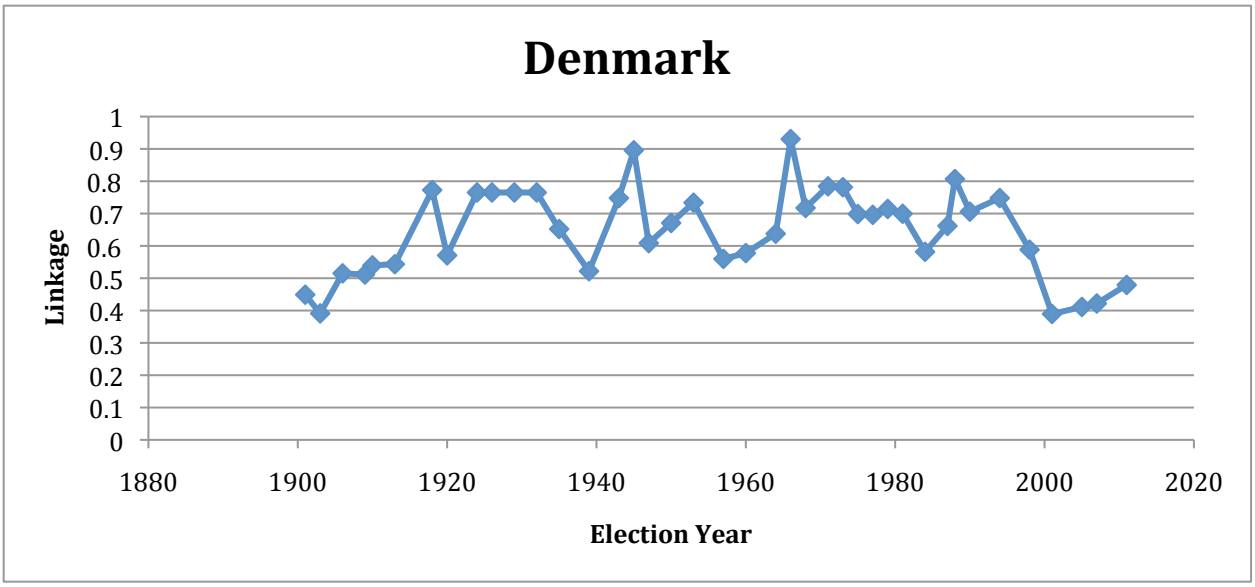

Canada
1.2
1
0.8
0.6
0.4
0.2
0
Linkage
1840
1860
1880
1900
1920
1940
1960
1980
2000
2020
Election Year

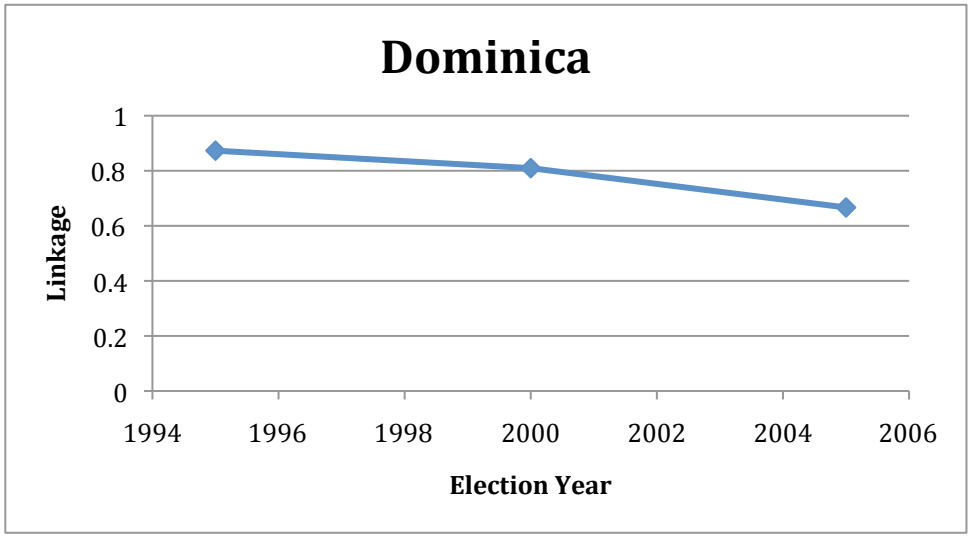

Cape Verde
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Linkage
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
Election Year

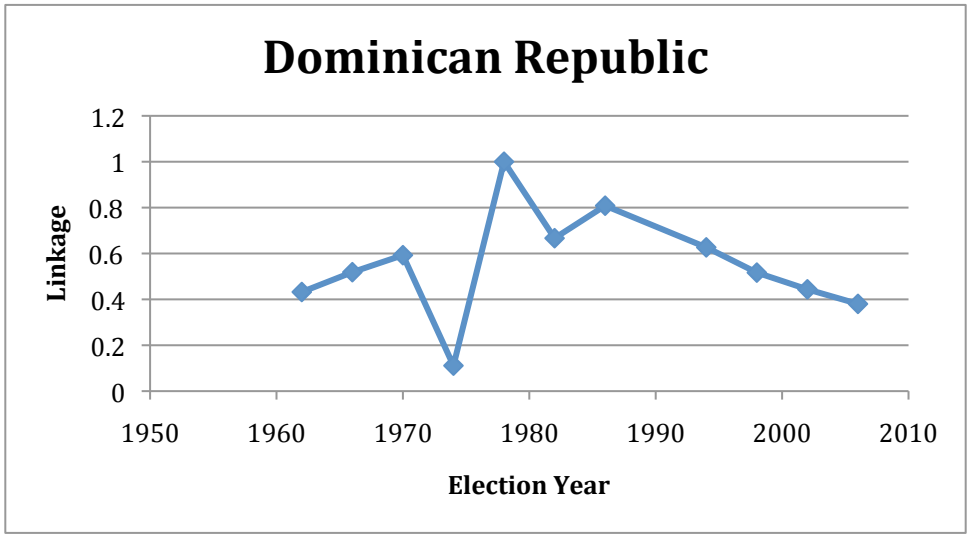

Colombia
0.25
0.2
0.15
0.1
0.05
0
Linkage
1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007
Election Year

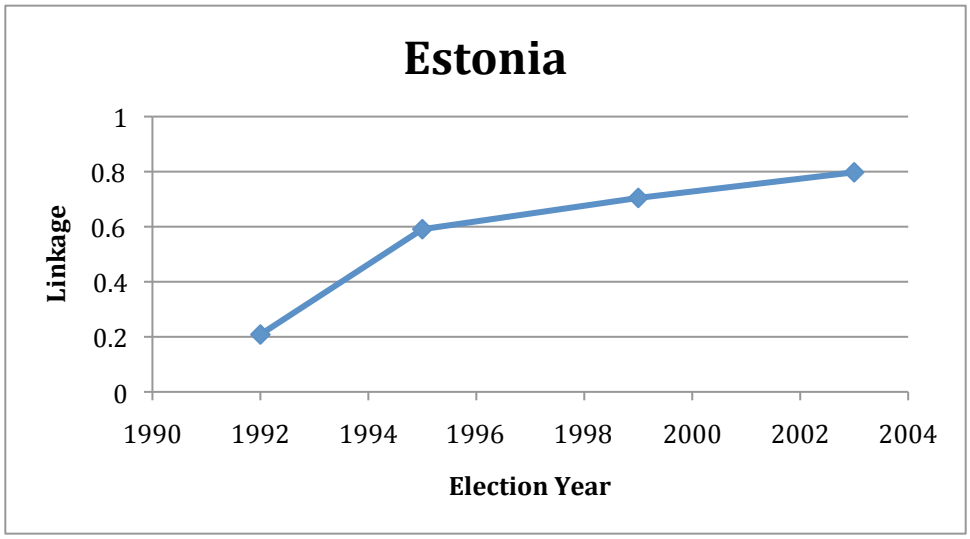

Costa Rica
1.2
1
0.8
0.6
0.4
0.2
0
Linkage
1950 1960 1970 1980 1990 2000 2010 2020
Election Year

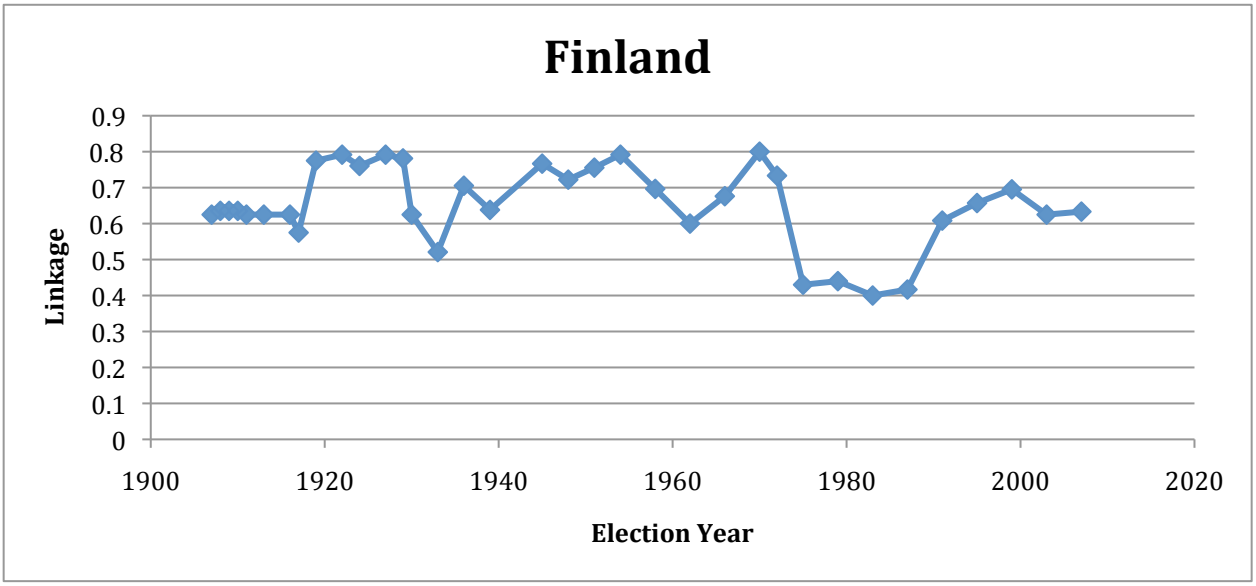

Czech Republic
1.2
1
0.8
0.6
0.4
0.2
0
Linkage
1988 1990 1992 1994 1996 1998 2000 2002 2004 2006 2008
Election Year

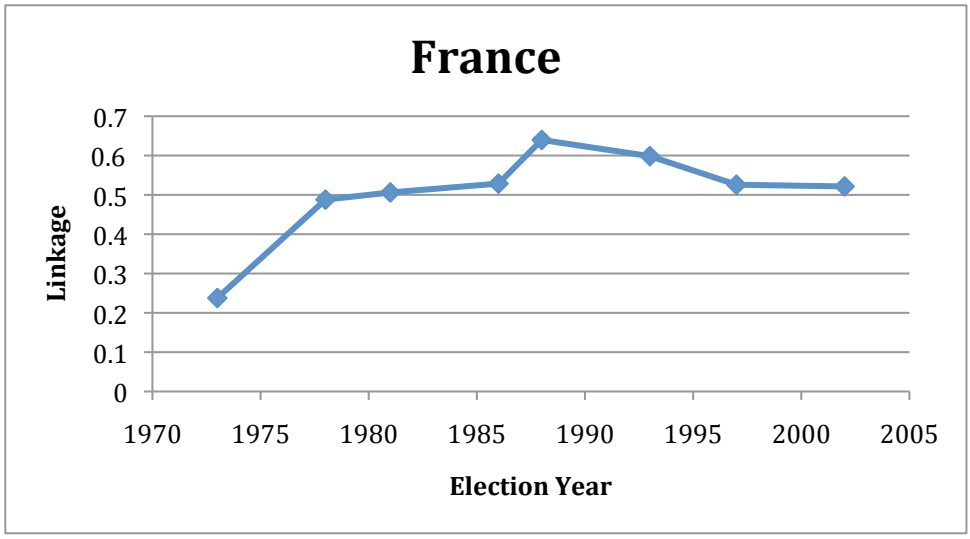

Denmark
Linkage
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1880
1900
1920
1940
1960
1980
2000
2020
Election Year

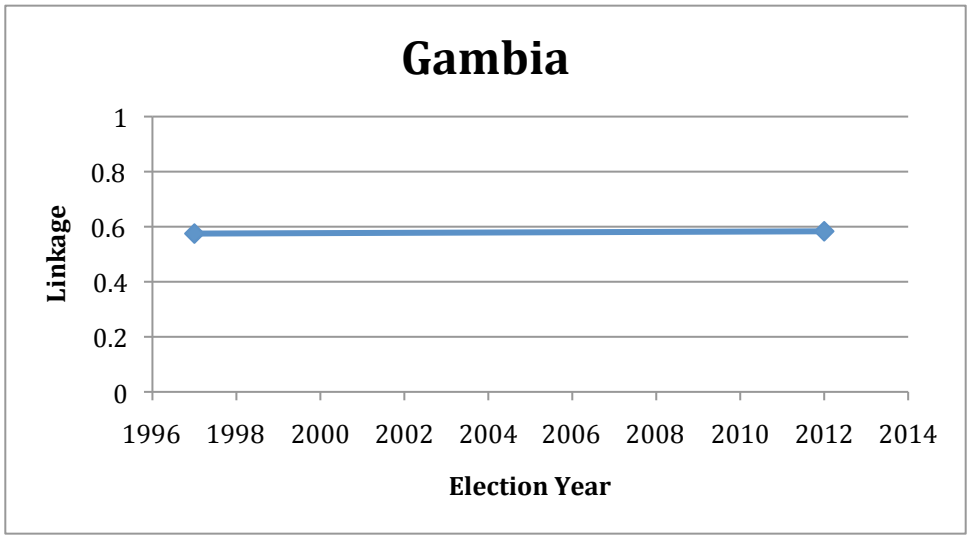

Dominica
Linkage
1
0.8
0.6
0.4
0.2
0
1994
1996
1998
2000
2002
2004
2006
Election Year

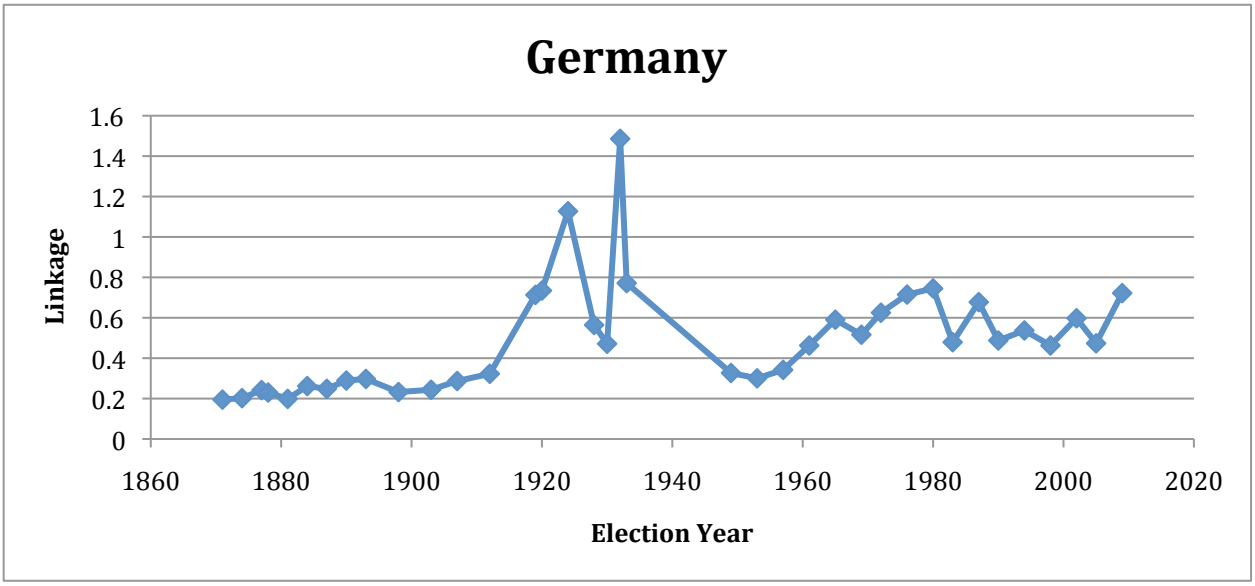

Dominican Republic
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1950
1960
1970
1980
1990
2000
2010
Election Year

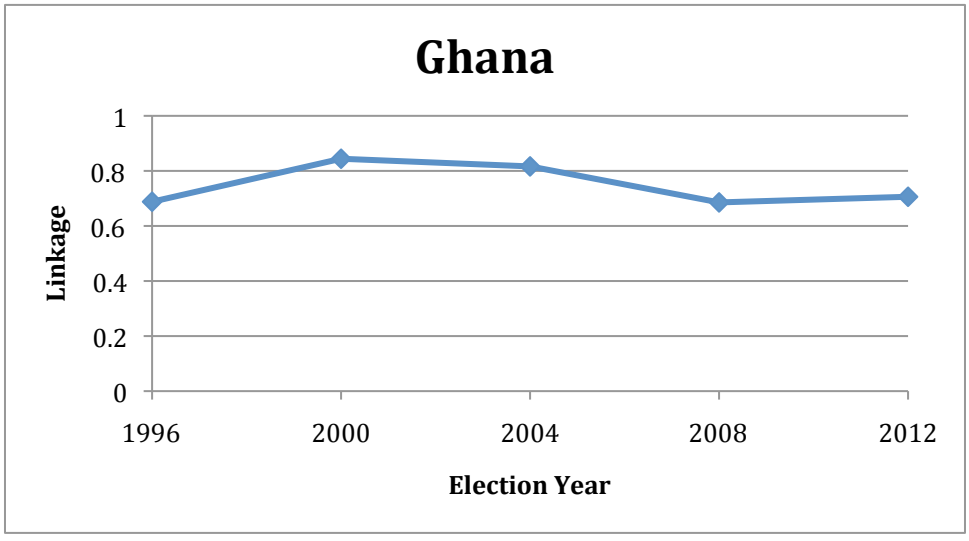

Estonia
Linkage
1
0.8
0.6
0.4
0.2
0
1990
1992
1994
1996
1998
2000
2002
2004
Election Year

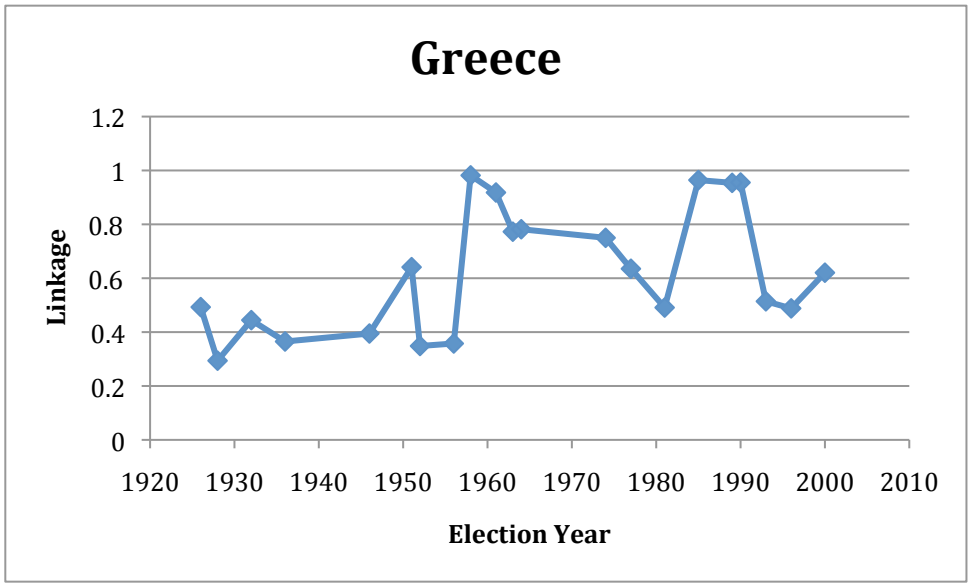

Finland
Linkage
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1900
1920
1940
1960
1980
2000
2020
Election Year

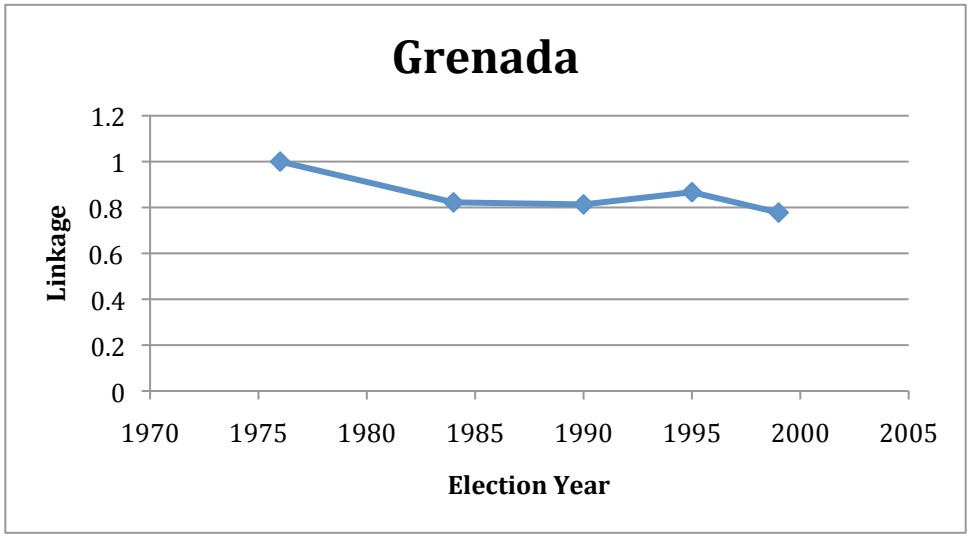

France
Linkage
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1970
1975
1980
1985
1990
1995
2000
2005
Election Year

