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# A Time–Series, Multinational Analysis of Democratic Forecasts and Internet Diffusion

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This study examines the democratic effects that the Internet has shown using macro-level, cross-national data in a sequence of time–series statistical tests. The democratic potential of the Internet may be inestimable, but its national level democratic effects were startlingly limited through 2003. Forecasting models generated in this study demonstrate that the actual democracy level of nearly every country in this study was *not* greater than its corresponding statistically-predicted democracy level for the years 1994–2003. These results are consistent even in countries where the Internet was more widely diffused, which suggests that Internet diffusion was not a specific causal mechanism of national-level democratic growth during the timeframe analyzed. Thus, based on the results of the 72 countries reported here, the diffusion of the Internet should not be considered a democratic panacea, but rather a component of contemporary democratization processes.

## *Introduction*

Technological developments, especially communicative ones, have long been positioned — and even romanticized — as powerful instruments of democracy (Dunham, 1938; Lerner, 1958). This tradition goes back at least as far as the printing press and its contribution to democratic movements of past centuries (Schudson, 1999) in relation to conceptions of the public sphere and the fourth estate (Jones, 2000). Over the course of the past century, telegraphs, telephones, radios, and televisions were all introduced as "new" media, and each of these technologies were often ascribed broad potential for enhancing democratic development around the world (Becker, 2001; Navia & Zweifel, 2006; Spinelli, 1996).

Now, it is generally agreed that these technologies have not been the democratic catalysts many expected (Hornik, 1988; Weare, 2002), but the democratic effects of Internet diffusion are still undetermined and widely debated. This study therefore examines these democratic effects, which are

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defined as the extent to which institutionalized democratic change is observably augmented by Internet diffusion at the national level. It is important to note that, for the purposes of this study, democracy and democratic change are measured using numerical categorizations based on three democratic components: political rights, institutional checks and balances, and civil liberties (Kedzie, 1997).

Transformative political processes are also linked to the prevalence (i.e., diffusion) of communication technologies such as the Internet, since technology is generally indicative of societal-level adaptations that may precipitate a critical mass of adoption (Castells, 1996). Likewise, Sterne (1999) finds that technological improvements to the quality of media infrastructure are coincidental with sociocultural requirements for their diffusion. The diffusion of the Internet reached a critical mass years ago in many countries, once self-sustaining levels of increasing users were realized (Rogers, 2003). Regarding this development, Castells (1996, p. 500) points out that "the diffusion of networking logic substantially modifies the operation and outcomes in processes of production, experience, power and culture."

Considering network society and diffusion theory perspectives, the investigation here is principally concerned with any observable predictive capabilities regarding democratization that may be the *result* of Internet diffusion. Higher levels of media diffusion are generally indicative of more culturally relevant information being available online (Norris, 2000) by a wider array of content (Bimber, 1998; Markus, 1987). Thus, macro-level relationships between the diffusion of communication technologies, such as the Internet, and democracy may be empirically observed over time (Banks, 1972; Norris, 2001; Winham, 1970).

Though there are many ways to operationalize democracy and measure the prevalence of media technologies, this study relies principally on macro-level time–series democracy data from an historical sample that includes 72 countries, reaching back as far as 1946 in some cases, but at least from 1954 to 2003. From this sample, a sequence of ARIMA (autoregressive integrated moving average) time–series regressions were modeled for each country for at least 40 years prior to 1994. These models were then used to generate statistically-forecasted democracy values for each country, in each year from 1994 to 2003. A 95% confidence interval with an upper and lower democracy score was then constructed around each of the forecasted values using dynamic mean squared errors. The actual democracy scores of each country for each year from 1994 to 2003 were then compared to the upper and lower values of the confidence interval.

In the event that the actual democracy level of any country was greater than the upper value of the forecasted democracy score during the time period of 1994 to 2003, Internet diffusion was investigated in case studies as a possible causal mechanism. This procedure produced both statistically-comparable results and context-based historical accounts. Through these analyses, this study addresses themes still common to communication development literature.

Such themes include the continued prognostications of scholars and policymakers alike, who often frame the Internet as a "mobility multiplier" (Lerner, 1958) capable of hastening the growth of democracies (Navia & Zweifel, 2006; Pitroda, 1993; Roy, 2005). Within a framework of diffusion theory, this study extends the current understanding of the role that the Internet can have in democratic

development. As such, it represents an important step in identifying relationships between communication technologies and democracy, a step that begins with the following review of relevant literature.

### *Internet Diffusion, Hegemony, and Democratic Change*

This study empirically addresses a question that Rogers (2003) characterizes as common but seldom-answered in diffusion research, specifically: What effect does the diffusion of one technology have upon other, structural aspects of society? Here, the effect Internet diffusion has on democracy is analyzed following the rationale explicated by O'Loughlin et al. (1998). They describe the process by which the diffusion of communication technologies plays an important role in less democratic countries transitioning to more democratic regimes. In particular, as society industrializes and information flows increase, "a growing bourgeoisie and urban proletariat emerges," which causes the power of the autocracy to wane (ibid., p. 551). Eventually, competing groups are unable to continue to suppress one another and maintain hegemony, so democracy becomes a rational compromise (Tilly, 1978).