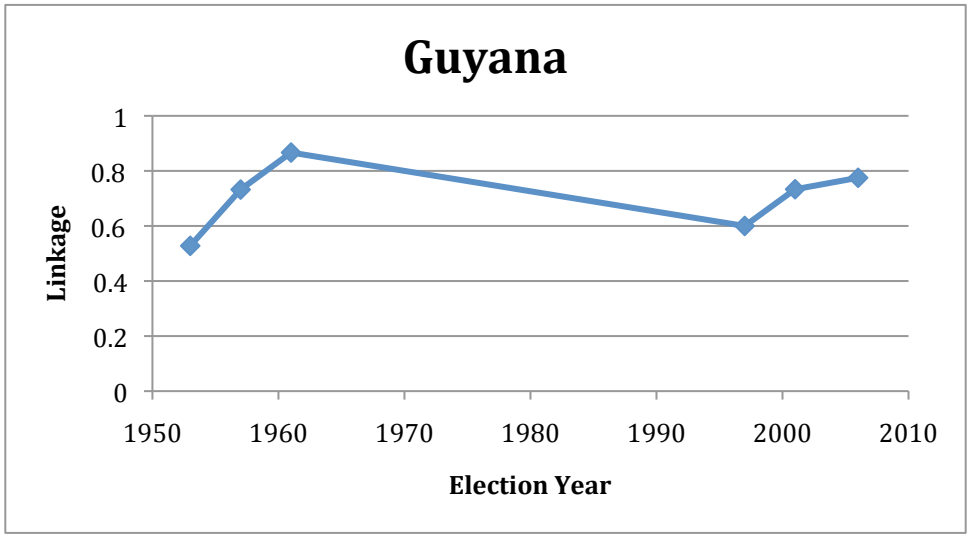

Gambia
Linkage
1
0.8
0.6
0.4
0.2
0
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
Election Year

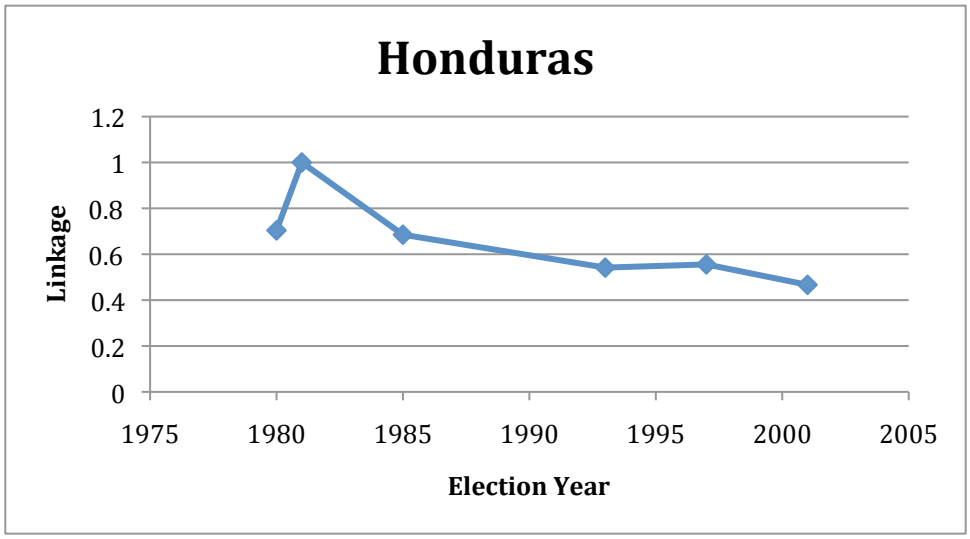

Germany
Linkage
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1860
1880
1900
1920
1940
1960
1980
2000
2020
Election Year

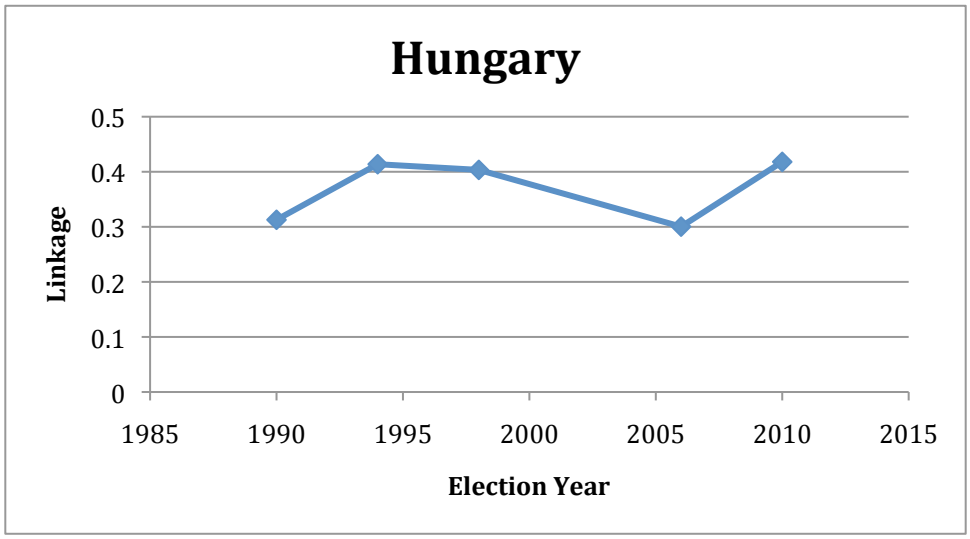

Ghana
Linkage
1
0.8
0.6
0.4
0.2
0
1996
2000
2004
2008
2012
Election Year

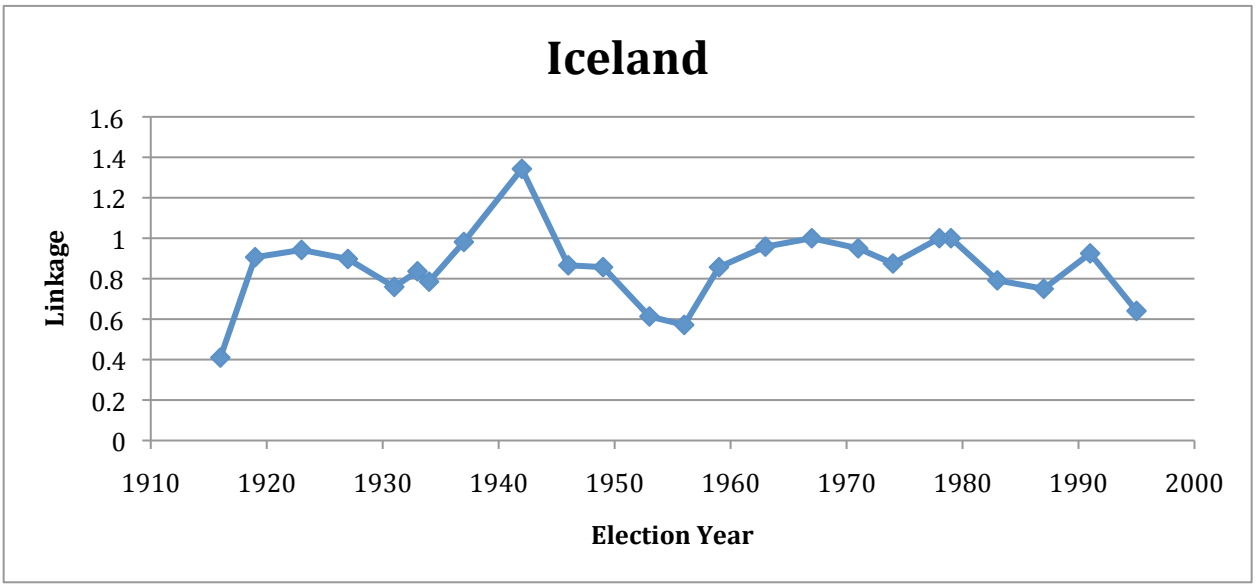

Greece
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
Election Year

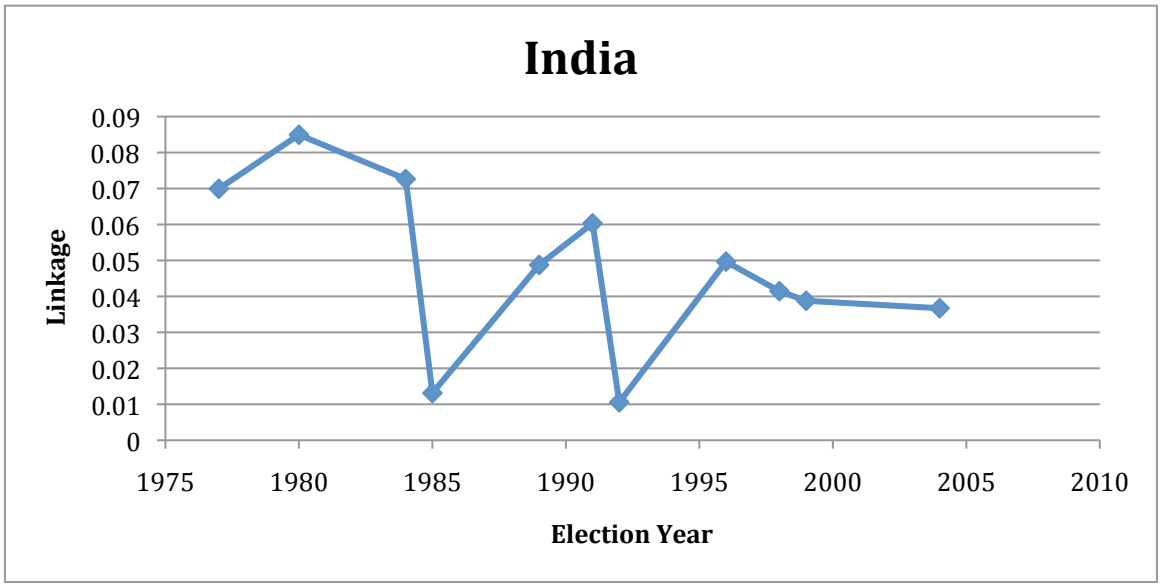

Grenada
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1970
1975
1980
1985
1990
1995
2000
2005
Election Year

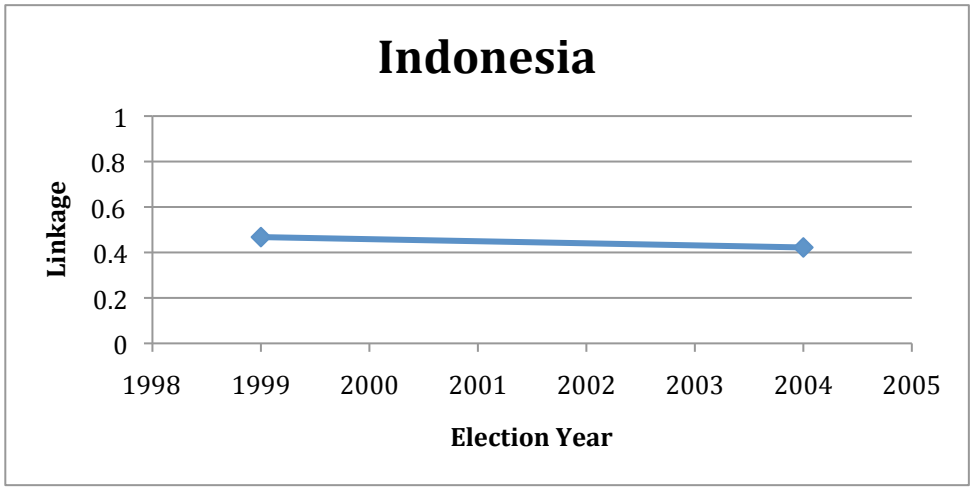

Guyana
Linkage
1
0.8
0.6
0.4
0.2
0
1950
1960
1970
1980
1990
2000
2010
Election Year

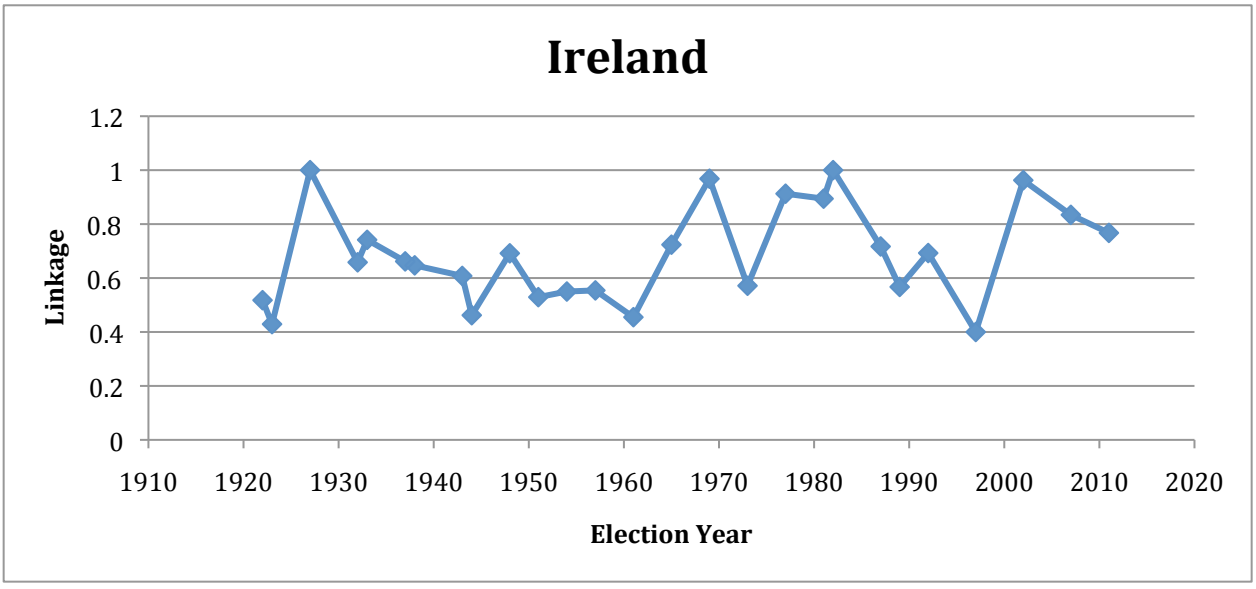

Honduras
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1975
1980
1985
1990
1995
2000
2005
Election Year

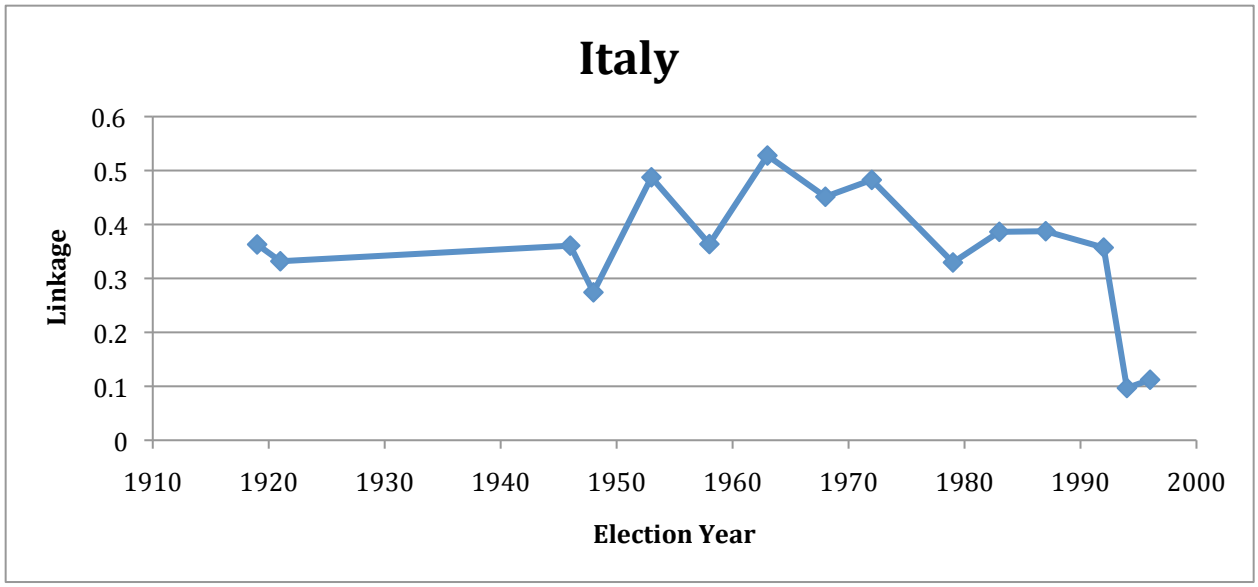

Hungary
Linkage
0.5
0.4
0.3
0.2
0.1
0
1985
1990
1995
2000
2005
2010
2015
Election Year

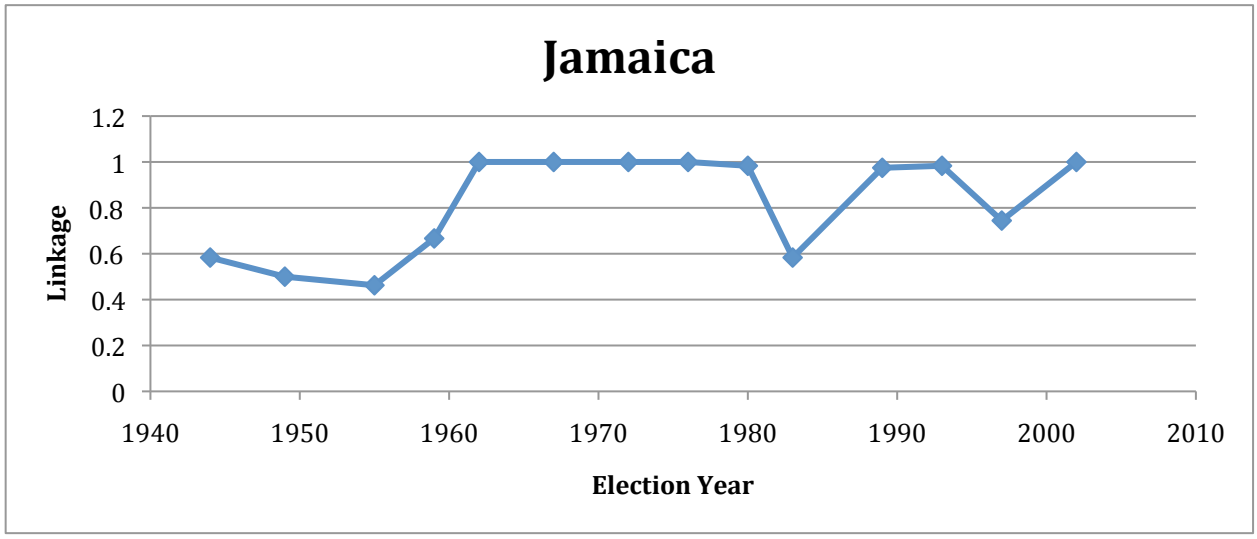

Iceland
Linkage
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
Election Year

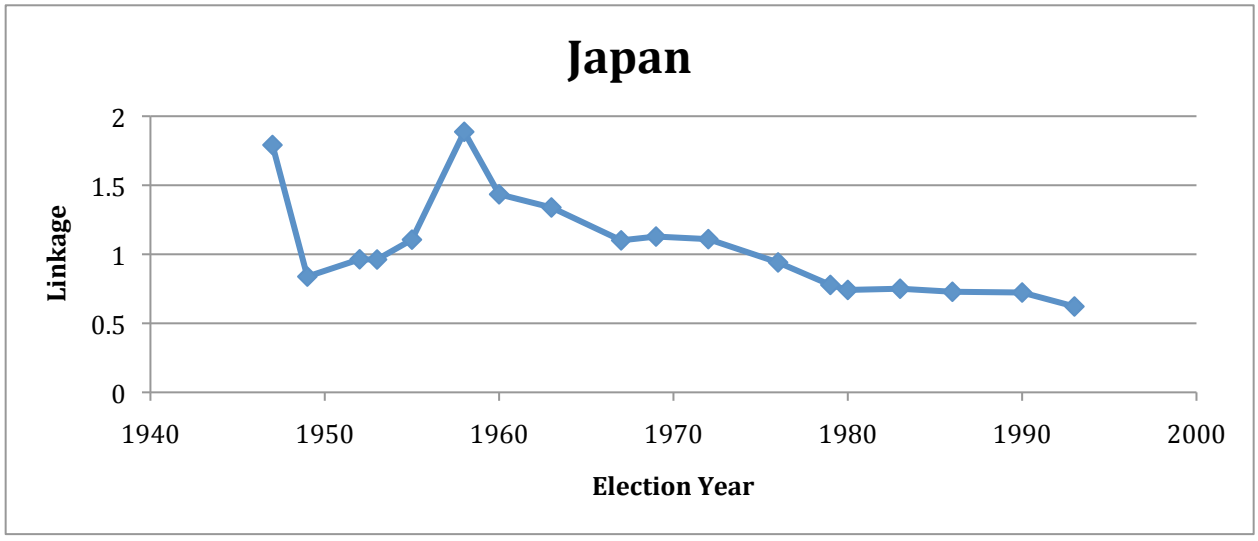

India
Linkage
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1975
1980
1985
1990
1995
2000
2005
2010
Election Year