This theoretical premise, which has been consistently supported statistically (Vanhanen, 1992), is one clarification of a causal mechanism that may be apparent on the macro-level, directly between communication technologies and democracy. History, however, has shown time and time again that even the advanced "new" media technologies of the moment are only as deterministic as the people who create and subsequently use them (Nord, 2001; Schudson, 1999, 2003). This is to say that people and societies are not technologically deterministic, but rather, they are inertial and slow to adapt and change — especially concerning closely-held and long-practiced beliefs and traditions (Kranzberg, 1992; Rogers, 2003).

Thus, it is prudent to expect that even countries that demonstrate rapid increases in media technology diffusion might not show revolutionary structural sociopolitical changes as a result of this diffusion. As Castells (1996, p. 5) notes on this topic, "Of course, technology does not determine society. Nor does society script the course of technological change, since many factors, including individual inventiveness and entrepreneurialism, intervene in the process of scientific discovery, technological innovation, and social applications, so that the final outcome depends on a complex pattern of interaction." Though it has been shown that innovations and ideas are generally adopted in an S-shaped curve, not all are accepted by a society or state for a variety of reasons, from cultural to practical (Rogers, 2003).

This finding obviously also includes "new" media technologies, such as those currently represented by the Internet. Although van Dijk (2006) reiterates this perspective by identifying that new media has created a "communications revolution" (p. 4), he goes on to describe that this should be viewed as ". . . a revolution at the level of media development itself. It is not a concept of the revolutionary effects of media on society" (p. 243). Indeed, even when communicative technologies are socially widespread, mass media often support the economic, political, social, and ideological institutions of which they are a part (Gitlin, 1980).

Shoemaker and Reese (1991) observe that ideology is "a symbolic mechanism that serves as a cohesive and integrating force in society" (p. 183), and this sort of ideological influence permeates mass media content in a manner that abides by, and creates, constructions of reality. Although new media, especially Web 2.0 applications, are increasingly based on user creation and reflexivity (Hardey, 2007), the content's function in society is often still to reinforce existing social relationships. Thus, van Dijk (2006) identifies new media as *trend amplifiers*.

In the process of filling information functions in a society, communication technologies are a vehicle for disseminating ideological values in which behavioral assumptions are ratified and boundaries of debate are imposed in a manner that typically reinforces the status quo and dominant asymmetric power relations (Hallin, 1986). This kind of hegemonic byproduct is an important aspect of the role the media play as a cultural transmission mechanism instead of a potent change agent. For example, "[m]edia institutions serve a hegemonic function by continually producing a cohesive ideology, a set of commonsensical values and norms that serves to reproduce and legitimate the social structure through which the subordinate classes participate in their own domination" (Shoemaker & Reese, 1991, p. 194).

The dominant ideology is therefore often relayed and cultivated in and through the mass media, which, in turn, maintains the status quo (Gitlin, 1980), and this includes the Internet as a mass media component (Morris & Ogan, 1996). In addition, more media — notably, more online media — do not necessarily equate to a greater diversity of information (Boczkowski & de Santos, 2007). Altogether, this generally indicates that more information alone may have no appreciable effect on democratic decision making (van Dijk, 2006), and that the Internet might not draw more people into the political process (Delli Carpini & Keeter, 2003).

Recently, however, Boyle (2005) found that online media use was a meaningful predictor of protest participation among college students, but that traditional media use was not. This finding suggests that individuals may respond in more efficacious and potent ways to online media, so much so that even behavior changes were manifest among online audiences, but not among traditional media users. This is consistent with similar shifts among international development organizations who strive to incorporate the local with global, facilitating "organic" national development from within a country toward a generally unspecified evolution that may or may not closely align with the outline of a Western democratic capitalist state (Rogers, 2003; Servaes, 1999).

To be certain, bridging the digital divide is a central concern and goal to prevent developing countries from falling farther behind and becoming more unable to participate in a global marketplace. Yet, this is as much a technological concern as it is a cultural one. That is, even getting everyone in the world connected to the Internet would not prove useful if there was not culturally pertinent and useful information for people from democratically-developing countries.

Studies have shown that English overwhelmingly dominates the Internet, even though a majority of the world's citizens are not English-speakers (UNESCO, 2005). Thus, wiring developing countries to the Internet, while important, cannot and should not be expected to radically change the living conditions and development status of those nations — just as exposing them to newspapers, radio, and television largely

did not (Wilson, 2004). This returns to a main point of Castells (1996), that "the powers that are in the media networks take second place to the power of flows embodied in the structure and language of these networks" (p. 507).

When considering the democratic effects of Internet diffusion, it is thus important to study why it might show greater effects than other communication technologies that predate it. Simply, the number and centrality of unique information functions (Ball-Rokeach & DeFleur, 1976) available to online users should increase exponentially in a manner that is not as constrained by other regulatory forces, because users can create content and access information easily. This possibility is increasingly likely once a critical mass of diffusion has been met, as it has in the case of the Internet (Rogers, 2003). As such, information available online is less likely than other mass media formats to conform to the prevailing national-level ideological and hegemonic structures, because the *potential* for nearly anyone to participate and contribute in an online environment is much greater than it has been with other, more traditional media (Meyer, 2006).

There are also, of course, moderating conditions of governmental regulation and censorship that limit civil liberties and other freedoms of expression online (Best & Wade, 2005). Coinciding with this situation is the general tendency of the Internet to be anchored by large multinational media firms (Griffiths, 2004), which might reproduce both the hegemonic and democratizing structures of traditional mass media. This media situation is nonetheless suggestive of a "long tail" (Anderson, 2006) means of media production, a means in which there are more and more producers of media content, but each one reaches an increasingly diminished percentage of a vast potential audience.

Given this scenario, online political activity may influence knowledge acquisition (Drew & Weaver, 2006), as well as opportunities to find and create political interaction. However, van Dijk (2006, p. 107–108) reports that "experience so far indicates that large-scale Internet activity in online forums, polls, communities and pressure groups is able to flourish without any influence on decision-making in official politics. The representative system is barely touched." Taken together, the transformative democratic agency of Internet diffusion is as yet inconclusive, even though the network society it has engendered "represents a qualitative change in the human experience" (Castells, 1996, p. 508).

From a diffusion perspective, "democratic change can be viewed in terms of two important elements: namely, the transfer of information and its reception" (O'Loughlin et al., 1998, p. 552). Though the data reported and analyzed cannot specifically quantify the extent to which information is successfully transferred and received, it does approximate these constructs by incorporating Internet diffusion rates as a potential casual mechanism related to democratic change. That said, Internet technologies have been shown to "complement rather than displace existing media and patterns of behavior" (DiMaggio, Hargittai, Neuman, & Robinson, 2001, p. 307). Even now, it is evident that the Internet-democracy nexus has yet to be fully understood as a democratic complement, supplement, or replacement to traditional media, so therefore, this study proceeds with two research questions:

RQ1: Are there countries where actual democracy scores are greater than statistically predicted democracy scores?

RQ2: In the event that some countries are more democratic than statistically predicted, is Internet diffusion a reasonable causal mechanism of that democratic growth?

## *Method*

The unit of analysis for data collection in this study is the nation, and analyses have proceeded at this level. The key concept under investigation is democratic change as it is related to the prevalence of the Internet in a given country. Since these variables cannot be controlled by the researcher in the real world, a true experimental design was not possible for this inquiry. Thus, the best strategy available was to use statistical techniques to examine relationships between variables mathematically (Weaver, 1977). The basic design for this study was, therefore, a series of longitudinal panels where data was input across a maximum of 58 discrete yearly points in time for each country as data availability permitted.

This type of design helped to answer research questions by taking observational data and applying a sequence of econometric tests to identify patterns of relationships among concepts. Even though aggregate national-level data can be only considered "rough estimates of the conditions prevailing in any given country at any given time" (Weaver, 1977, p. 164), such data was still useful to effectively model general patterns of relationships (Heise, 1970). Furthermore, Stock and Watson (2003, p. 271) write that, "[b]y studying *changes* in the dependent variable over time, it is possible to eliminate the effect of omitted variables that differ across entities but are constant over time." Thus, the use of time–series data may actually have increased predictive and explanatory power over pretest/posttest control group designs in instances such as this, where effects may not be readily apparent.

It is also worth pointing out that the time–series models employed here are univariate in that they rely statistically only upon previous democracy levels. The argument here is not that the time–series analysis is "better" than multivariate models, just that it offers another analytic tool to help explain the sociopolitical phenomenon of democratization. Results derived from this inquiry are thus intended to provide context for previous and future studies that examine the ways and the extent to which media contribute to national-level democratic change.

### *Country Selection and Case Studies*

In order to meet the stability demands of time–series regression analysis forecast modeling, countries were required to have approximately 50, but no less than 40, unique observations (Poole, McPhee, & Canary, 2002), and to demonstrate variance in their democracy levels. Since data were collected on a yearly basis and the year 1994 was isolated as benchmark for forecasts precisely because of the introduction of the Mosaic Web browser in 1993, only countries that maintained generally consistent borders or grew out of established "parent" countries were included. This stipulation produced an

acceptable timeline of observations, but also, unfortunately, nullified some countries that were unified or declared independent following the decline of the Soviet Union and decolonialization, respectively.