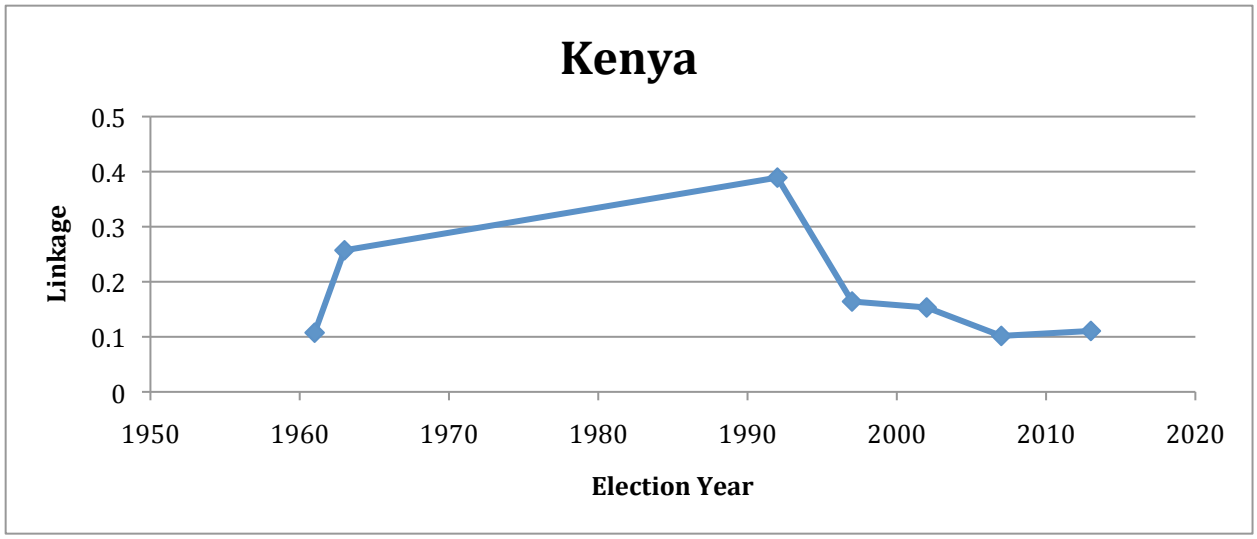

Indonesia
Linkage
1
0.8
0.6
0.4
0.2
0
1998
1999
2000
2001
2002
2003
2004
2005
Election Year

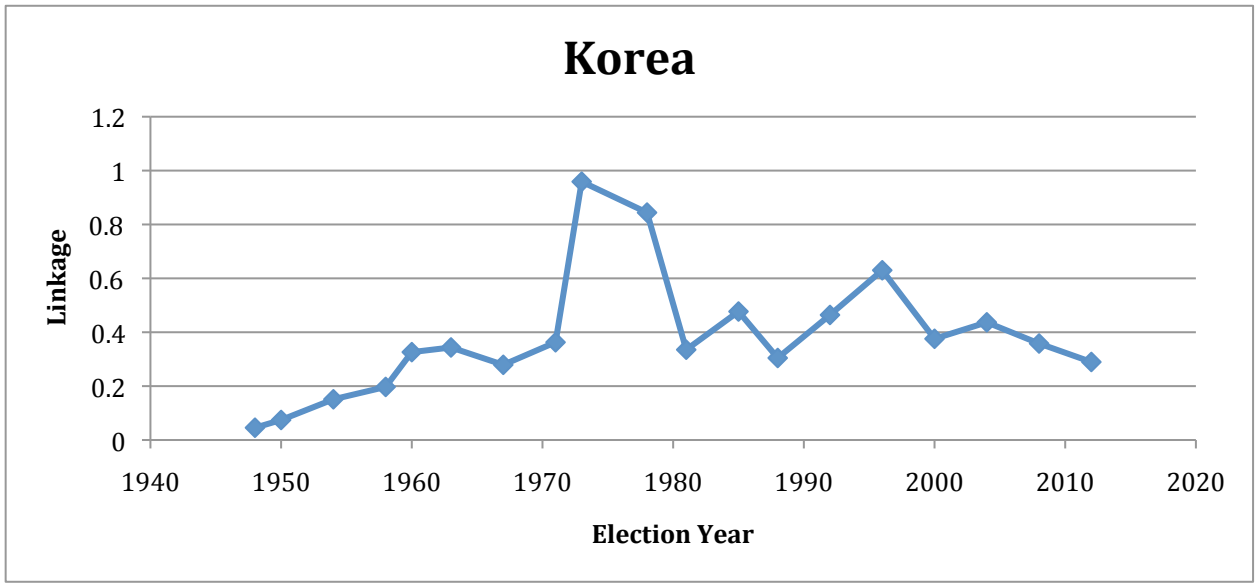

Ireland
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
Election Year

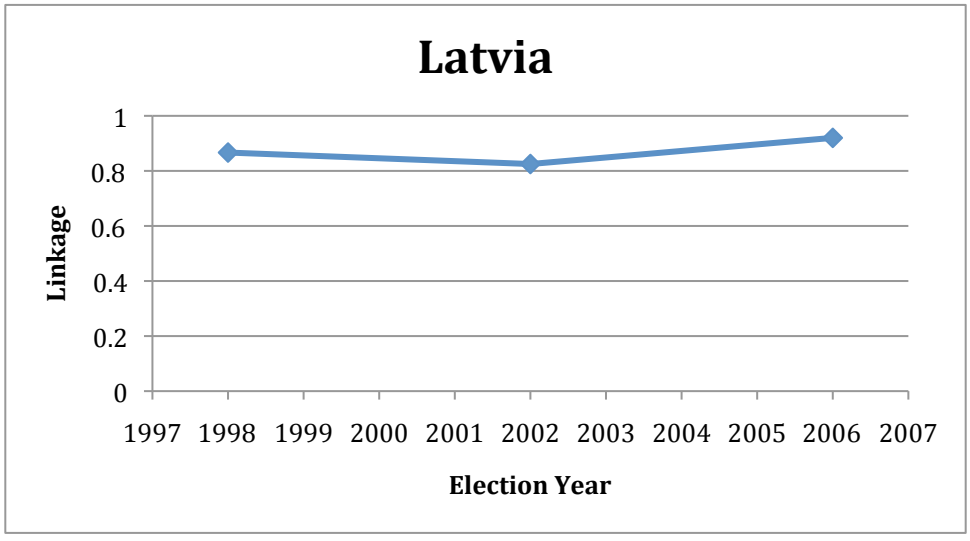

Italy
Linkage
0.6
0.5
0.4
0.3
0.2
0.1
0
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
Election Year

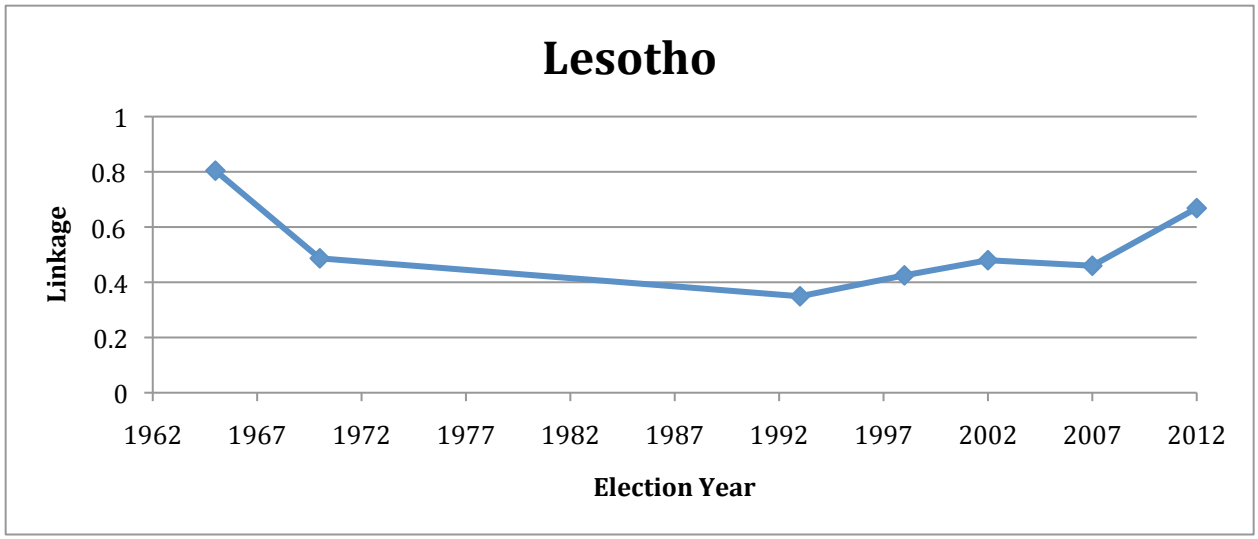

Jamaica
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1940
1950
1960
1970
1980
1990
2000
2010
Election Year

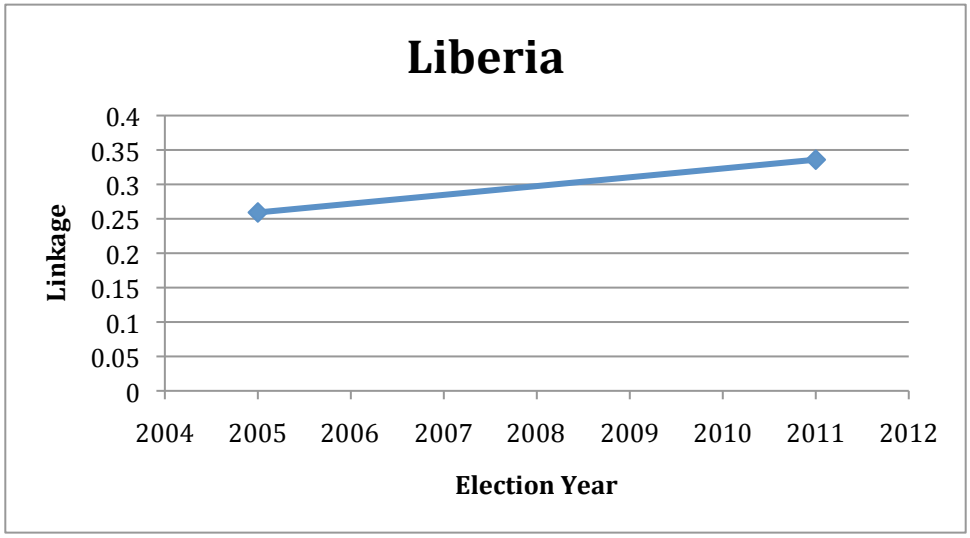

Japan
Linkage
2
1.5
1
0.5
0
1940
1950
1960
1970
1980
1990
2000
Election Year

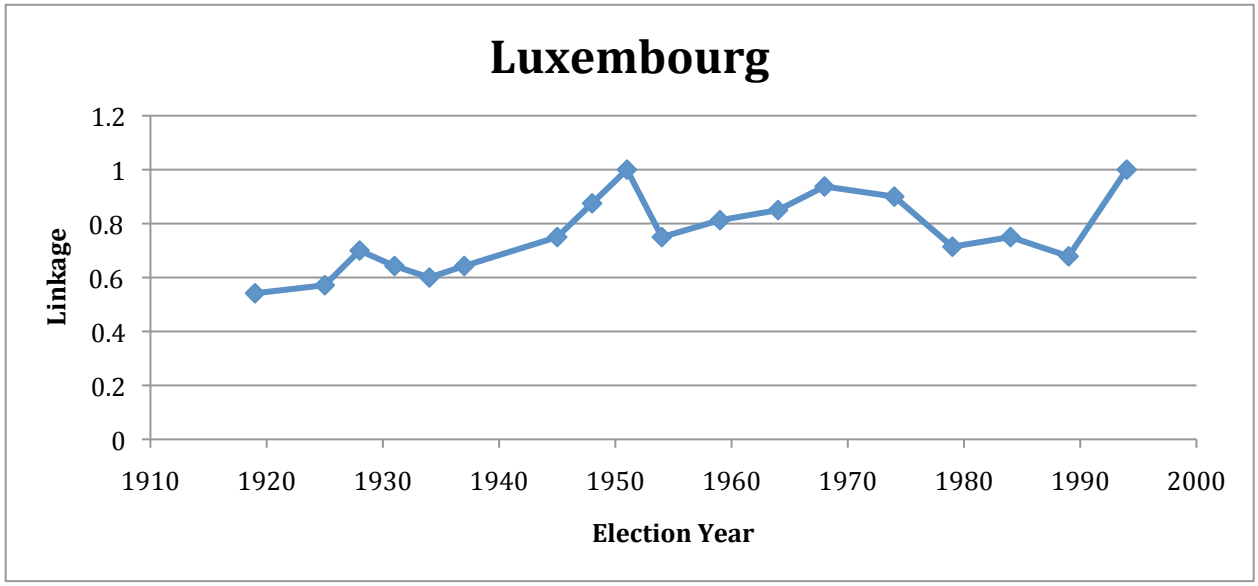

Kenya
Linkage
0.5
0.4
0.3
0.2
0.1
0
1950
1960
1970
1980
1990
2000
2010
2020
Election Year

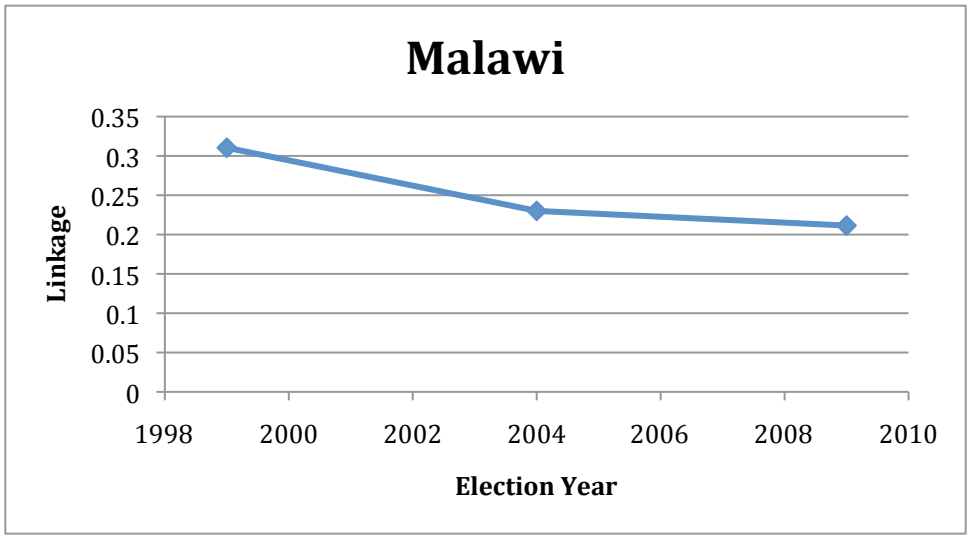

Korea
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1940
1950
1960
1970
1980
1990
2000
2010
2020
Election Year

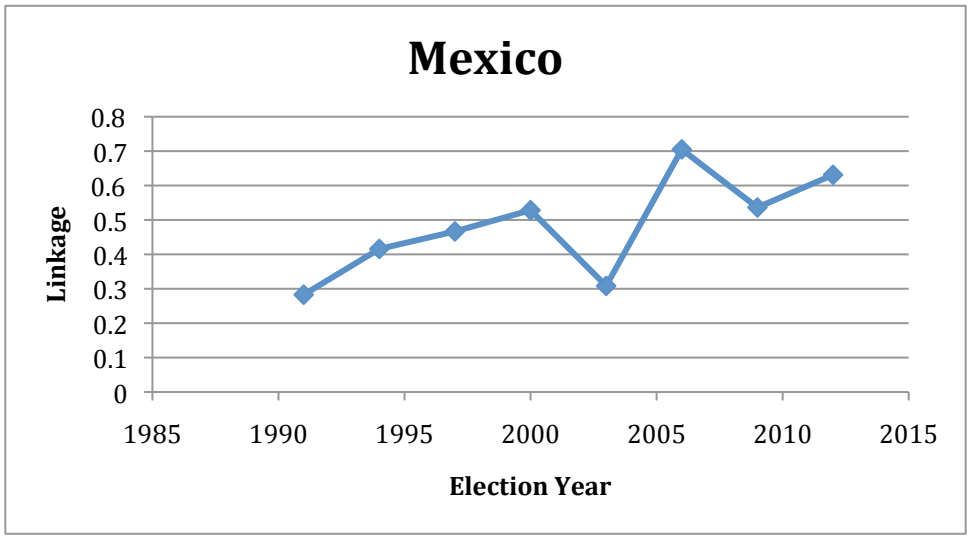

Latvia
Linkage
1
0.8
0.6
0.4
0.2
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Election Year

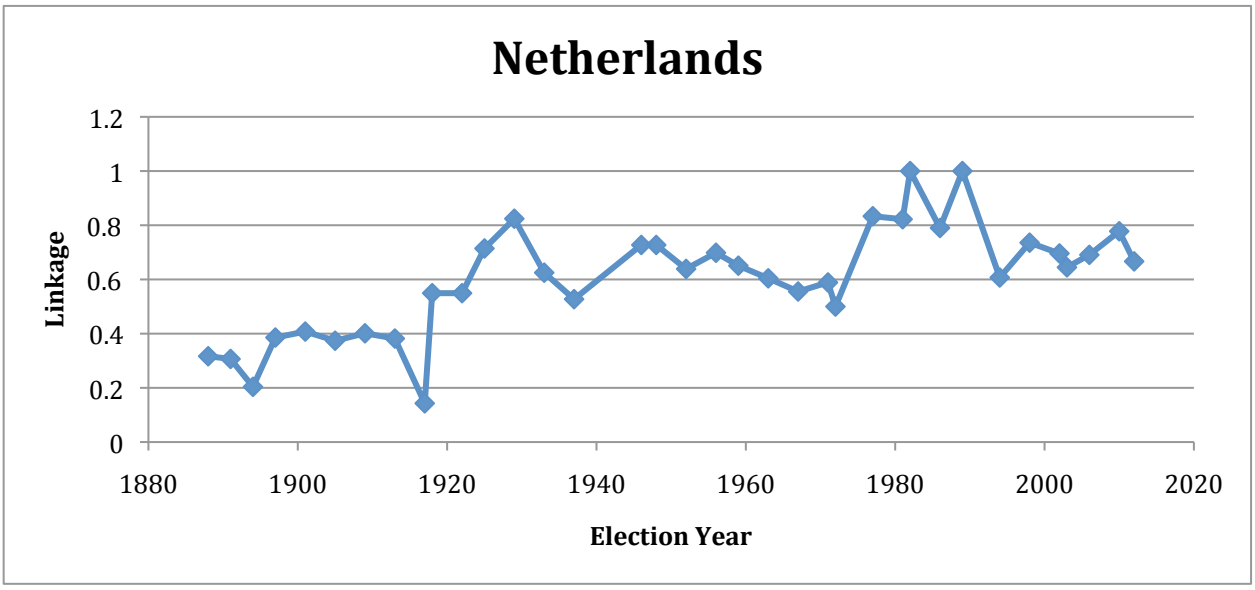

Lesotho
Linkage
1
0.8
0.6
0.4
0.2
0
1962
1967
1972
1977
1982
1987
1992
1997
2002
2007
2012
Election Year

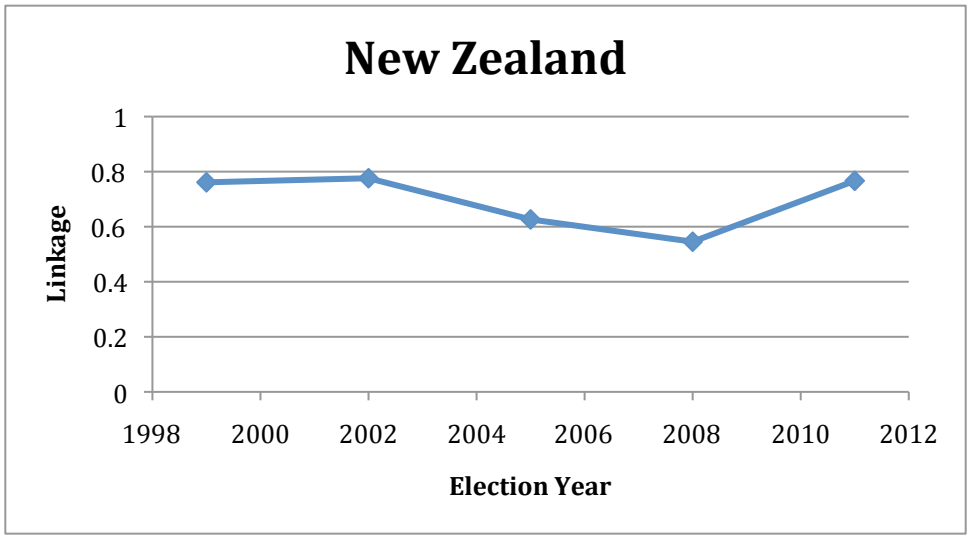

Liberia
Linkage
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
2004
2005
2006
2007
2008
2009
2010
2011
2012
Election Year