The sample in this study comprises 72 countries, with nearly all Eastern European and former Soviet states represented. Indeed, it is possible that the sample used here may not be perfectly generalizable to all other countries, but it nonetheless represents a wealth of countries from many regions around the world. In addition, the nature of any time–series model is predicated upon a minimum of 40 data points — and of course, more is better. Since democracy data is collected annually, there is no choice but to go back at least 40 years from 1994, because that is the first year for which predictions are generated. Thus, in order to be viable for the time–series models constructed here, countries must have continuously existed as political entities from 1954 onward, or earlier.

To make the most of the available countries and data, as well as to better reflect real-world conditions, this analysis incorporated "parent" countries that divided into "child" nations. This procedure was performed on the basis that the democracy levels of child countries such as the Czech Republic and Slovakia, for example, could be predicted by their parent countries, in this case Czechoslovakia, up until the child states fragmented from their parent state. That is, the democracy scores of Czechoslovakia (or some other parent country) from 1946 to 1992 (or until separation) were combined with those of the Czech Republic (or the appropriate child country) from 1993 (or the appropriate date of separation) to 2003, and were considered representative of the level of democracy in the territory of the Czech Republic (or appropriate child country) for the timeframe analyzed. Though this is somewhat cumbersome, it makes the most of data limitations and still incorporates important geopolitical shifts.

It is imprudent, however, to track the democracy levels of once-divided countries that later became unified into one state. For example, using the democracy scores for East Germany through 1990 to predict the democracy level of unified Germany in 2003 is statistically possible but realistically meaningless. In the same way, relying on democracy data of North Vietnam for all years until unification with South Vietnam to generate predictions about the unified Vietnamese state in 2003 would be erroneous, because such an approach neglects the additional territory and characteristics of South Vietnam that were incorporated upon unification. Thus, Germany, Vietnam, and Yemen were not included in analyses, because these three countries were separated by regional distinctions and then later became unified during the timeframe analyzed here.

Similarly, it was not scientifically or practically reasonable to incorporate territories that were protectorates or colonies ruled by other countries through the year 1954. Again, this is because of the requirements of having at least 40 data points for time–series regression modeling and setting 1994 as the starting point for Internet diffusion. Many African countries, for example, did not declare their independence until after 1954. Since these countries did not exist as self-governing political entities until after that date, there is no democracy score available for them, as their parent country did not geographically subsume these countries.

Finally, countries were excluded by the requirement of time–series analysis if democracy data were missing for any years from 1954 to 2003, or if the democracy level was constant for the entire time

period. These are practical requirements, as substitution of missing values in this analysis would have drastic effects on the forecasts. Countries with no variance in their democracy score over time (such as the United States, Canada, and so on) were omitted because, in such cases, the predictive capacities of these series are entirely negated. A constant cannot predict anything other than a constant (Enders, 2004). Even given these strict data requirements, 72 countries met all of these criteria and were integrated into analyses (see Appendix for a complete list).

Based on the statistical findings, three countries that demonstrated democracy levels greater than those statistically predicted were selected for brief contemporary historical analyses to identify whether the Internet acted as a specific causal mechanism that may have contributed to democratization processes. These case study evaluations were basic overviews of historical events, figures, and policies that placed these findings into context to better specify what precise role, if any, the Internet had on the increases in democracy observed in these three countries that were greater than they had been predicted to be, statistically.

*Democracy*

The "Polity 2" score is the most sophisticated, comprehensive measure of national level democracy available generally. Specifically, the Polity 2 score is the primary component measure drawn from the Polity IV database (the fourth iteration of data collection from the Polity organization) to measure overall national-level democracy. Therefore, this measure was used as the primary independent and — due to the nature of time–series data analysis — dependent variable to examine the research questions posed in this study.

The Polity 2 democracy scores comprise historical and contemporary analyses of democratic institutions and processes following a strict codebook based on the groundbreaking work of Gurr and Associates (1978), which is now administered by regional specialists and researchers. Over the years, this data-collection scheme has resulted in reliability of authority codings that "have been taken as a given by most of the investigators who have used them in secondary analyses" (Polity IV User Manual, 2002, p. 5). Polity 2 scores range from -10 to +10, and they are calculated by adding together composite "Democracy" and "Autocracy" scores.

"Democracy" scores are composed of ratings of three interdependent elements. As described in the Polity IV users' manual:

> One is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive. Third is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. (2002, p. 13)

Once calculated, these elements result in an additive Democracy score between 0 and 10. In this scale, 0 represents an absence of democracy, and 10 represents a strongly democratic state.

The "Autocracy" scores, on the other hand, represent governments that "sharply restrict or suppress competitive political participation" (ibid., p. 14). Operational indicators of autocracy are derived from weighted codings of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive (Polity IV, 2002). Autocracy figures range from -10 to 0, representing a strongly autocratic regime and an autocracy-free state, respectively.

It is important to note that, throughout this study, Polity 2 scores are often simply referred to as democracy scores, but this reference should not be confused with the additive "Democracy" score that was used to compute the Polity 2 score. Factor analysis demonstrated that the Polity 2 scores load highly (over .90 for the years 1994 to 2003) with the Freedom House government accountability figures, which have often been used in previous research. At present, however, Freedom House figures are only readily available from 1972 onward, thus rendering them inadequate for this study. Despite this limitation, the findings between this and other studies (Best & Wade, 2005; Kedzie, 2002; Weaver, 1977; Weaver, Buddenbaum, & Fair, 1985) can be accurately and reliably compared.

*Internet Diffusion*

The instrument used by the International Telecommunications Union (ITU) to assess Internet diffusion, administered yearly, is based on surveys that represent percentages of the population for a certain age group and includes reference to the frequency of use. When surveys are not available, the ITU estimates Internet diffusion based on the number of users (ITU, 2005b). These estimates are based on the availability of Internet access per 100 citizens, and they are calculated to generally indicate how accessible the Internet is to the public within a given country. In most cases, the ITU is considered the premier data collection agency in this field, even though user figures are approximations at best.

Although Internet data may be less than concrete, a number of studies conceive Internet diffusion as both a unique predictor and a dependent variable (Best & Wade, 2005; Dimitrova & Beilock, 2005), and one such study concluded that access data is preferable (Milner, 2006) to other measures or combinations thereof. This recommendation was followed, and Internet access data were used without combinations of host or domain data in this study. Of course, the Internet itself has morphed over the years, but the diffusion data used here "measures the number of people with access to the worldwide network; these are not just subscribers to ISPs" (Milner, 2006, p. 188).

*Forecasting Models*

An ARIMA (autoregressive integrated moving average) time–series regression of the democracy level for each nation identified in this study was modeled. The democracy level for each country was observed for at least 40 years prior to 1994, and then this distribution of data points was used to statistically predict each year from 1994 to 2003, using dynamic forecasting estimations. The actual observed democracy scores for these same years were then compared to these forecasts using upper and lower confidence intervals. In the event that the actual, observed scores were greater or less than the confidence intervals, there was a greater change in democracy than could have been statistically

expected, based only on the past values of democracy in a reconstruction of an econometric method described by Enders (2004).

In other words, this procedure applies the democracy score for each year up to 1994 in a regression model, where time 1 predicts time 2, time 2 predicts time 3, and so on. Based on the distribution of these democracy scores over at least 40 data points and the democracy score of the given country in 1993, these regression models were used to statistically forecast the level of democracy in 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, and 2003. The forecasted democracy score derived from these time–series regression models was then compared to the actual observed Polity 2 score that was reported for each corresponding year.

This analysis was completed for every country in the sample, which fitted as many countries as possible to the data requirements of the model. Then, any instance was investigated further where the forecasts were "wrong," in that the actual observed democracy score was greater than the 95% confidence interval constructed around the predicted value. Doing so produced statistically comparable results that enabled us to examine if the Internet has, in fact, contributed to certain countries becoming more democratic than could have been expected without the introduction and subsequent diffusion of the Internet. This scenario occurred only three times in this study, and those cases (Croatia, Indonesia, and Mexico) were analyzed for any specific reason or causal mechanism that might have attributed these changes to the diffusion of the Internet.

By analyzing individual countries, this process examined if there were certain characteristics that engendered or constrained democracy to an extent that was beyond that of the constructed 95% confidence interval around the predicted democracy scores from 1994 to 2003. The cut off year was 2003, simply because this was the latest data available at the time of data collection. It is also worth noting that the introduction of the Mosaic Web browser in 1993 that generally marks the public launch of the Internet was coincidentally beneficial, because events outside of the public diffusion of the Internet — namely, the end of the Cold War — should not adversely affect data analysis.

Indeed, the exogenous system shock presented by shift in geospatial politics is generally before ARIMA forecasts are generated in this study. In addition, since this latest "third" wave of democratization occurred (Huntington, 1991), for the most part, before the beginning of the Internet diffusion time period of 1994 to 2003 (Diamond, 1996), there is little reason to suspect unobserved simultaneity, seasonality, or other threats to effective data interpretation.

To explain the method applied here further, it is not unlike predicting what the average currency value will be for the next week in 72 countries around the world, with an expected "high" and "low" figure for each country. To do this effectively, one would have to gather the appropriate currency data for approximately 50 days before the predictions were set to be made. After the predicted week had passed and actual currency performance could be observed, the predicted "high" and "low" figures could be compared to those actual currency values to see if the forecasts were correct.

In the event that the predictions were "wrong" and the currency was worth more than expected, in say Croatia, Indonesia, and Mexico, one could then examine what events may have occurred to result in the erroneous forecast. In so doing, one would have to rule out seemingly related but possibly spurious relationships, such as the steady growth of the Internet over that timeframe. It is likewise reasonable to apply this method to measure whether or not the diffusion of the Internet has played a meaningful role in national level democratization, which is the very crux and purpose of this study.