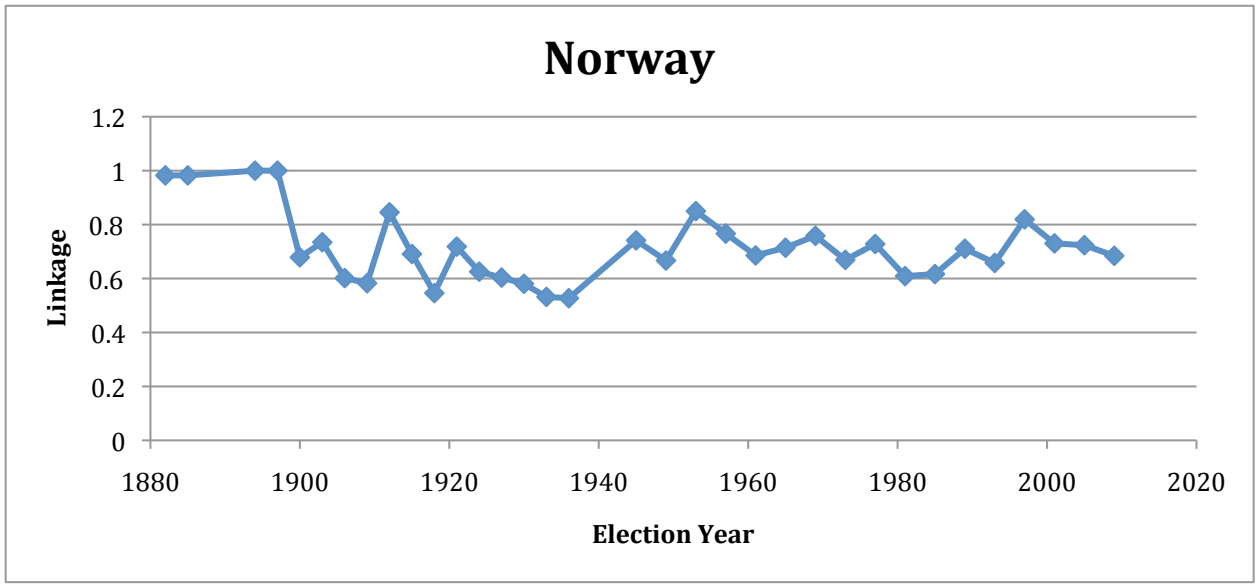

Luxembourg
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
Election Year

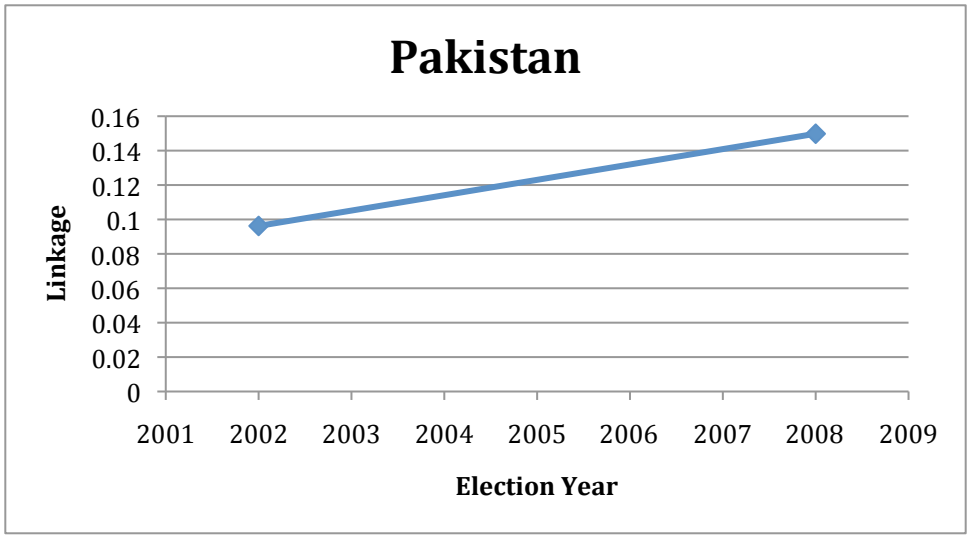

Malawi
Linkage
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1998
2000
2002
2004
2006
2008
2010
Election Year

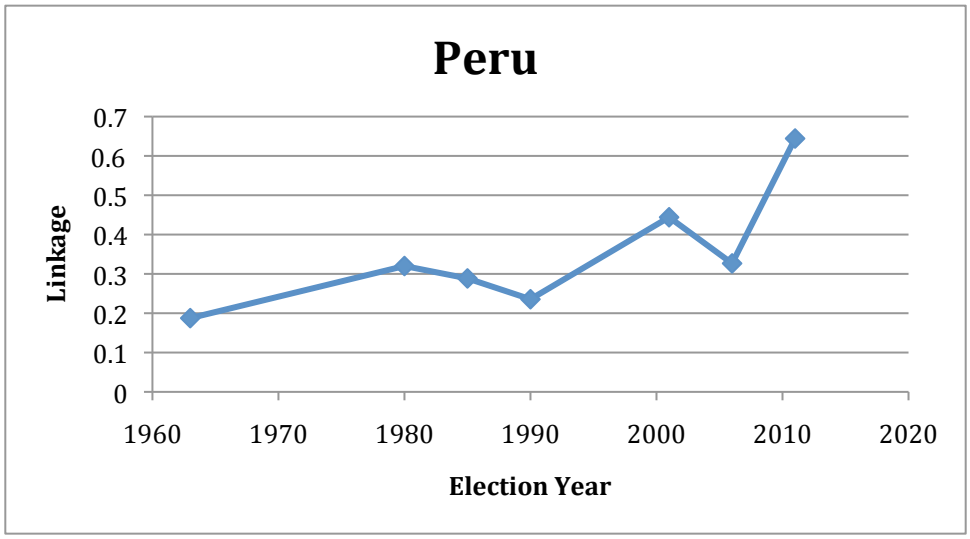

Mexico
Linkage
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1985
1990
1995
2000
2005
2010
2015
Election Year

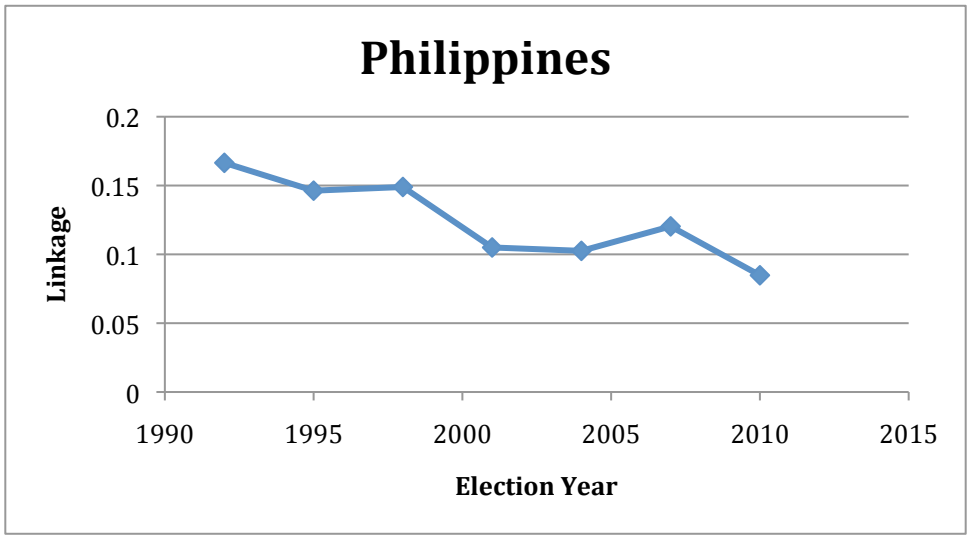

Netherlands
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1880
1900
1920
1940
1960
1980
2000
2020
Election Year

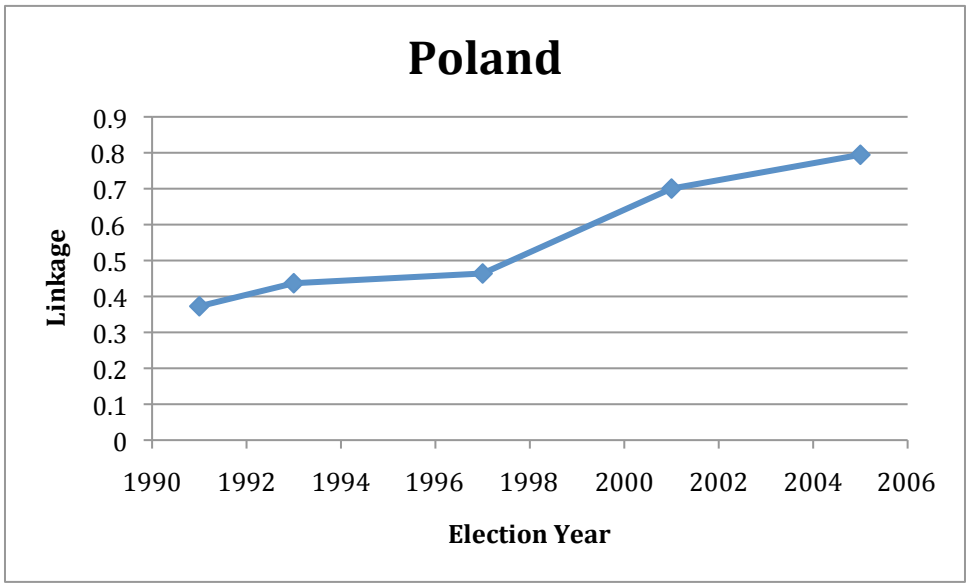

New Zealand
Linkage
1
0.8
0.6
0.4
0.2
0
1998
2000
2002
2004
2006
2008
2010
2012
Election Year

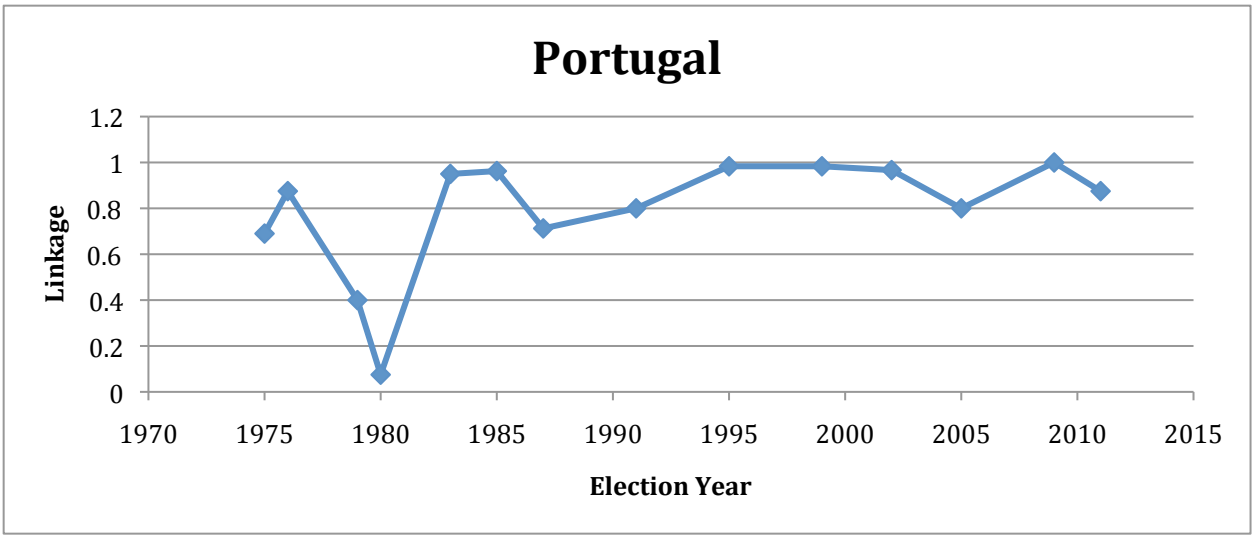

Norway
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1880
1900
1920
1940
1960
1980
2000
2020
Election Year

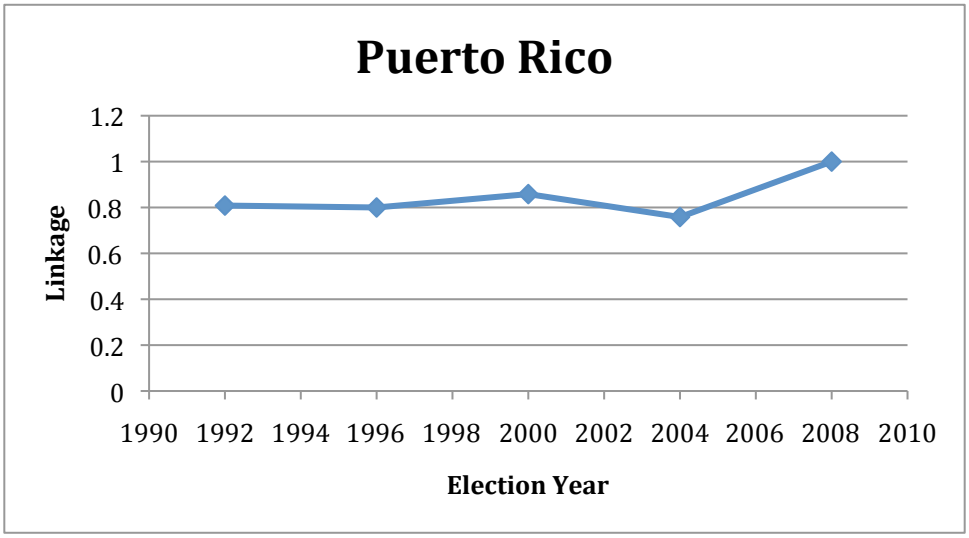

Pakistan
Linkage
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
Election Year

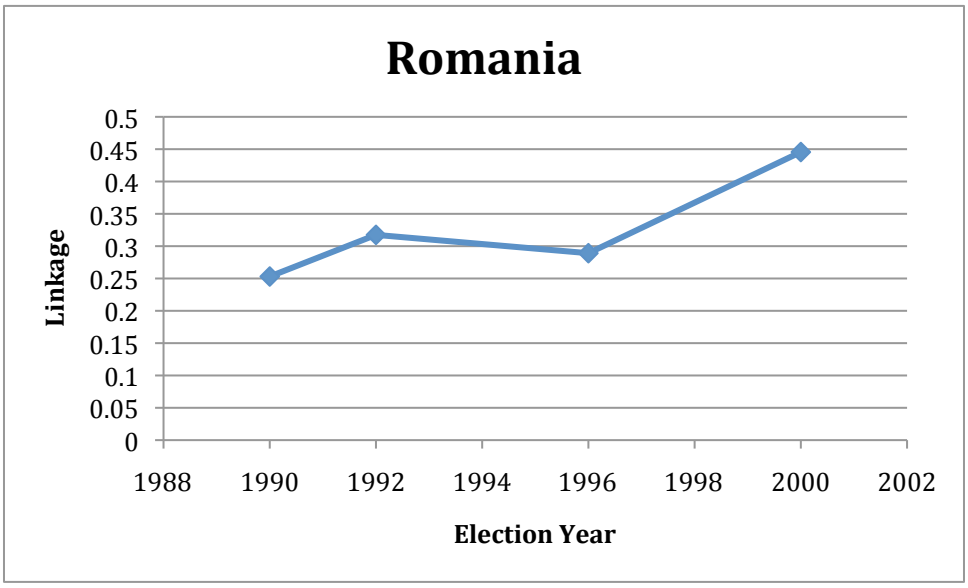

Peru
Linkage
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1960
1970
1980
1990
2000
2010
2020
Election Year

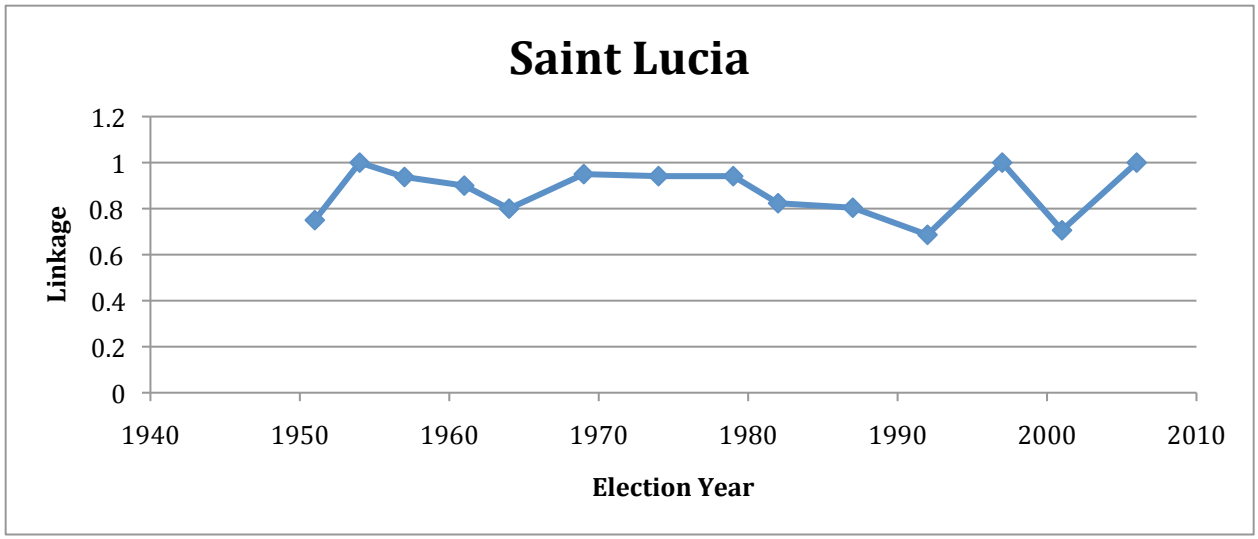

Philippines
Linkage
0.2
0.15
0.1
0.05
0
1990
1995
2000
2005
2010
2015
Election Year

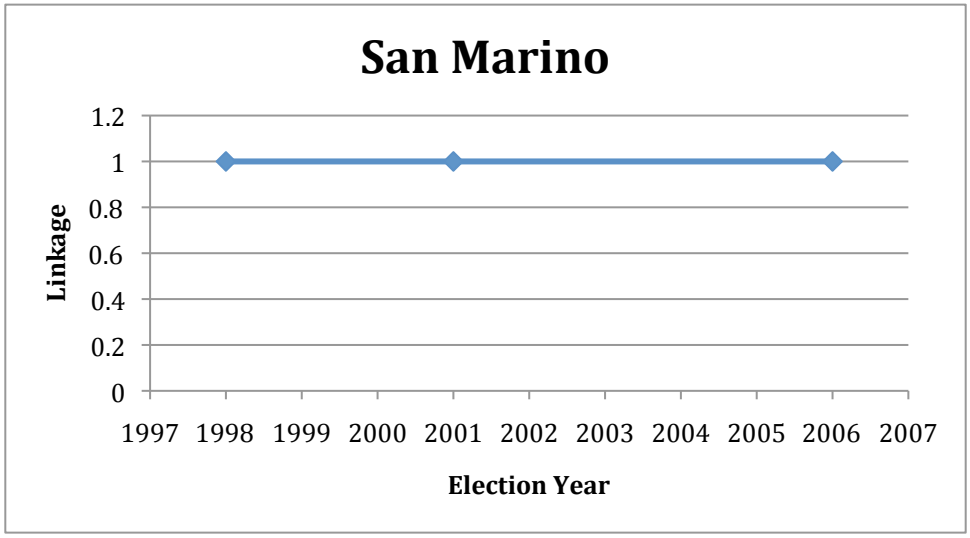

Poland
Linkage
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
Election Year