Through the process of statically fitting time–series regression models to this data, countries were transformed using a natural logarithm for the purposes of stationarity. In several cases, logarithmic transformations did not even approximate a stationary series of data points, and these countries had to be differenced one time (I = 1). However, an autoregressive operator of 1 year was universally applied (AR = 1), as was a null moving average figure (MA = 0), which matched the democracy distributions that were often stable for periods of years or decades, and then shifted dramatically. Thus, the general model identification was that of ARIMA (1, 0, 0), though several countries were estimated using an ARIMA (1, 1, 0) model.[1]

***Findings***

The first research question was: Are there countries where actual democracy scores are greater than statistically predicted democracy scores? The answer to that question is yes, there were four countries where the actual democracy score was greater than that of the statistically predicted democracy score. These countries are Croatia from 2000 onward, Haiti from 1994 to 1998, Indonesia from 1999 onward, and Mexico from 1994 onward. One country, Belarus, had actual democracy scores that were significantly less than the statistically predicted democracy score from 1995 onward. The findings for these countries are summarized in Table 1.

***Table 1.*** Comparisons of Actual Democracy Scores (ln) to the Upper and Lower Forecasted Values of 95% Confidence Intervals Constructed around Forecasted Democracy Scores (ln) for Belarus, Croatia, Haiti, Indonesia, and Mexico in relation to Internet Diffusion Rates from 1994 to 2003.

| Year | Upper Forecast Democracy Value | Actual Observed Democracy Level | Lower Forecast Democracy Value | Internet Access per 100 Citizens |
|---|---|---|---|---|
| | *Belarus* | | | |
| 1994 | 3.25 | 2.94 | 2.65 | 0.00 |
| 1995 | 3.29 | **2.48** | 2.63 | 0.00 |
| 1996 | 3.30 | **1.61** | 2.63 | 0.00 |
| 1997 | 3.31 | **1.61** | 2.64 | 0.05 |
| 1998 | 3.32 | **1.61** | 2.64 | 0.07 |
| 1999 | 3.33 | **1.61** | 2.65 | 0.50 |
| 2000 | 3.33 | **1.61** | 2.66 | 1.87 |
| 2001 | 3.34 | **1.61** | 2.67 | 4.32 |
| 2002 | 3.35 | **1.61** | 2.68 | 8.15 |
| 2003 | 3.36 | **1.61** | 2.69 | 14.09 |

| *(Table 1 continued)* | Upper Forecast Democracy Value | Actual Observed Democracy Level | Lower Forecast Democracy Value | Internet Access per 100 Citizens |
|---|---|---|---|---|
| Year | | *Croatia* | | |
| 1994 | 2.42 | 2.20 | 1.97 | 0.27 |
| 1995 | 2.51 | 1.95 | 1.88 | 0.53 |
| 1996 | 2.57 | 1.95 | 1.81 | 0.89 |
| 1997 | 2.63 | 1.95 | 1.76 | 1.78 |
| 1998 | 2.67 | 1.95 | 1.71 | 3.35 |
| 1999 | 2.71 | 2.56 | 1.66 | 4.47 |
| 2000 | 2.75 | **2.94** | 1.63 | 6.69 |
| 2001 | 2.78 | **2.94** | 1.59 | 11.84 |
| 2002 | 2.81 | **2.94** | 1.56 | 18.03 |
| 2003 | 2.83 | **2.94** | 1.53 | 23.18 |
| | | *Haiti* | | |
| 1994 | 2.25 | **2.94** | 1.01 | 0.00 |
| 1995 | 2.47 | **2.94** | 0.82 | 0.00 |
| 1996 | 2.62 | **2.94** | 0.70 | 0.01 |
| 1997 | 2.73 | **2.94** | 0.62 | 0.00 |
| 1998 | 2.80 | **2.94** | 0.57 | 0.03 |
| 1999 | 2.86 | 2.64 | 0.53 | 0.07 |
| 2000 | 2.91 | 2.30 | 0.50 | 0.25 |
| 2001 | 2.95 | 2.30 | 0.48 | 0.36 |
| 2002 | 2.98 | 2.30 | 0.46 | 0.96 |
| 2003 | 3.00 | 2.30 | 0.45 | 1.80 |
| | | *Indonesia* | | |
| 1994 | 1.93 | 1.61 | 1.34 | 0.00 |
| 1995 | 2.07 | 1.61 | 1.25 | 0.03 |
| 1996 | 2.18 | 1.61 | 1.19 | 0.06 |
| 1997 | 2.27 | 1.61 | 1.15 | 0.19 |
| 1998 | 2.35 | 1.95 | 1.12 | 0.25 |
| 1999 | 2.42 | **2.89** | 1.09 | 0.44 |
| 2000 | 2.49 | **2.89** | 1.08 | 0.92 |
| 2001 | 2.54 | **2.89** | 1.06 | 2.01 |
| 2002 | 2.60 | **2.89** | 1.05 | 2.12 |
| 2003 | 2.65 | **2.89** | 1.04 | 3.75 |
| | | *Mexico* | | |
| 1994 | 2.64 | **2.77** | 2.33 | 0.04 |
| 1995 | 2.70 | **2.77** | 2.27 | 0.10 |
| 1996 | 2.74 | **2.77** | 2.22 | 0.20 |
| 1997 | 2.78 | **2.89** | 2.18 | 0.62 |
| 1998 | 2.81 | **2.89** | 2.14 | 1.28 |
| 1999 | 2.84 | **2.89** | 2.11 | 1.87 |
| 2000 | 2.87 | **3.00** | 2.08 | 5.12 |
| 2001 | 2.89 | **3.00** | 2.06 | 7.47 |
| 2002 | 2.91 | **3.00** | 2.03 | 9.96 |
| 2003 | 2.93 | **3.00** | 2.01 | 11.99 |