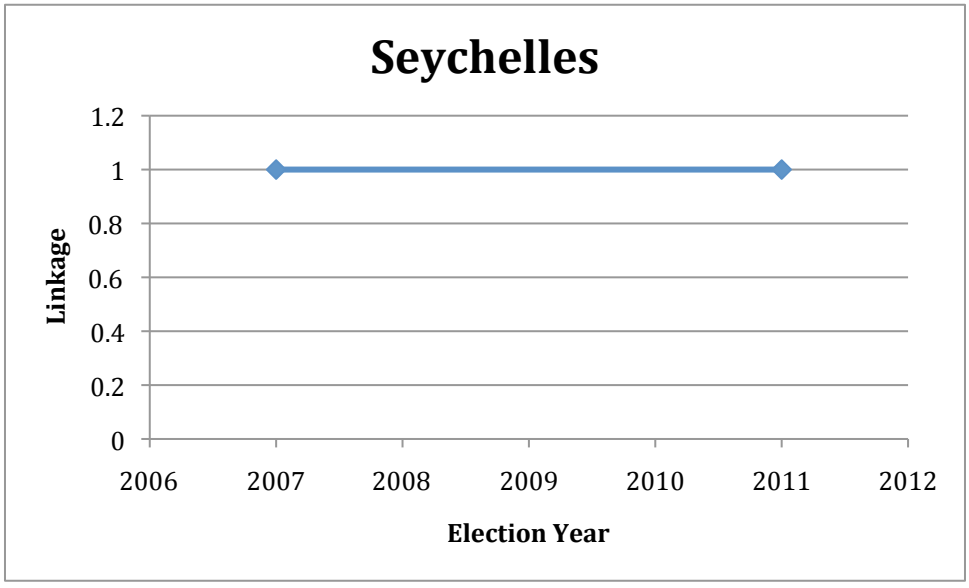

Portugal
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Election Year

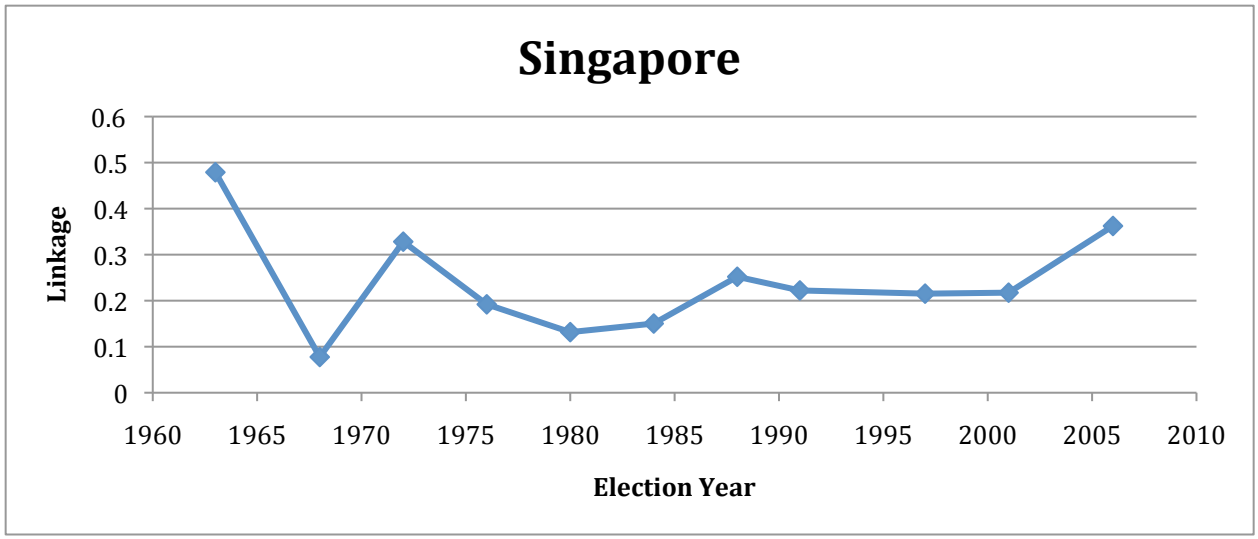

Puerto Rico
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
Election Year

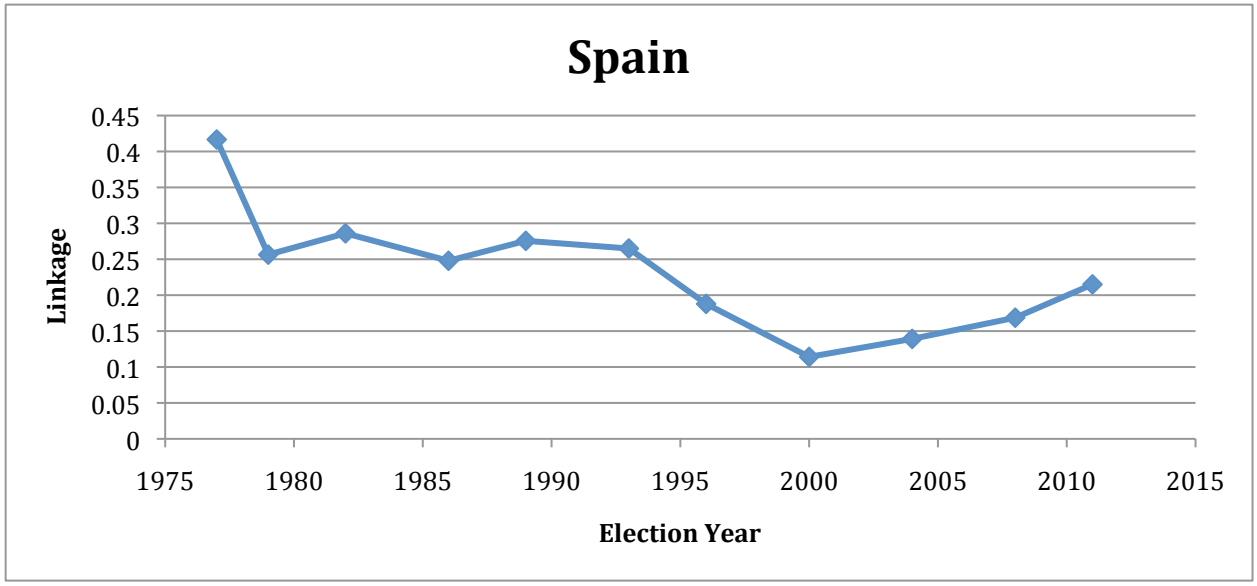

Romania
Linkage
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1988
1990
1992
1994
1996
1998
2000
2002
Election Year

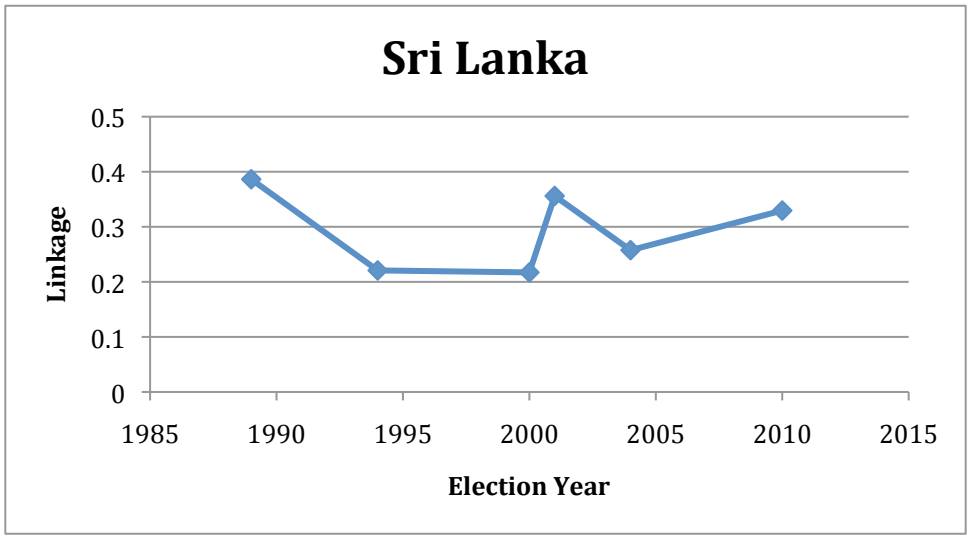

Saint Lucia
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1940
1950
1960
1970
1980
1990
2000
2010
Election Year

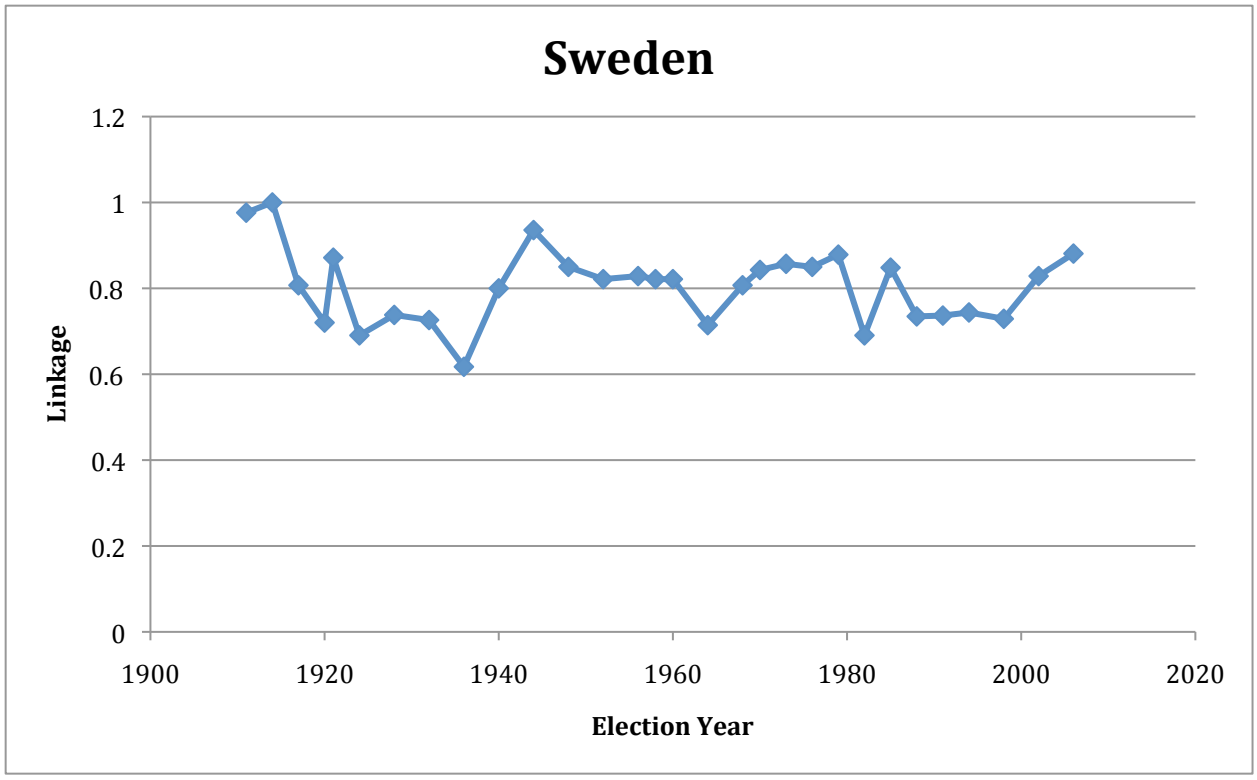

San Marino
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Election Year

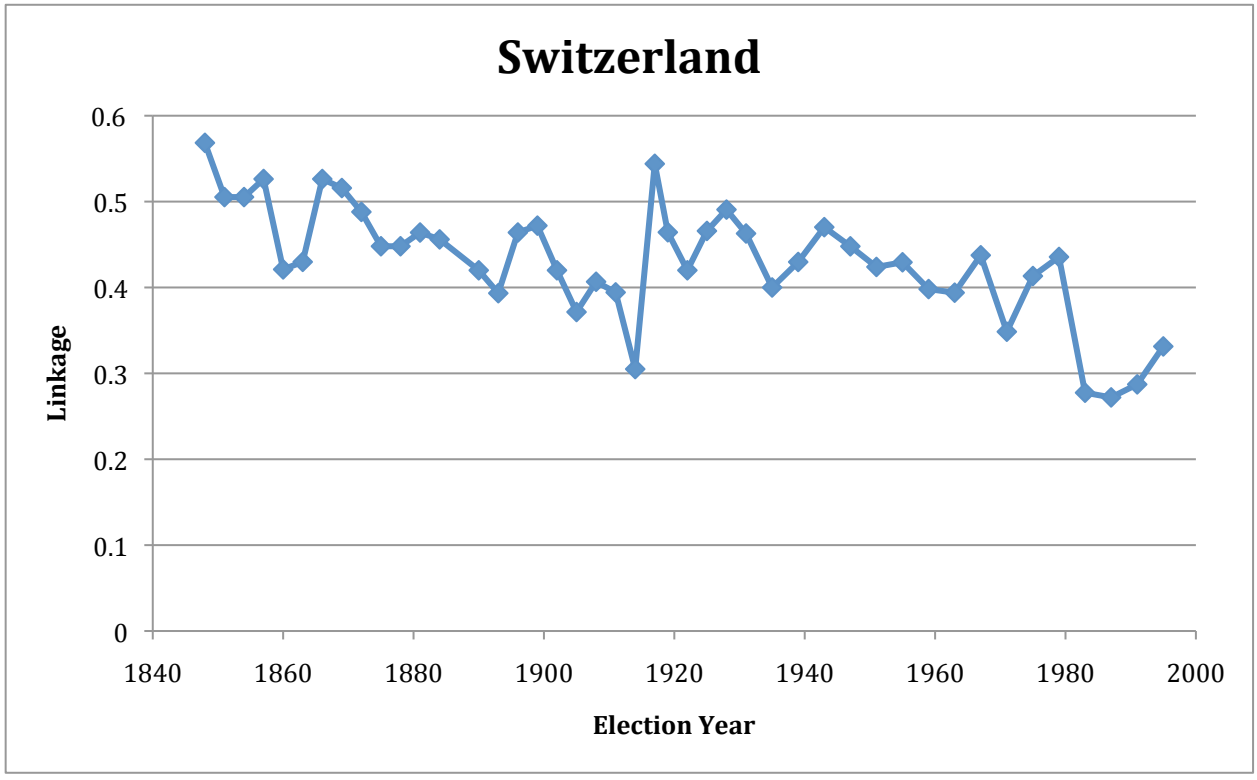

Seychelles
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
2006
2007
2008
2009
2010
2011
2012
Election Year

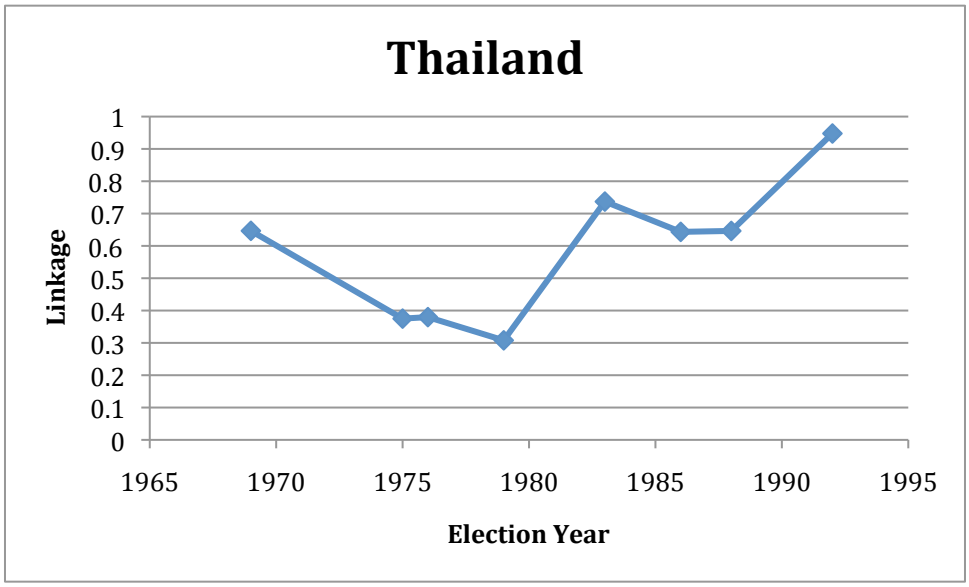

Singapore
Linkage
0.6
0.5
0.4
0.3
0.2
0.1
0
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Election Year

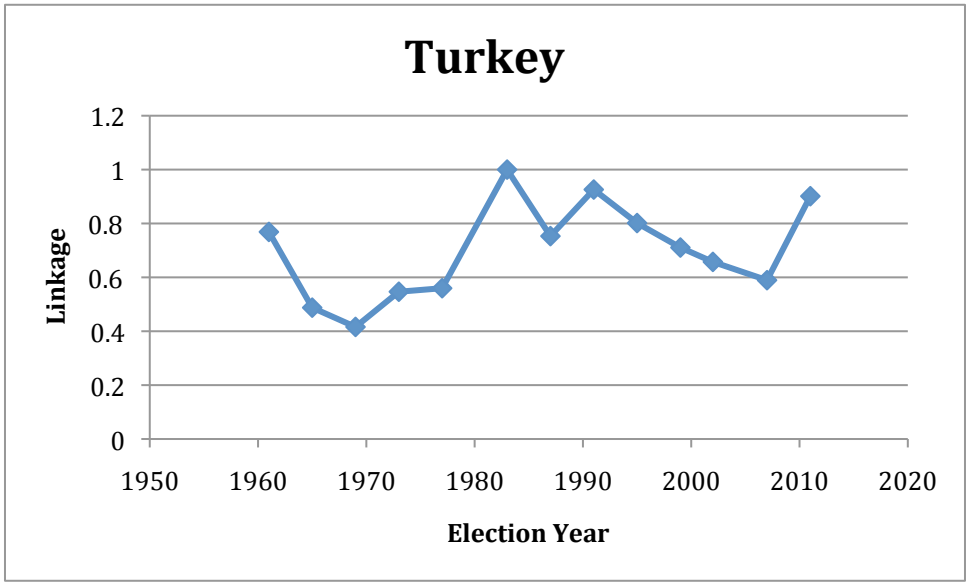

Spain
Linkage
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1975
1980
1985
1990
1995
2000
2005
2010
2015
Election Year

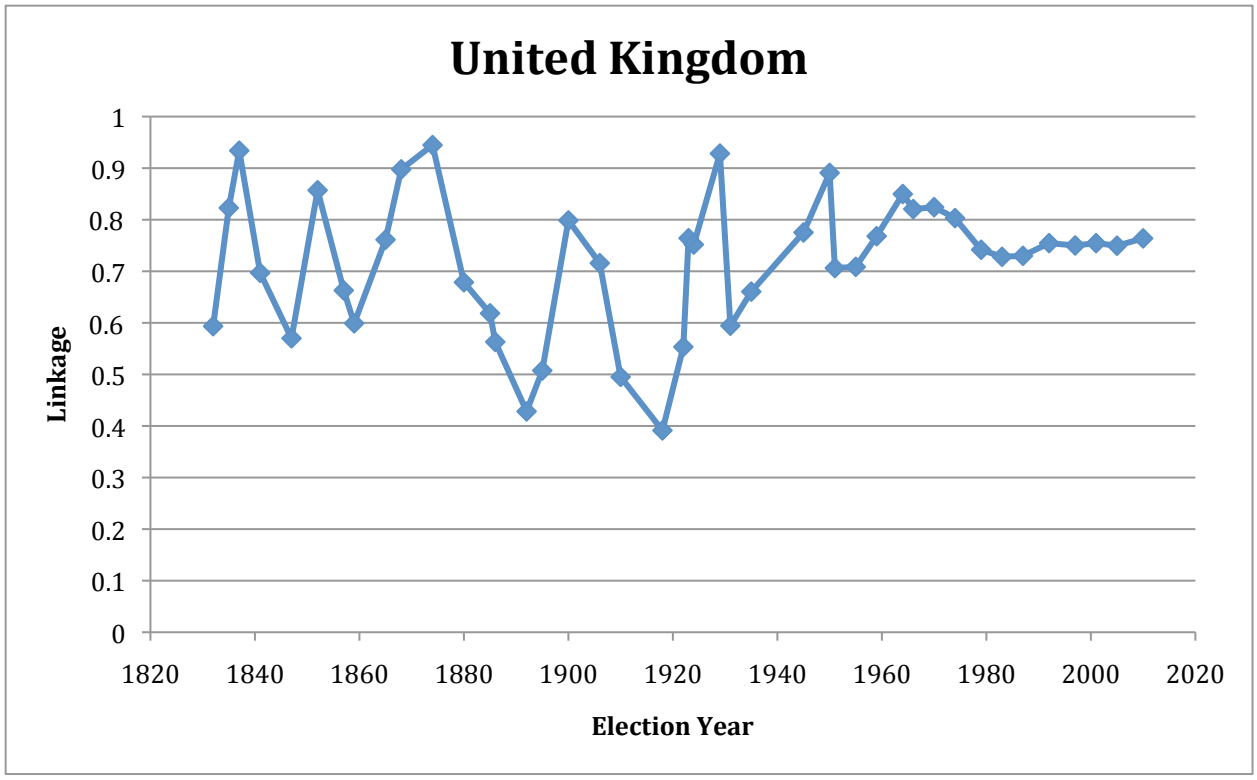

Sri Lanka
Linkage
0.5
0.4
0.3
0.2
0.1
0
1985
1990
1995
2000
2005
2010
2015
Election Year

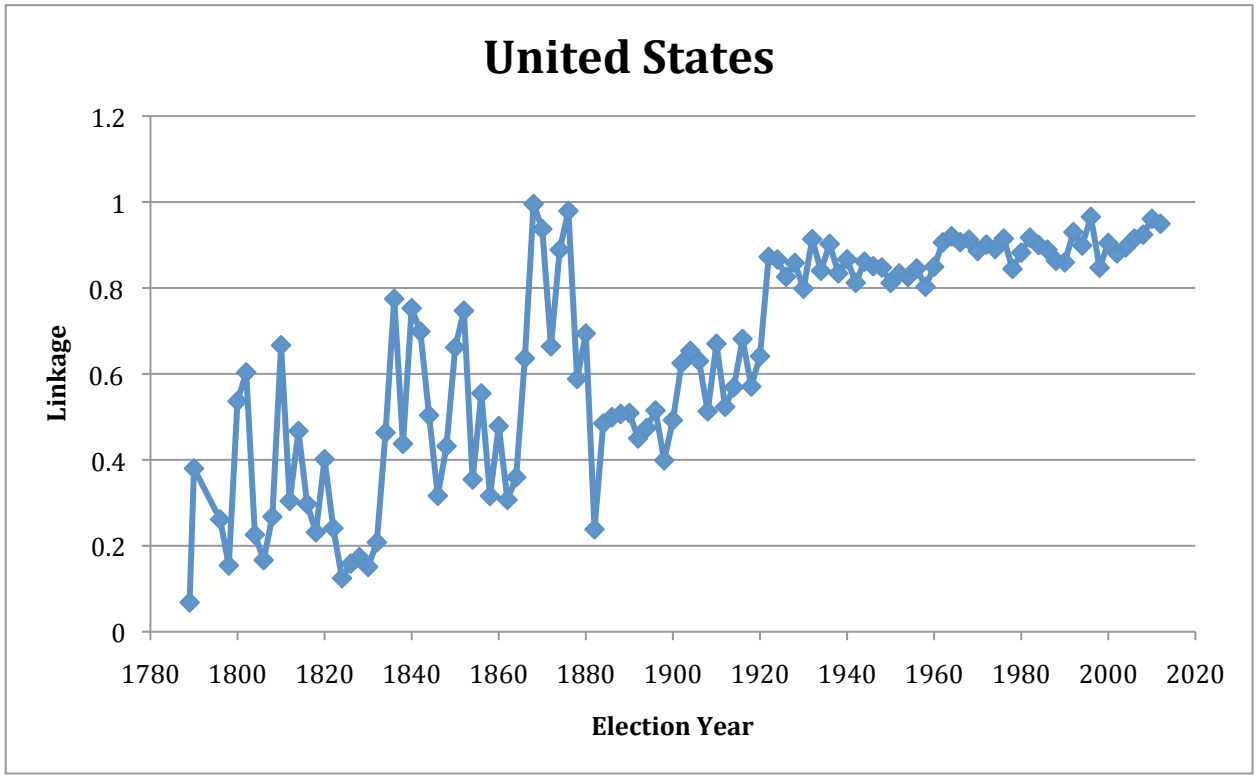

Sweden
1.2
1
0.8
0.6
0.4
0.2
0
Linkage
1900
1920
1940
1960
1980
2000
2020
Election Year

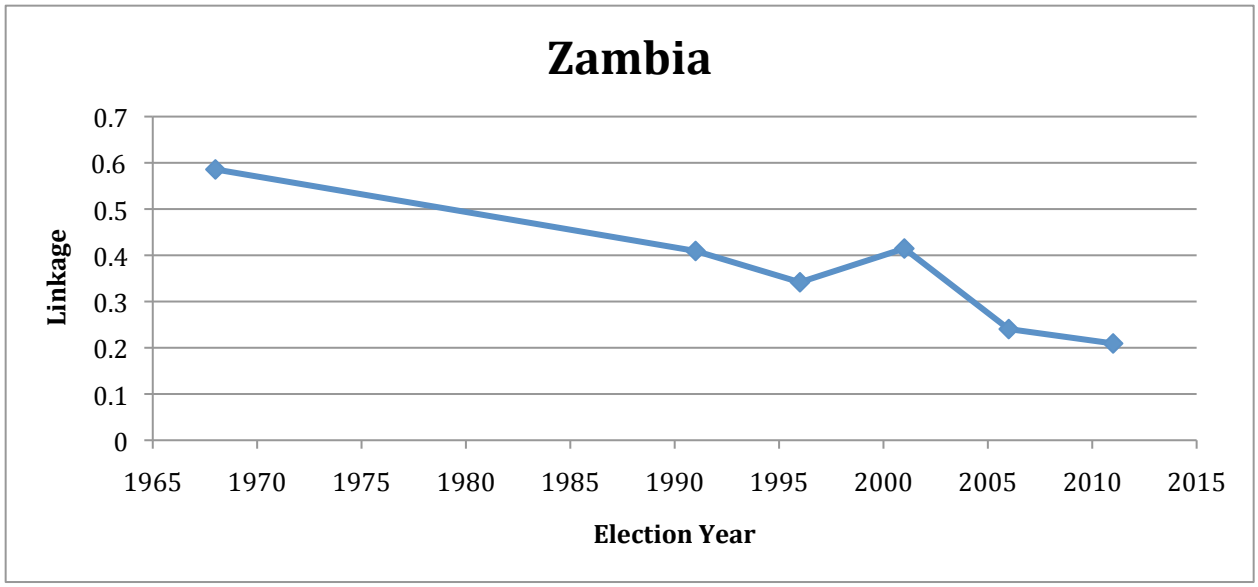

Switzerland
0.6
0.5
0.4
0.3
0.2
0.1
0
Linkage
1840
1860
1880
1900
1920
1940
1960
1980
2000
Election Year


Thailand
Linkage
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1965
1970
1975
1980
1985
1990
1995
Election Year


Turkey
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1950
1960
1970
1980
1990
2000
2010
2020
Election Year


United Kingdom
Linkage
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1820
1840
1860
1880
1900
1920
1940
1960
1980
2000
2020
Election Year


United States
Linkage
1.2
1
0.8
0.6
0.4
0.2
0
1780
1800
1820
1840
1860
1880
1900
1920
1940
1960
1980
2000
2020
Election Year


Zambia
Linkage
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015
Election Year

Appendix II: Linkage Data by Country

Region	Country	Year	Election #	# of Parties	Linkage
Eastern Europe	Albania	2001	1	9	0.196666667
Eastern Europe	Albania	2005	2	7	0.38
Eastern Europe	Albania	2009	3	6	0.430555556
Eastern Europe	Albania	2013	4	7	0.5
Africa	Angola	2008	1	14	1
Africa	Angola	2012	2	9	1
Caribbean	Anguilla	1994	1	4	0.5
Caribbean	Anguilla	1999	2	3	0.571428571
Caribbean	Anguilla	2000	3	5	0.285714286
Caribbean	Anguilla	2005	4	3	0.571428571
Caribbean	Antigua and Barbuda	1999	1	3	0.666666667
Latin America	Argentina	2005	1	21	0.081349206
Latin America	Argentina	2007	2	24	0.079861111
Oceania	Australia	1901	1	3	0.656410256
Oceania	Australia	1903	2	3	0.542222222
Oceania	Australia	1906	3	3	0.612612613
Oceania	Australia	1910	4	2	0.9
Oceania	Australia	1913	5	2	0.933333333
Oceania	Australia	1914	6	2	0.806666667
Oceania	Australia	1917	7	2	0.853333333
Oceania	Australia	1919	8	3	0.671232877
Oceania	Australia	1922	9	3	0.713615023
Oceania	Australia	1925	10	3	0.697368421
Oceania	Australia	1928	11	3	0.546666667
Oceania	Australia	1929	12	5	0.574561404
Oceania	Australia	1931	13	4	0.542763158
Oceania	Australia	1934	14	5	0.522666667
Oceania	Australia	1937	15	3	0.64
Oceania	Australia	1940	16	4	0.583333333
Oceania	Australia	1943	17	4	0.47972973
Oceania	Australia	1946	18	4	0.540540541
Oceania	Australia	1949	19	3	0.707317073
Oceania	Australia	1951	20	3	0.653116531
Oceania	Australia	1954	21	3	0.62745098
Oceania	Australia	1955	22	3	0.655913978
Oceania	Australia	1958	23	3	0.818428184
Oceania	Australia	1961	24	4	0.66733871
Oceania	Australia	1963	25	3	0.795698925
Oceania	Australia	1966	26	4	0.689516129
Oceania	Australia	1969	27	4	0.654
Oceania	Australia	1972	28	3	0.778666667
Oceania	Australia	1974	29	2	0.937007874
Oceania	Australia	1975	30	3	0.706349206
Oceania	Australia	1977	31	4	0.737903226
Oceania	Australia	1980	32	4	0.698
Oceania	Australia	1983	33	4	0.648
Oceania	Australia	1984	34	4	0.714527027

Western Europe	Austria	1919	1	4	0.75
Western Europe	Austria	1920	2	4	0.78
Western Europe	Austria	1923	3	3	0.96
Western Europe	Austria	1927	4	2	0.74
Western Europe	Austria	1930	5	4	0.91
Western Europe	Austria	1945	6	3	0.8
Western Europe	Austria	1949	7	3	0.933333333
Western Europe	Austria	1953	8	3	0.933333333
Western Europe	Austria	1956	9	3	0.88
Western Europe	Austria	1959	10	3	0.92
Western Europe	Austria	1962	11	3	0.906666667
Western Europe	Austria	1966	12	5	0.552
Western Europe	Austria	1970	13	3	0.826666667
Western Europe	Austria	1971	14	3	0.851851852
Western Europe	Austria	1975	15	3	0.851851852
Western Europe	Austria	1979	16	3	0.888888889
Western Europe	Austria	1983	17	3	0.814814815
Western Europe	Austria	1986	18	4	0.861111111
Western Europe	Austria	1990	19	4	0.861111111
Western Europe	Austria	1994	20	5	0.888888889
Western Europe	Austria	1995	21	5	0.772093023
Western Europe	Austria	1999	22	5	0.8
Western Europe	Austria	2002	23	4	0.959302326
Western Europe	Austria	2006	24	4	0.994186047
Western Europe	Austria	2008	25	6	0.817829457
Caribbean	Bahamas	1997	1	4	0.575
Caribbean	Bahamas	2002	2	3	0.675
Caribbean	Bahamas	2007	3	2	0.780487805
Caribbean	Bahamas	2012	4	4	0.782894737
Western Europe	Belgium	1847	1	2	0.842105263
Western Europe	Belgium	1848	2	2	0.719512195
Western Europe	Belgium	1850	3	2	0.704545455
Western Europe	Belgium	1852	4	2	0.789473684
Western Europe	Belgium	1854	5	2	0.545454545
Western Europe	Belgium	1856	6	2	0.526315789
Western Europe	Belgium	1857	7	2	0.829268293
Western Europe	Belgium	1859	8	2	0.380952381
Western Europe	Belgium	1861	9	2	0.473684211
Western Europe	Belgium	1863	10	2	0.636363636
Western Europe	Belgium	1864	11	2	0.646341463
Western Europe	Belgium	1866	12	2	0.421052632
Western Europe	Belgium	1868	13	2	0.431818182
Western Europe	Belgium	1870	14	2	0.951219512
Western Europe	Belgium	1872	15	2	0.363636364
Western Europe	Belgium	1874	16	2	0.315789474
Western Europe	Belgium	1876	17	2	0.545454545
Western Europe	Belgium	1878	18	2	0.421052632
Western Europe	Belgium	1880	19	2	0.75
Western Europe	Belgium	1882	20	2	0.684210526
Western Europe	Belgium	1884	21	2	0.636363636
Western Europe	Belgium	1886	22	2	0.605263158
Western Europe	Belgium	1888	23	2	0.522727273

Western Europe	Belgium	1890	24	2	0.631578947
Western Europe	Belgium	1892	25	2	0.682926829
Western Europe	Belgium	1894	26	4	0.554878049
Western Europe	Belgium	1896	27	4	0.545454545
Western Europe	Belgium	1898	28	4	0.552631579
Western Europe	Belgium	1900	29	4	0.708333333
Western Europe	Belgium	1902	30	4	0.7
Western Europe	Belgium	1904	31	4	0.716666667
Western Europe	Belgium	1906	32	3	0.511111111
Western Europe	Belgium	1908	33	4	0.566666667
Western Europe	Belgium	1910	34	4	0.433333333
Western Europe	Belgium	1912	35	4	0.408333333
Western Europe	Belgium	1914	36	4	0.683333333
Western Europe	Belgium	1919	37	4	0.8
Western Europe	Belgium	1921	38	4	0.808333333
Western Europe	Belgium	1925	39	5	0.666666667
Western Europe	Belgium	1929	40	5	0.686666667
Western Europe	Belgium	1932	41	6	0.533333333
Western Europe	Belgium	1936	42	6	0.777777778
Western Europe	Belgium	1939	43	7	0.604761905
Western Europe	Belgium	1946	44	4	0.825
Western Europe	Belgium	1949	45	5	0.706666667
Western Europe	Belgium	1950	46	4	0.758333333
Western Europe	Belgium	1954	47	5	0.606666667
Western Europe	Belgium	1958	48	5	0.716666667
Western Europe	Belgium	1961	49	5	0.7
Western Europe	Belgium	1965	50	5	0.766666667
Western Europe	Belgium	1968	51	6	0.594444444
Western Europe	Belgium	1971	52	6	0.627777778
Western Europe	Belgium	1974	53	6	0.594444444
Western Europe	Belgium	1977	54	6	0.583333333
Western Europe	Belgium	1978	55	7	0.50952381
Western Europe	Belgium	1981	56	9	0.540740741
Western Europe	Belgium	1985	57	9	0.57037037
Western Europe	Belgium	1987	58	9	0.5
Western Europe	Belgium	1991	59	11	0.490909091
Western Europe	Belgium	1995	60	9	0.511111111
Africa	Benin	1991	1	14	1
Africa	Benin	1995	2	31	1
Africa	Benin	2011	3	19	1
North America	Bermuda	1963	1	1	0.5
North America	Bermuda	1972	2	2	0.958333333
North America	Bermuda	1976	3	2	0.958333333
North America	Bermuda	1980	4	2	1
North America	Bermuda	1983	5	2	1
North America	Bermuda	1985	6	3	0.944444444
North America	Bermuda	1989	7	3	1
North America	Bermuda	1993	8	3	0.648148148
North America	Bermuda	1998	9	3	0.611111111
North America	Bermuda	2003	10	2	1
North America	Bermuda	2007	11	2	1
North America	Bermuda	2012	12	2	1

Latin America	Bolivia	1985	1	7	0.53968254
Latin America	Bolivia	1989	2	3	0.703703704
Latin America	Bolivia	1993	3	4	0.444444444
Latin America	Bolivia	1997	4	7	0.628151261
Latin America	Bolivia	2002	5	9	0.446078431
Latin America	Bolivia	2005	6	8	0.510714286
Eastern Europe	Bosnia and Herzegovina	2006	1	9	0.375
Africa	Botswana	1965	1	4	0.661290323
Africa	Botswana	1969	2	4	0.467741935
Africa	Botswana	1974	3	4	0.40625
Africa	Botswana	1979	4	4	0.421875
Africa	Botswana	1984	5	5	0.417647059
Africa	Botswana	1989	6	7	0.365546218
Africa	Botswana	1994	7	9	0.306481481
Africa	Botswana	1999	8	4	0.6875
Africa	Botswana	2004	9	6	0.453216374
Africa	Botswana	2009	10	5	0.505263158
Latin America	Brazil	1945	1	11	0.305785124
Latin America	Brazil	1947	2	5	0.34
Latin America	Brazil	1950	3	11	0.32
Latin America	Brazil	1954	4	11	0.338181818
Latin America	Brazil	1958	5	11	0.330909091
Latin America	Brazil	1962	6	12	0.31
Latin America	Brazil	1982	7	5	0.448
Latin America	Brazil	1986	8	10	0.361538462
Latin America	Brazil	1990	9	19	0.317738791
Latin America	Brazil	1994	10	15	0.385185185
Latin America	Brazil	1998	11	16	0.37962963
Latin America	Brazil	2002	12	17	0.368191721
Latin America	Brazil	2006	13	15	0.437037037
Eastern Europe	Bulgaria	1991	1	7	0.276497696
Eastern Europe	Bulgaria	1994	2	4	0.323170732
Eastern Europe	Bulgaria	1997	3	4	0.481707317
Asia	Cambodia	2008	1	5	0.541666667
Africa	Cameroon	1997	1	12	0.199712644
Africa	Cameroon	2002	2	12	0.170187793
North America	Canada	1867	1	4	0.210893855
North America	Canada	1872	2	3	0.343696028
North America	Canada	1874	3	4	0.321428571
North America	Canada	1878	4	4	0.464285714
North America	Canada	1882	5	4	0.421227197
North America	Canada	1887	6	3	0.616260163
North America	Canada	1891	7	3	0.643902439
North America	Canada	1896	8	3	0.658576052
North America	Canada	1900	9	4	0.961165049
North America	Canada	1904	10	2	0.952606635
North America	Canada	1908	11	5	0.95412844
North America	Canada	1911	12	2	0.958715596
North America	Canada	1917	13	5	0.584057971
North America	Canada	1921	14	3	0.776811594
North America	Canada	1925	15	3	0.715076072
North America	Canada	1926	16	3	0.639004149

North America	Canada	1930	17	3	0.647302905
North America	Canada	1935	18	5	0.619753086
North America	Canada	1940	19	4	0.567901235
North America	Canada	1945	20	5	0.567078189
North America	Canada	1949	21	5	0.531800766
North America	Canada	1953	22	4	0.651140684
North America	Canada	1957	23	4	0.681558935
North America	Canada	1958	24	3	0.821292776
North America	Canada	1962	25	4	0.779467681
North America	Canada	1963	26	4	0.788973384
North America	Canada	1965	27	4	0.753802281
North America	Canada	1968	28	4	0.729166667
North America	Canada	1972	29	4	0.78125
North America	Canada	1974	30	4	0.777462121
North America	Canada	1979	31	5	0.773049645
North America	Canada	1980	32	5	0.74822695
North America	Canada	1984	33	6	0.970449173
North America	Canada	1988	34	4	0.694915254
North America	Canada	1993	35	5	0.66440678
North America	Canada	1997	36	4	0.821428571
North America	Canada	2000	37	4	0.796511628
North America	Canada	2004	38	4	0.762175325
North America	Canada	2006	39	4	0.810876623
North America	Canada	2008	40	4	0.903409091
North America	Canada	2011	41	4	0.788961039
Africa	Cape Verde	1995	1	4	0.723684211
Africa	Cape Verde	2001	2	4	0.625
Africa	Cape Verde	2006	3	5	0.59
Africa	Cape Verde	2011	4	5	0.676923077
Latin America	Colombia	1998	1	26	0.128205128
Latin America	Colombia	2002	2	41	0.101995565
Latin America	Colombia	2006	3	25	0.203636364
Latin America	Costa Rica	1953	1	4	0.75
Latin America	Costa Rica	1958	2	5	0.828571429
Latin America	Costa Rica	1962	3	3	1
Latin America	Costa Rica	1966	4	4	0.678571429
Latin America	Costa Rica	1970	5	3	0.857142857
Latin America	Costa Rica	1974	6	7	0.673469388
Latin America	Costa Rica	1978	7	3	0.428571429
Latin America	Costa Rica	1982	8	4	0.357142857
Latin America	Costa Rica	1986	9	4	0.571428571
Latin America	Costa Rica	1990	10	5	0.485714286
Latin America	Costa Rica	1994	11	6	0.452380952
Latin America	Costa Rica	1998	12	5	0.571428571
Latin America	Costa Rica	2002	13	5	0.828571429
Latin America	Costa Rica	2006	14	6	0.738095238
Latin America	Costa Rica	2010	15	7	0.775510204
Eastern Europe	Croatia	2007	1	5	0.352941176
Eastern Europe	Czech Republic	1990	1	6	0.5625
Eastern Europe	Czech Republic	1992	2	7	0.517857143
Eastern Europe	Czech Republic	1996	3	6	0.9375
Eastern Europe	Czech Republic	1998	4	6	0.833333333

Eastern Europe	Czech Republic	2002	5	3	1
Eastern Europe	Czech Republic	2006	6	5	0.9
Western Europe	Denmark	1901	1	4	0.449115044
Western Europe	Denmark	1903	2	5	0.391150442
Western Europe	Denmark	1906	3	5	0.515044248
Western Europe	Denmark	1909	4	5	0.511504425
Western Europe	Denmark	1910	5	4	0.539823009
Western Europe	Denmark	1913	6	5	0.543362832
Western Europe	Denmark	1918	7	4	0.772727273
Western Europe	Denmark	1920	8	4	0.570652174
Western Europe	Denmark	1924	9	8	0.765217391
Western Europe	Denmark	1926	10	5	0.765217391
Western Europe	Denmark	1929	11	5	0.765217391
Western Europe	Denmark	1932	12	5	0.765217391
Western Europe	Denmark	1935	13	5	0.652173913
Western Europe	Denmark	1939	14	6	0.52173913
Western Europe	Denmark	1943	15	8	0.747826087
Western Europe	Denmark	1945	16	5	0.895652174
Western Europe	Denmark	1947	17	5	0.608695652
Western Europe	Denmark	1950	18	7	0.670807453
Western Europe	Denmark	1953	19	7	0.733695652
Western Europe	Denmark	1957	20	8	0.559782609
Western Europe	Denmark	1960	21	8	0.577639752
Western Europe	Denmark	1964	22	7	0.637681159
Western Europe	Denmark	1966	23	6	0.930434783
Western Europe	Denmark	1968	24	5	0.717391304
Western Europe	Denmark	1971	25	6	0.784313725
Western Europe	Denmark	1973	26	6	0.781512605
Western Europe	Denmark	1975	27	7	0.698529412
Western Europe	Denmark	1977	28	8	0.696078431
Western Europe	Denmark	1979	29	6	0.714285714
Western Europe	Denmark	1981	30	7	0.699346405
Western Europe	Denmark	1984	31	9	0.581699346
Western Europe	Denmark	1987	32	9	0.661764706
Western Europe	Denmark	1988	33	8	0.806722689
Western Europe	Denmark	1990	34	7	0.705882353
Western Europe	Denmark	1994	35	7	0.74789916
Western Europe	Denmark	1998	36	9	0.588235294
Western Europe	Denmark	2001	37	15	0.389473684
Western Europe	Denmark	2005	38	16	0.411184211
Western Europe	Denmark	2007	39	16	0.421875
Western Europe	Denmark	2011	40	16	0.479166667
Caribbean	Dominica	1995	1	3	0.873015873
Caribbean	Dominica	2000	2	3	0.80952381
Caribbean	Dominica	2005	3	3	0.666666667
Latin America	Dominican Republic	1962	1	6	0.432098765
Latin America	Dominican Republic	1966	2	4	0.518518519
Latin America	Dominican Republic	1970	3	6	0.592592593
Latin America	Dominican Republic	1974	4	4	0.111111111
Latin America	Dominican Republic	1978	5	2	1
Latin America	Dominican Republic	1982	6	4	0.666666667
Latin America	Dominican Republic	1986	7	4	0.808333333