It is important to note that the pattern of actual democracy figures being within the confidence interval range was nearly identical for nearly every country in this study. That is, in all but five of the 72 countries analyzed here, the actual observed democracy scores fell well *within* the 95% confidence intervals constructed around the predicted democracy scores using dynamic mean squared errors (MSEs) to generate forecasted democracy scores. Thus, it seems that the public availability of the Internet and its rapid diffusion in this sample of countries was not consistently related to any dramatic shifts in democratic change beyond that which was predicted by democracy itself from figures *before* the Internet began to publicly diffuse around the world.

These findings are important contextual markers that should abrogate both utopian and dystopian forms of technological determinism. It is, of course, valuable and important to recognize the crucial and predictive relationships between new media development and democracy, but it is likewise vital to not overstate such relationships or their transformative democratic capacity. Further investigation involved brief case studies of the three countries that did demonstrate a sustained increase in the level of democracy greater than the confidence interval produced by ARIMA forecasting models through 2003.

Thus, the second research question was: In the event that some countries are more democratic than statistically predicted, is Internet diffusion a reasonable causal mechanism? In order to address this question in earnest, each of the countries identified above with actual democracy scores greater or less than the forecasted confidence intervals of democracy values was examined.

It is important to report that Haiti was not analyzed as a case study for two reasons, even though it demonstrated actual democracy values greater than that of the statistically predicted democracy values. First, according to figures from the ITU, the Internet diffusion rate per 100 people in Haiti was actually 0.01 or less from 1994 through 1997. It is therefore impossible to build an argument that Internet diffusion may have acted as a causal democratic mechanism during this time period. In addition, the actual democracy score dropped into the statistically forecasted range from 1999 onward, which suggests that, even if it were possible that the Internet did augment Haiti's national level democracy, it was not a sustained democratic shift.

Interestingly, the democracy level of Belarus actually declined below the lower level of the forecast democratic confidence interval. While the purpose of this study is to more specifically assess the possibility that Internet diffusion might be linked to democratic growth, the case of Belarus provides an important counterbalance to that concept. This is because, starting with 1995, the actual democracy score was less than the predicted democracy score — and it remained below the predicted values through 2003, even though Internet diffusion reached approximately 14% by the end of the time frame investigated. Thus, it is evident that less democratic countries can invest in increasing Internet diffusion and still constrict democratic development.

One leading Belarusian IT agency reported that the Internet is contributing to the development of political will there, but also that the Internet has "so far been hardly used to narrow the gap between the parliamentarians and people they represent" (Doroshevich & Sokolova, 2003). This example makes it clear

that, while the Internet most likely does not play a direct role in diminishing democracy, transformative national-level democratic change that might potentially be associated with Internet diffusion can be upheld by the state by consolidating power through authoritarian means.

Croatia is the first of the three countries which both had actual democracy levels greater than the predicted confidence intervals and were also suitable for an historical case study analysis, based on the durability of democratic change through 2003 and an appreciable level of Internet diffusion. The most important aspect to consider regarding Croatia and its democratic transition is that it was embroiled in a bitter war until 1995 (Hampton, 2007). During this time, the *ZaMir Network* maintained a critical online presence that is credited as having contributed to the anti-war movement (Gessen, 1995). Presently located at http://www.zamirnet.hr, this organization first began as a bulletin board system. It then transitioned technologically, as its mission became more centrally focused on civil society and democratic change once the war ended (Stubbs, 2005).

Even with this scenario, where Internet diffusion might be particularly potent in bringing about democratic change because of the high degree of sociopolitical instability (Ball-Rokeach & DeFleur, 1976), it was not until the election of a new, multiparty government in 2000 that democracy flourished (Dokic, Starc, & Stubbs, 2007). This is also the same year that Croatia became a part of the European Union (Hampton, 2007), as well as when the actual democracy score increased to a level greater than that of the statistically predicted values.

By 2000, the Internet was available to approximately 7% of the Croatian population, and economic growth was gradual but steady. It therefore seems reasonable to identify Internet diffusion as a contributing factor, if not a specific causal mechanism, to democratic growth in Croatia. This is precisely because of Croatia's history of "cyberactivism" (Stubbs, 2005) and transnational social movements, although effective democratic participation in Croatia "requires the understanding of power as a set of complex social, political and economic relations" (Dokic, Starc, & Stubbs, 2007, p. 155).