Latin America	Dominican Republic	1994	8	5	0.626666667
Latin America	Dominican Republic	1998	9	6	0.516666667
Latin America	Dominican Republic	2002	10	7	0.443768997
Latin America	Dominican Republic	2006	11	8	0.380319149
Africa	Equatorial Guinea	1993	1	7	0.373015873
Eastern Europe	Estonia	1992	1	6	0.208333333
Eastern Europe	Estonia	1995	2	4	0.590909091
Eastern Europe	Estonia	1999	3	8	0.704545455
Eastern Europe	Estonia	2003	4	7	0.797619048
Western Europe	Finland	1907	1	6	0.625
Western Europe	Finland	1908	2	6	0.635416667
Western Europe	Finland	1909	3	6	0.635416667
Western Europe	Finland	1910	4	6	0.635416667
Western Europe	Finland	1911	5	6	0.625
Western Europe	Finland	1913	6	6	0.625
Western Europe	Finland	1916	7	6	0.625
Western Europe	Finland	1917	8	5	0.575
Western Europe	Finland	1919	9	5	0.775
Western Europe	Finland	1922	10	6	0.791666667
Western Europe	Finland	1924	11	6	0.760416667
Western Europe	Finland	1927	12	6	0.791666667
Western Europe	Finland	1929	13	6	0.78125
Western Europe	Finland	1930	14	6	0.625
Western Europe	Finland	1933	15	6	0.520833333
Western Europe	Finland	1936	16	7	0.705357143
Western Europe	Finland	1939	17	7	0.638095238
Western Europe	Finland	1945	18	6	0.766666667
Western Europe	Finland	1948	19	6	0.722222222
Western Europe	Finland	1951	20	6	0.755555556
Western Europe	Finland	1954	21	6	0.791666667
Western Europe	Finland	1958	22	7	0.696428571
Western Europe	Finland	1962	23	8	0.6
Western Europe	Finland	1966	24	7	0.676190476
Western Europe	Finland	1970	25	7	0.8
Western Europe	Finland	1972	26	7	0.733333333
Western Europe	Finland	1975	27	9	0.43
Western Europe	Finland	1979	28	6	0.44
Western Europe	Finland	1983	29	4	0.4
Western Europe	Finland	1987	30	8	0.416666667
Western Europe	Finland	1991	31	8	0.608333333
Western Europe	Finland	1995	32	7	0.657142857
Western Europe	Finland	1999	33	7	0.695238095
Western Europe	Finland	2003	34	8	0.625
Western Europe	Finland	2007	35	8	0.633333333
Western Europe	France	1973	1	9	0.237726098
Western Europe	France	1978	2	4	0.487869198
Western Europe	France	1981	3	5	0.506131078
Western Europe	France	1986	4	4	0.528645833
Western Europe	France	1988	5	5	0.63963964
Western Europe	France	1993	6	7	0.598455598
Western Europe	France	1997	7	5	0.525765766
Western Europe	France	2002	8	7	0.521492921

Africa	Gambia	1997	1	4	0.575
Africa	Gambia	2012	2	2	0.583333333
Western Europe	Germany	1871	1	11	0.194907187
Western Europe	Germany	1874	2	11	0.202198305
Western Europe	Germany	1877	3	10	0.241813602
Western Europe	Germany	1878	4	10	0.229974811
Western Europe	Germany	1881	5	12	0.198572628
Western Europe	Germany	1884	6	9	0.261964736
Western Europe	Germany	1887	7	9	0.24825077
Western Europe	Germany	1890	8	9	0.289392667
Western Europe	Germany	1893	9	9	0.297229219
Western Europe	Germany	1898	10	12	0.232367758
Western Europe	Germany	1903	11	12	0.243702771
Western Europe	Germany	1907	12	9	0.286873776
Western Europe	Germany	1912	13	9	0.322698013
Western Europe	Germany	1919	14	6	0.712962963
Western Europe	Germany	1920	15	7	0.734693878
Western Europe	Germany	1924	16	9	1.126984127
Western Europe	Germany	1928	17	8	0.564285714
Western Europe	Germany	1930	18	10	0.471428571
Western Europe	Germany	1932	19	5	1.485714286
Western Europe	Germany	1933	20	5	0.771428571
Western Europe	Germany	1949	21	12	0.326790634
Western Europe	Germany	1953	22	12	0.300275482
Western Europe	Germany	1957	23	10	0.342105263
Western Europe	Germany	1961	24	7	0.4626952
Western Europe	Germany	1965	25	5	0.590322581
Western Europe	Germany	1969	26	5	0.516129032
Western Europe	Germany	1972	27	4	0.625
Western Europe	Germany	1976	28	4	0.714717742
Western Europe	Germany	1980	29	4	0.744959677
Western Europe	Germany	1983	30	5	0.479032258
Western Europe	Germany	1987	31	5	0.677419355
Western Europe	Germany	1990	32	8	0.48742378
Western Europe	Germany	1994	33	6	0.537093496
Western Europe	Germany	1998	34	6	0.462906504
Western Europe	Germany	2002	35	6	0.59754738
Western Europe	Germany	2005	36	7	0.473483039
Western Europe	Germany	2009	37	7	0.721930244
Africa	Ghana	1996	1	5	0.43875
Africa	Ghana	2000	2	6	0.635625
Africa	Ghana	2004	3	6	0.448913043
Africa	Ghana	2008	4	6	0.417826087
Africa	Ghana	2012	5	6	0.312987013
Western Europe	Gibraltar	2011	1	1	1
Eastern Europe	Greece	1926	1	7	0.492857143
Eastern Europe	Greece	1928	2	10	0.293877551
Eastern Europe	Greece	1932	3	9	0.444444444
Eastern Europe	Greece	1936	4	8	0.365131579
Eastern Europe	Greece	1946	5	3	0.394736842
Eastern Europe	Greece	1951	6	7	0.641114983
Eastern Europe	Greece	1952	7	4	0.348484848

Eastern Europe	Greece	1956	8	3	0.357723577
Eastern Europe	Greece	1958	9	3	0.981818182
Eastern Europe	Greece	1961	10	2	0.918181818
Eastern Europe	Greece	1963	11	4	0.772727273
Eastern Europe	Greece	1964	12	2	0.781818182
Eastern Europe	Greece	1974	13	4	0.75
Eastern Europe	Greece	1977	14	7	0.635204082
Eastern Europe	Greece	1981	15	6	0.491071429
Eastern Europe	Greece	1985	16	3	0.964285714
Eastern Europe	Greece	1989	17	2	0.954
Eastern Europe	Greece	1990	18	2	0.955357143
Eastern Europe	Greece	1993	19	5	0.514285714
Eastern Europe	Greece	1996	20	6	0.488095238
Eastern Europe	Greece	2000	21	4	0.620535714
Caribbean	Grenada	1976	1	1	1
Caribbean	Grenada	1984	2	3	0.822222222
Caribbean	Grenada	1990	3	5	0.813333333
Caribbean	Grenada	1995	4	4	0.866666667
Caribbean	Grenada	1999	5	3	0.777777778
Caribbean	Guyana	1953	1	3	0.527777778
Caribbean	Guyana	1957	2	4	0.732142857
Caribbean	Guyana	1961	3	3	0.866666667
Caribbean	Guyana	1997	4	4	0.6
Caribbean	Guyana	2001	5	3	0.733333333
Caribbean	Guyana	2006	6	4	0.775
Latin America	Honduras	1980	1	3	0.703703704
Latin America	Honduras	1981	2	2	1
Latin America	Honduras	1985	3	3	0.685185185
Latin America	Honduras	1993	4	4	0.541666667
Latin America	Honduras	1997	5	4	0.555555556
Latin America	Honduras	2001	6	5	0.466666667
Eastern Europe	Hungary	1990	1	21	0.312770563
Eastern Europe	Hungary	1994	2	16	0.413707386
Eastern Europe	Hungary	1998	3	12	0.403409091
Eastern Europe	Hungary	2006	4	7	0.300324675
Eastern Europe	Hungary	2010	5	7	0.418019481
Western Europe	Iceland	1916	1	7	0.409937888
Western Europe	Iceland	1919	2	4	0.90625
Western Europe	Iceland	1923	3	3	0.942028986
Western Europe	Iceland	1927	4	3	0.897435897
Western Europe	Iceland	1931	5	4	0.759259259
Western Europe	Iceland	1933	6	4	0.836538462
Western Europe	Iceland	1934	7	5	0.785185185
Western Europe	Iceland	1937	8	4	0.981481481
Western Europe	Iceland	1942	9	5	1.342857143
Western Europe	Iceland	1946	10	4	0.866071429
Western Europe	Iceland	1949	11	4	0.857142857
Western Europe	Iceland	1953	12	6	0.613095238
Western Europe	Iceland	1956	13	4	0.571428571
Western Europe	Iceland	1959	14	4	0.857142857
Western Europe	Iceland	1963	15	3	0.958333333
Western Europe	Iceland	1967	16	3	1

Western Europe	Iceland	1971	17	5	0.95
Western Europe	Iceland	1974	18	5	0.875
Western Europe	Iceland	1978	19	4	1
Western Europe	Iceland	1979	20	4	1
Western Europe	Iceland	1983	21	6	0.791666667
Western Europe	Iceland	1987	22	8	0.75
Western Europe	Iceland	1991	23	5	0.925
Western Europe	Iceland	1995	24	8	0.640625
Asia	India	1977	1	30	0.069926199
Asia	India	1980	2	32	0.084948015
Asia	India	1984	3	30	0.072632226
Asia	India	1985	4	9	0.01312336
Asia	India	1989	5	51	0.048741614
Asia	India	1991	6	49	0.060307269
Asia	India	1992	7	8	0.01056338
Asia	India	1996	8	60	0.04966237
Asia	India	1998	9	69	0.041449809
Asia	India	1999	10	71	0.038777786
Asia	India	2004	11	74	0.036707979
Asia	Indonesia	1999	1	8	0.467592593
Asia	Indonesia	2004	2	13	0.422037422
Western Europe	Ireland	1922	1	4	0.517857143
Western Europe	Ireland	1923	2	8	0.429166667
Western Europe	Ireland	1927	3	6	1
Western Europe	Ireland	1932	4	4	0.658333333
Western Europe	Ireland	1933	5	4	0.741666667
Western Europe	Ireland	1937	6	4	0.661764706
Western Europe	Ireland	1938	7	4	0.647058824
Western Europe	Ireland	1943	8	6	0.607843137
Western Europe	Ireland	1944	9	7	0.462184874
Western Europe	Ireland	1948	10	6	0.691666667
Western Europe	Ireland	1951	11	6	0.529166667
Western Europe	Ireland	1954	12	6	0.55
Western Europe	Ireland	1957	13	6	0.554166667
Western Europe	Ireland	1961	14	7	0.454887218
Western Europe	Ireland	1965	15	4	0.723684211
Western Europe	Ireland	1969	16	3	0.968253968
Western Europe	Ireland	1973	17	5	0.571428571
Western Europe	Ireland	1977	18	3	0.912698413
Western Europe	Ireland	1981	19	3	0.894308943
Western Europe	Ireland	1982	20	3	1
Western Europe	Ireland	1987	21	5	0.717073171
Western Europe	Ireland	1989	22	4	0.567073171
Western Europe	Ireland	1992	23	5	0.692682927
Western Europe	Ireland	1997	24	10	0.4
Western Europe	Ireland	2002	25	7	0.962585034
Western Europe	Ireland	2007	26	8	0.834302326
Western Europe	Ireland	2011	27	9	0.76744186
Western Europe	Italy	1919	1	10	0.362962963
Western Europe	Italy	1921	2	11	0.331818182
Western Europe	Italy	1946	3	11	0.360703812
Western Europe	Italy	1948	4	8	0.274193548

Western Europe	Italy	1953	5	9	0.487455197
Western Europe	Italy	1958	6	11	0.363636364
Western Europe	Italy	1963	7	9	0.527777778
Western Europe	Italy	1968	8	9	0.451388889
Western Europe	Italy	1972	9	9	0.482638889
Western Europe	Italy	1979	10	11	0.329545455
Western Europe	Italy	1983	11	11	0.386363636
Western Europe	Italy	1987	12	10	0.3875
Western Europe	Italy	1992	13	14	0.357142857
Western Europe	Italy	1994	14	11	0.096842105
Western Europe	Italy	1996	15	7	0.112180451
Caribbean	Jamaica	1944	1	3	0.583333333
Caribbean	Jamaica	1949	2	4	0.5
Caribbean	Jamaica	1955	3	5	0.4625
Caribbean	Jamaica	1959	4	3	0.666666667
Caribbean	Jamaica	1962	5	2	1
Caribbean	Jamaica	1967	6	2	1
Caribbean	Jamaica	1972	7	2	1
Caribbean	Jamaica	1976	8	2	1
Caribbean	Jamaica	1980	9	2	0.983333333
Caribbean	Jamaica	1983	10	2	0.583333333
Caribbean	Jamaica	1989	11	2	0.974576271
Caribbean	Jamaica	1993	12	2	0.983333333
Caribbean	Jamaica	1997	13	3	0.744444444
Caribbean	Jamaica	2002	14	2	1
Asia	Japan	1947	1	5	1.791452991
Asia	Japan	1949	2	10	0.838461538
Asia	Japan	1952	3	8	0.963675214
Asia	Japan	1953	4	7	0.962148962
Asia	Japan	1955	5	6	1.105932203
Asia	Japan	1958	6	3	1.88700565
Asia	Japan	1960	7	4	1.434322034
Asia	Japan	1963	8	4	1.338983051
Asia	Japan	1967	9	5	1.100813008
Asia	Japan	1969	10	5	1.128455285
Asia	Japan	1972	11	5	1.109677419
Asia	Japan	1976	12	6	0.941025641
Asia	Japan	1979	13	7	0.778021978
Asia	Japan	1980	14	7	0.741758242
Asia	Japan	1983	15	7	0.750549451
Asia	Japan	1986	16	7	0.728571429
Asia	Japan	1990	17	7	0.723076923
Asia	Japan	1993	18	9	0.621877692
Africa	Kenya	1961	1	10	0.1075
Africa	Kenya	1963	2	5	0.257142857
Africa	Kenya	1992	3	6	0.389184397
Africa	Kenya	1997	4	15	0.164126984
Africa	Kenya	2002	5	18	0.153274
Africa	Kenya	2007	6	21	0.101632
Africa	Kenya	2013	7	20	0.110668103
Asia	Korea	1948	1	42	0.045595238
Asia	Korea	1950	2	28	0.074319728

Asia	Korea	1954	3	12	0.151067323
Asia	Korea	1958	4	10	0.196995708
Asia	Korea	1960	5	6	0.326180258
Asia	Korea	1963	6	12	0.34351145
Asia	Korea	1967	7	9	0.279050042
Asia	Korea	1971	8	6	0.362745098
Asia	Korea	1973	9	3	0.95890411
Asia	Korea	1978	10	3	0.844155844
Asia	Korea	1981	11	12	0.335144928
Asia	Korea	1985	12	8	0.476902174
Asia	Korea	1988	13	10	0.304464286
Asia	Korea	1992	14	6	0.464135021
Asia	Korea	1996	15	5	0.630039526
Asia	Korea	2000	16	7	0.375707992
Asia	Korea	2004	17	7	0.436801881
Asia	Korea	2008	18	8	0.358163265
Asia	Korea	2012	19	8	0.289634146
Eastern Europe	Latvia	1998	1	6	0.866666667
Eastern Europe	Latvia	2002	2	8	0.825
Eastern Europe	Latvia	2006	3	5	0.92
Africa	Lesotho	1965	1	4	0.804166667
Africa	Lesotho	1970	2	5	0.486666667
Africa	Lesotho	1993	3	10	0.349230769
Africa	Lesotho	1998	4	12	0.425
Africa	Lesotho	2002	5	18	0.479861111
Africa	Lesotho	2007	6	14	0.459821429
Africa	Lesotho	2012	7	17	0.668382353
Africa	Liberia	2005	1	17	0.259191176
Africa	Liberia	2011	2	27	0.335870117
Western Europe	Luxembourg	1919	1	6	0.541666667
Western Europe	Luxembourg	1925	2	7	0.571428571
Western Europe	Luxembourg	1928	3	5	0.7
Western Europe	Luxembourg	1931	4	7	0.642857143
Western Europe	Luxembourg	1934	5	5	0.6
Western Europe	Luxembourg	1937	6	7	0.642857143
Western Europe	Luxembourg	1945	7	5	0.75
Western Europe	Luxembourg	1948	8	4	0.875
Western Europe	Luxembourg	1951	9	3	1
Western Europe	Luxembourg	1954	10	4	0.75
Western Europe	Luxembourg	1959	11	4	0.8125
Western Europe	Luxembourg	1964	12	5	0.85
Western Europe	Luxembourg	1968	13	4	0.9375
Western Europe	Luxembourg	1974	14	5	0.9
Western Europe	Luxembourg	1979	15	7	0.714285714
Western Europe	Luxembourg	1984	16	5	0.75
Western Europe	Luxembourg	1989	17	7	0.678571429
Western Europe	Luxembourg	1994	18	4	1
Africa	Malawi	1999	1	7	0.31039641
Africa	Malawi	2004	2	15	0.2300893
Africa	Malawi	2009	3	10	0.211458333
Latin America	Mexico	1991	1	10	0.282666667
Latin America	Mexico	1994	2	7	0.415714286

Latin America	Mexico	1997	3	7	0.466666667
Latin America	Mexico	2000	4	2	0.528333333
Latin America	Mexico	2003	5	10	0.308333333
Latin America	Mexico	2006	6	2	0.705
Latin America	Mexico	2009	7	8	0.53625
Latin America	Mexico	2012	8	6	0.631111111
Asia	Nepal	2008	1	24	0.164409722
Western Europe	Netherlands	1888	1	6	0.316666667
Western Europe	Netherlands	1891	2	6	0.306666667
Western Europe	Netherlands	1894	3	8	0.20375
Western Europe	Netherlands	1897	4	8	0.385638298
Western Europe	Netherlands	1901	5	7	0.407704655
Western Europe	Netherlands	1905	6	7	0.373860182
Western Europe	Netherlands	1909	7	7	0.401284109
Western Europe	Netherlands	1913	8	7	0.381954887
Western Europe	Netherlands	1917	9	7	0.142857143
Western Europe	Netherlands	1918	10	9	0.549382716
Western Europe	Netherlands	1922	11	9	0.549382716
Western Europe	Netherlands	1925	12	7	0.714285714
Western Europe	Netherlands	1929	13	6	0.824074074
Western Europe	Netherlands	1933	14	8	0.625
Western Europe	Netherlands	1937	15	10	0.527272727
Western Europe	Netherlands	1946	16	7	0.727272727
Western Europe	Netherlands	1948	17	7	0.727272727
Western Europe	Netherlands	1952	18	8	0.638888889
Western Europe	Netherlands	1956	19	7	0.698412698
Western Europe	Netherlands	1959	20	7	0.650793651
Western Europe	Netherlands	1963	21	8	0.604166667
Western Europe	Netherlands	1967	22	10	0.555555556
Western Europe	Netherlands	1971	23	10	0.588888889
Western Europe	Netherlands	1972	24	11	0.5
Western Europe	Netherlands	1977	25	3	0.833333333
Western Europe	Netherlands	1981	26	5	0.822222222
Western Europe	Netherlands	1982	27	3	1
Western Europe	Netherlands	1986	28	5	0.79
Western Europe	Netherlands	1989	29	4	1
Western Europe	Netherlands	1994	30	7	0.607142857
Western Europe	Netherlands	1998	31	7	0.735714286
Western Europe	Netherlands	2002	32	9	0.695906433
Western Europe	Netherlands	2003	33	8	0.644736842
Western Europe	Netherlands	2006	34	8	0.690789474
Western Europe	Netherlands	2010	35	9	0.777777778
Western Europe	Netherlands	2012	36	9	0.666666667
Oceania	New Zealand	1999	1	10	0.76119403
Oceania	New Zealand	2002	2	11	0.77602108
Oceania	New Zealand	2005	3	9	0.626409018
Oceania	New Zealand	2008	4	11	0.545454545
Oceania	New Zealand	2011	5	9	0.766666667
Africa	Nigeria	2003	1	15	0.168888889
Western Europe	Norway	1882	1	2	0.98245614
Western Europe	Norway	1885	2	2	0.98245614
Western Europe	Norway	1894	3	2	1

Western Europe	Norway	1897	4	2	1
Western Europe	Norway	1900	5	3	0.678787879
Western Europe	Norway	1903	6	3	0.734567901
Western Europe	Norway	1906	7	4	0.601626016
Western Europe	Norway	1909	8	3	0.582655827
Western Europe	Norway	1912	9	2	0.845528455
Western Europe	Norway	1915	10	4	0.691056911
Western Europe	Norway	1918	11	5	0.546031746
Western Europe	Norway	1921	12	6	0.718390805
Western Europe	Norway	1924	13	7	0.625615764
Western Europe	Norway	1927	14	6	0.603448276
Western Europe	Norway	1930	15	6	0.58045977
Western Europe	Norway	1933	16	7	0.532019704
Western Europe	Norway	1936	17	7	0.527093596
Western Europe	Norway	1945	18	6	0.74137931
Western Europe	Norway	1949	19	6	0.666666667
Western Europe	Norway	1953	20	6	0.85
Western Europe	Norway	1957	21	6	0.766666667
Western Europe	Norway	1961	22	7	0.685714286
Western Europe	Norway	1965	23	7	0.714285714
Western Europe	Norway	1969	24	6	0.758333333
Western Europe	Norway	1973	25	7	0.669172932
Western Europe	Norway	1977	26	6	0.728070175
Western Europe	Norway	1981	27	7	0.609022556
Western Europe	Norway	1985	28	7	0.616541353
Western Europe	Norway	1989	29	8	0.710526316
Western Europe	Norway	1993	30	8	0.657894737
Western Europe	Norway	1997	31	7	0.819548872
Western Europe	Norway	2001	32	8	0.730263158
Western Europe	Norway	2005	33	8	0.723684211
Western Europe	Norway	2009	34	7	0.684210526
Asia	Pakistan	2002	1	29	0.09622211
Asia	Pakistan	2008	2	16	0.149816176
Latin America	Peru	1963	1	12	0.1875
Latin America	Peru	1980	2	9	0.32
Latin America	Peru	1985	3	8	0.288461538
Latin America	Peru	1990	4	8	0.235576923
Latin America	Peru	2001	5	10	0.444
Latin America	Peru	2006	6	12	0.326666667
Latin America	Peru	2011	7	4	0.644230769
Asia	Philippines	1992	1	15	0.166499162
Asia	Philippines	1995	2	13	0.146267526
Asia	Philippines	1998	3	12	0.148953301
Asia	Philippines	2001	4	19	0.105010121
Asia	Philippines	2004	5	15	0.102539683
Asia	Philippines	2007	6	17	0.120333065
Asia	Philippines	2010	7	24	0.084795322
Eastern Europe	Poland	1991	1	19	0.372688478
Eastern Europe	Poland	1993	2	14	0.436813187
Eastern Europe	Poland	1997	3	8	0.463942308
Eastern Europe	Poland	2001	4	7	0.700348432
Eastern Europe	Poland	2005	5	7	0.794425087

Western Europe	Portugal	1975	1	5	0.69
Western Europe	Portugal	1976	2	4	0.875
Western Europe	Portugal	1979	3	3	0.4
Western Europe	Portugal	1980	4	2	0.075
Western Europe	Portugal	1983	5	3	0.95
Western Europe	Portugal	1985	6	4	0.9625
Western Europe	Portugal	1987	7	4	0.7125
Western Europe	Portugal	1991	8	3	0.8
Western Europe	Portugal	1995	9	3	0.983333333
Western Europe	Portugal	1999	10	3	0.983333333
Western Europe	Portugal	2002	11	3	0.966666667
Western Europe	Portugal	2005	12	4	0.8
Western Europe	Portugal	2009	13	4	1
Western Europe	Portugal	2011	14	4	0.875
Caribbean	Puerto Rico	1992	1	3	0.808333333
Caribbean	Puerto Rico	1996	2	3	0.8
Caribbean	Puerto Rico	2000	3	3	0.858333333
Caribbean	Puerto Rico	2004	4	3	0.758333333
Caribbean	Puerto Rico	2008	5	2	1
Eastern Europe	Romania	1990	1	8	0.25304878
Eastern Europe	Romania	1992	2	9	0.317460317
Eastern Europe	Romania	1996	3	7	0.289115646
Eastern Europe	Romania	2000	4	7	0.445578231
Eastern Europe	Russian Federation	2007	1	7	0.536881419
Eastern Europe	Russian Federation	2011	2	5	0.801481481
Caribbean	Saint Lucia	1951	1	2	0.75
Caribbean	Saint Lucia	1954	2	2	1
Caribbean	Saint Lucia	1957	3	2	0.9375
Caribbean	Saint Lucia	1961	4	2	0.9
Caribbean	Saint Lucia	1964	5	2	0.8
Caribbean	Saint Lucia	1969	6	2	0.95
Caribbean	Saint Lucia	1974	7	2	0.941176471
Caribbean	Saint Lucia	1979	8	2	0.941176471
Caribbean	Saint Lucia	1982	9	3	0.823529412
Caribbean	Saint Lucia	1987	10	3	0.803921569
Caribbean	Saint Lucia	1992	11	3	0.68627451
Caribbean	Saint Lucia	1997	12	2	1
Caribbean	Saint Lucia	2001	13	3	0.705882353
Caribbean	Saint Lucia	2006	14	2	1
Western Europe	San Marino	1998	1	3	1
Western Europe	San Marino	2001	2	3	1
Western Europe	San Marino	2006	3	3	1
Africa	Seychelles	2007	1	2	1
Africa	Seychelles	2011	2	2	1
Asia	Singapore	1963	1	7	0.478991597
Asia	Singapore	1968	2	2	0.077586207
Asia	Singapore	1972	3	6	0.328205128
Asia	Singapore	1976	4	8	0.192028986
Asia	Singapore	1980	5	8	0.131666667
Asia	Singapore	1984	6	8	0.150316456
Asia	Singapore	1988	7	7	0.251948052
Asia	Singapore	1991	8	6	0.222222222

Asia	Singapore	1997	9	6	0.215277778
Asia	Singapore	2001	10	4	0.217391304
Asia	Singapore	2006	11	3	0.362318841
Western Europe	Spain	1977	1	9	0.416666667
Western Europe	Spain	1979	2	12	0.256410256
Western Europe	Spain	1982	3	8	0.286057692
Western Europe	Spain	1986	4	9	0.247863248
Western Europe	Spain	1989	5	12	0.275641026
Western Europe	Spain	1993	6	9	0.264957265
Western Europe	Spain	1996	7	13	0.187869822
Western Europe	Spain	2000	8	15	0.114102564
Western Europe	Spain	2004	9	17	0.139140271
Western Europe	Spain	2008	10	13	0.168639053
Western Europe	Spain	2011	11	11	0.215034965
Asia	Sri Lanka	1989	1	6	0.386363636
Asia	Sri Lanka	1994	2	7	0.220779221
Asia	Sri Lanka	2000	3	9	0.217171717
Asia	Sri Lanka	2001	4	6	0.356060606
Asia	Sri Lanka	2004	5	6	0.257575758
Asia	Sri Lanka	2010	6	4	0.329545455
Western Europe	Sweden	1911	1	3	0.976190476
Western Europe	Sweden	1914	2	3	1
Western Europe	Sweden	1917	3	5	0.807142857
Western Europe	Sweden	1920	4	6	0.720238095
Western Europe	Sweden	1921	5	5	0.871428571
Western Europe	Sweden	1924	6	6	0.69047619
Western Europe	Sweden	1928	7	6	0.738095238
Western Europe	Sweden	1932	8	6	0.726190476
Western Europe	Sweden	1936	9	7	0.617346939
Western Europe	Sweden	1940	10	5	0.8
Western Europe	Sweden	1944	11	5	0.935714286
Western Europe	Sweden	1948	12	5	0.85
Western Europe	Sweden	1952	13	5	0.821428571
Western Europe	Sweden	1956	14	5	0.828571429
Western Europe	Sweden	1958	15	5	0.821428571
Western Europe	Sweden	1960	16	5	0.821428571
Western Europe	Sweden	1964	17	6	0.714285714
Western Europe	Sweden	1968	18	5	0.807142857
Western Europe	Sweden	1970	19	5	0.842857143
Western Europe	Sweden	1973	20	5	0.857142857
Western Europe	Sweden	1976	21	5	0.85
Western Europe	Sweden	1979	22	5	0.878571429
Western Europe	Sweden	1982	23	6	0.69047619
Western Europe	Sweden	1985	24	4	0.848214286
Western Europe	Sweden	1988	25	7	0.734693878
Western Europe	Sweden	1991	26	8	0.736607143
Western Europe	Sweden	1994	27	7	0.743842365
Western Europe	Sweden	1998	28	7	0.729064039
Western Europe	Sweden	2002	29	7	0.828571429
Western Europe	Sweden	2006	30	7	0.880952381
Western Europe	Switzerland	1848	1	5	0.568421053
Western Europe	Switzerland	1851	2	5	0.505263158

Western Europe	Switzerland	1854	3	5	0.505263158
Western Europe	Switzerland	1857	4	5	0.526315789
Western Europe	Switzerland	1860	5	6	0.421052632
Western Europe	Switzerland	1863	6	6	0.429824561
Western Europe	Switzerland	1866	7	5	0.526315789
Western Europe	Switzerland	1869	8	5	0.515789474
Western Europe	Switzerland	1872	9	5	0.488
Western Europe	Switzerland	1875	10	5	0.448
Western Europe	Switzerland	1878	11	5	0.448
Western Europe	Switzerland	1881	12	5	0.464
Western Europe	Switzerland	1884	13	5	0.456
Western Europe	Switzerland	1890	14	6	0.42
Western Europe	Switzerland	1893	15	6	0.393333333
Western Europe	Switzerland	1896	16	5	0.464
Western Europe	Switzerland	1899	17	5	0.472
Western Europe	Switzerland	1902	18	6	0.42
Western Europe	Switzerland	1905	19	7	0.371428571
Western Europe	Switzerland	1908	20	6	0.406666667
Western Europe	Switzerland	1911	21	7	0.394285714
Western Europe	Switzerland	1914	22	8	0.305
Western Europe	Switzerland	1917	23	5	0.544
Western Europe	Switzerland	1919	24	7	0.464285714
Western Europe	Switzerland	1922	25	8	0.42
Western Europe	Switzerland	1925	26	7	0.465838509
Western Europe	Switzerland	1928	27	7	0.49068323
Western Europe	Switzerland	1931	28	7	0.462857143
Western Europe	Switzerland	1935	29	8	0.4
Western Europe	Switzerland	1939	30	8	0.4296875
Western Europe	Switzerland	1943	31	7	0.470238095
Western Europe	Switzerland	1947	32	8	0.447916667
Western Europe	Switzerland	1951	33	8	0.423913043
Western Europe	Switzerland	1955	34	8	0.429347826
Western Europe	Switzerland	1959	35	9	0.398148148
Western Europe	Switzerland	1963	36	9	0.393939394
Western Europe	Switzerland	1967	37	8	0.4375
Western Europe	Switzerland	1971	38	11	0.348484848
Western Europe	Switzerland	1975	39	9	0.413333333
Western Europe	Switzerland	1979	40	9	0.435555556
Western Europe	Switzerland	1983	41	14	0.277472527
Western Europe	Switzerland	1987	42	15	0.272
Western Europe	Switzerland	1991	43	15	0.287179487
Western Europe	Switzerland	1995	44	13	0.331360947
Asia	Taiwan	1986	1	2	3.611111111
Asia	Taiwan	1989	2	4	1.5
Asia	Taiwan	1992	3	5	1.103448276
Asia	Taiwan	1995	4	4	1.724137931
Asia	Taiwan	1998	5	7	1.073732719
Asia	Taiwan	2001	6	6	1.510752688
Asia	Taiwan	2004	7	6	1.290322581
Asia	Thailand	1969	1	12	0.646604938
Asia	Thailand	1975	2	29	0.375048431
Asia	Thailand	1976	3	27	0.379710145

Asia	Thailand	1979	4	24	0.30787037
Asia	Thailand	1983	5	13	0.737083812
Asia	Thailand	1986	6	16	0.643410853
Asia	Thailand	1988	7	18	0.646322379
Asia	Thailand	1992	8	16	0.947672
Asia	Turkey	1961	1	4	0.768656716
Asia	Turkey	1965	2	6	0.487562189
Asia	Turkey	1969	3	8	0.416044776
Asia	Turkey	1973	4	8	0.546641791
Asia	Turkey	1977	5	6	0.559701493
Asia	Turkey	1983	6	3	1
Asia	Turkey	1987	7	6	0.75308642
Asia	Turkey	1991	8	5	0.925925926
Asia	Turkey	1995	9	7	0.801587302
Asia	Turkey	1999	10	8	0.710648148
Asia	Turkey	2002	11	8	0.657407407
Asia	Turkey	2007	12	6	0.589506173
Asia	Turkey	2011	13	3	0.901234568
Western Europe	United Kingdom	1832	1	3	0.593516209
Western Europe	United Kingdom	1835	2	2	0.822942643
Western Europe	United Kingdom	1837	3	2	0.933915212
Western Europe	United Kingdom	1841	4	2	0.697007481
Western Europe	United Kingdom	1847	5	2	0.57
Western Europe	United Kingdom	1852	6	2	0.857142857
Western Europe	United Kingdom	1857	7	2	0.662907268
Western Europe	United Kingdom	1859	8	2	0.598997494
Western Europe	United Kingdom	1865	9	2	0.76125
Western Europe	United Kingdom	1868	10	2	0.897619048
Western Europe	United Kingdom	1874	11	2	0.944711538
Western Europe	United Kingdom	1880	12	3	0.678685897
Western Europe	United Kingdom	1885	13	3	0.618455158
Western Europe	United Kingdom	1886	14	3	0.562986003
Western Europe	United Kingdom	1892	15	4	0.428237129
Western Europe	United Kingdom	1895	16	3	0.507516848
Western Europe	United Kingdom	1900	17	2	0.798600311
Western Europe	United Kingdom	1906	18	2	0.715732087
Western Europe	United Kingdom	1910	19	5	0.495178849
Western Europe	United Kingdom	1918	20	4	0.391351744
Western Europe	United Kingdom	1922	21	4	0.553361345
Western Europe	United Kingdom	1923	22	3	0.764145658
Western Europe	United Kingdom	1924	23	3	0.751820728
Western Europe	United Kingdom	1929	24	3	0.928291317
Western Europe	United Kingdom	1931	25	3	0.594397759
Western Europe	United Kingdom	1935	26	3	0.660514541
Western Europe	United Kingdom	1945	27	3	0.775256618
Western Europe	United Kingdom	1950	28	3	0.890850722
Western Europe	United Kingdom	1951	29	3	0.706260032
Western Europe	United Kingdom	1955	30	3	0.708598726
Western Europe	United Kingdom	1959	31	3	0.768046709
Western Europe	United Kingdom	1964	32	3	0.849787686
Western Europe	United Kingdom	1966	33	3	0.82059448
Western Europe	United Kingdom	1970	34	3	0.824309979

Western Europe	United Kingdom	1974	35	4	0.803149606
Western Europe	United Kingdom	1979	36	4	0.741732283
Western Europe	United Kingdom	1983	37	4	0.728076923
Western Europe	United Kingdom	1987	38	4	0.73
Western Europe	United Kingdom	1992	39	4	0.754608295
Western Europe	United Kingdom	1997	40	4	0.75
Western Europe	United Kingdom	2001	41	4	0.754552352
Western Europe	United Kingdom	2005	42	4	0.749613003
Western Europe	United Kingdom	2010	43	4	0.763846154
North America	United States	1789	1	2	0.068181818
North America	United States	1790	2	2	0.38
North America	United States	1796	3	2	0.261363636
North America	United States	1798	4	3	0.154320988
North America	United States	1800	5	2	0.536585366
North America	United States	1802	6	2	0.603448276
North America	United States	1804	7	2	0.225806452
North America	United States	1806	8	3	0.166666667
North America	United States	1808	9	3	0.267676768
North America	United States	1810	10	2	0.666666667
North America	United States	1812	11	2	0.304347826
North America	United States	1814	12	2	0.467213115
North America	United States	1816	13	2	0.297029703
North America	United States	1818	14	2	0.231481481
North America	United States	1820	15	2	0.401515152
North America	United States	1822	16	2	0.241176471
North America	United States	1824	17	6	0.124637681
North America	United States	1826	18	7	0.158441558
North America	United States	1828	19	7	0.173564753
North America	United States	1830	20	5	0.150980392
North America	United States	1832	21	7	0.208074534
North America	United States	1834	22	5	0.463333333
North America	United States	1836	23	2	0.774590164
North America	United States	1838	24	5	0.437398374
North America	United States	1840	25	3	0.752777778
North America	United States	1842	26	3	0.698717949
North America	United States	1844	27	3	0.503649635
North America	United States	1846	28	3	0.316436252
North America	United States	1848	29	3	0.431884058
North America	United States	1850	30	3	0.661691542
North America	United States	1852	31	3	0.747126437
North America	United States	1854	32	6	0.354304636
North America	United States	1856	33	4	0.554635762
North America	United States	1858	34	4	0.315957447
North America	United States	1860	35	4	0.478618421
North America	United States	1862	36	4	0.306866953
North America	United States	1864	37	4	0.359513274
North America	United States	1866	38	3	0.636178862
North America	United States	1868	39	2	0.995327103
North America	United States	1870	40	2	0.937229437
North America	United States	1872	41	3	0.664242424
North America	United States	1874	42	2	0.888686131
North America	United States	1876	43	2	0.979310345

North America	United States	1878	44	4	0.588235294
North America	United States	1880	45	3	0.693970421
North America	United States	1882	46	9	0.238294899
North America	United States	1884	47	4	0.484615385
North America	United States	1886	48	4	0.499230769
North America	United States	1888	49	4	0.506923077
North America	United States	1890	50	4	0.509063444
North America	United States	1892	51	5	0.45
North America	United States	1894	52	5	0.474220963
North America	United States	1896	53	4	0.514830508
North America	United States	1898	54	5	0.398870056
North America	United States	1900	55	4	0.492231638
North America	United States	1902	56	3	0.62478185
North America	United States	1904	57	3	0.653577661
North America	United States	1906	58	3	0.630017452
North America	United States	1908	59	2	0.51285347
North America	United States	1910	60	3	0.670094259
North America	United States	1912	61	5	0.523404255
North America	United States	1914	62	4	0.568925234
North America	United States	1916	63	3	0.681464174
North America	United States	1918	64	3	0.570765661
North America	United States	1920	65	3	0.641144625
North America	United States	1922	66	2	0.872413793
North America	United States	1924	67	2	0.866359447
North America	United States	1926	68	2	0.826036866
North America	United States	1928	69	2	0.858294931
North America	United States	1930	70	2	0.798387097
North America	United States	1932	71	2	0.913486005
North America	United States	1934	72	2	0.839907193
North America	United States	1936	73	2	0.902552204
North America	United States	1938	74	2	0.834106729
North America	United States	1940	75	2	0.866589327
North America	United States	1942	76	2	0.812064965
North America	United States	1944	77	2	0.861111111
North America	United States	1946	78	2	0.850694444
North America	United States	1948	79	2	0.847575058
North America	United States	1950	80	2	0.811778291
North America	United States	1952	81	2	0.833718245
North America	United States	1954	82	2	0.825635104
North America	United States	1956	83	2	0.845265589
North America	United States	1958	84	2	0.802995392
North America	United States	1960	85	2	0.849425287
North America	United States	1962	86	2	0.906103286
North America	United States	1964	87	2	0.920323326
North America	United States	1966	88	2	0.906466513
North America	United States	1968	89	2	0.912442396
North America	United States	1970	90	2	0.886206897
North America	United States	1972	91	2	0.901149425
North America	United States	1974	92	2	0.890552995
North America	United States	1976	93	2	0.914942529
North America	United States	1978	94	2	0.844470046
North America	United States	1980	95	2	0.88221709

North America	United States	1982	96	2	0.917241379
North America	United States	1984	97	2	0.9
North America	United States	1986	98	2	0.889150943
North America	United States	1988	99	2	0.862903226
North America	United States	1990	100	2	0.859770115
North America	United States	1992	101	2	0.929885057
North America	United States	1994	102	2	0.898850575
North America	United States	1996	103	2	0.965517241
North America	United States	1998	104	2	0.847126437
North America	United States	2000	105	2	0.904597701
North America	United States	2002	106	2	0.88045977
North America	United States	2004	107	2	0.894252874
North America	United States	2006	108	2	0.914942529
North America	United States	2008	109	2	0.924137931
North America	United States	2010	110	2	0.96091954
North America	United States	2012	111	2	0.949425287
Africa	Zambia	1968	1	2	0.585714286
Africa	Zambia	1991	2	2	0.409333333
Africa	Zambia	1996	3	8	0.341666667
Africa	Zambia	2001	4	10	0.414666667
Africa	Zambia	2006	5	10	0.240444444
Africa	Zambia	2011	6	9	0.209333333