Thus, a circumspect approach to understanding the role Internet diffusion played in Croatia's democratization is to recognize that, by most accounts, it was an important factor that helped determine the trajectory of political development in this country. It was not, however, the defining feature of this democratic transition, which was set in motion years earlier by a coalescing of events and political figures that also transcended Croatia's national boundaries (Hampton, 2007).

The next case study, Indonesia, had observed actual democracy levels greater than that of the predicted confidence interval from 1999 to 2003. Yet, for nearly all of the timeframe investigated here, Indonesian media development was tightly restricted by the government and subject to severe censorship (Eick, 2007), so it seems unlikely that the diffusion of the Internet would be a critical democratic agent. In addition, the diffusion of the Internet was a paltry 0.44 people per 100 in 1999, when the democracy level spiked through the upper confidence interval of the predicted value.

Generally, this dramatic democratic shift has been credited to General Suharto's resignation and the subsequent reformasi era, both events that are not keenly linked to the Internet or traditional media

development, but rather to the East Asian financial crisis and, as some argue, mobile telephones (Barton, 2001; Hill & Sen, 2005). Moreover, the Indonesian Telecommunication Act of 1999 has failed to bridge the digital divide, and thus, little to no democratic effect has been observed, either during or after the Suharto regime (Eick, 2007).

What access these efforts have yielded, however, seems to "have failed the test of both mass-based and discursive democracy" (Hill & Sen, 2005, p. 146), in that only the privileged have access, and among those are "many forces that are extremist, illiberal, anti-democratic" (p. 146). Thus, it is rather certain the Internet played virtually no role in the rapid democratization of Indonesia, one of only several national cases where democratic development actually exceeded that of statistical expectations.

In the final case, Mexico, the same general conclusions can be drawn but for somewhat different reasons. In the first predicted year of this analysis, 1994, the actual democracy score was greater than the predicted upper confidence interval. Statistically, this was because the previous year registered a democracy score much lower, and this country was also fitted to a forecasting model in which each predicted value was predicated upon the value from 1993. Thus, Mexico's actual democracy score was greater than the predicted confidence interval for every year of this analysis, beginning with 1994. This particular finding seems intrinsically unrelated to Internet diffusion because, as was the case in many other countries in 1994, the Internet was only available to researchers, government figures, and other élites. In the case of Mexico, it is difficult to argue that Internet diffusion was really a key feature of forcing democratic change, because the diffusion rate was only 0.04% in 1994.

Though this access increased to nearly 12% in 2003, it is unclear if the Internet played a central role in supporting a democratic movement that was already underway by 1994 (Levy, Bruhn, & Zebadúa, 2006). Of course, 1994 is also the year that the value of the peso collapsed and the North American Free Trade Agreement (NAFTA) went into effect (Fischer, 2000). Though it would be presumptuous to assume that NAFTA had an immediate democratic effect, it certainly is notable that this economic program increased foreign direct investment in Mexico to more than $10 billion yearly (Economic Commission for Latin American and the Caribbean, 2001). Thus, it seems that economic crises precipitated a democratic surge in Indonesia and Mexico, but the democratic change in Mexico was both less drastic and coincidental with an economic stimulus in NAFTA.

Paradoxically, NAFTA also brought to the forefront the Zapatista rebellion that began at the same time. This movement is often cited as one of the most potent democratic uses marginalized groups have made of the Internet (Wallis, 2003), although the Zapatistas may be considered another extremist group that used the Internet to propagate their message (Ferdinand, 2000). Thus, the diffusion and use of the Internet in Mexico was both a product of increasing democracy and development, as well as a democratic agent. In fact, Wallis pointed to Mexico as a case in which the Internet may have contributed to the democratization of a developing country that was not already a well-formed and functioning democracy at the time when the Internet began to publicly diffuse.

Nonetheless, there is no specific evidence in this study that summarily supports this claim, precisely because the actual democracy score exceeded the confidence interval during the same year that

NAFTA was implemented, and because the Zapatista resistance made use of electronic networks to oppose this globalizing force by using another globalizing agent (the Internet). Simply, the immediacy of the time structure suggests that the observed democratic shift from 1993 to 1994 which extended beyond that of the first confidence interval had more to do with developments that had been ongoing for decades than with those which occurred within the course of the one year (Levy, Bruhn, & Zebadúa, 2006) when the democracy score spiked.

Even when effectively used by the Zapatista movement with the help of academics and the influential (Wallis, 2003), the Internet was unlikely to demonstrate such a substantial shift with virtually no time lag and a nearly negligible level of penetration. Thus, even in what might be considered a best-case scenario, it is still impossible to summarily conclude that Mexico was more democratic precisely due to Internet diffusion than it would have been had the Internet not diffused, at least when considering institutionalized national level democracy.

This is because the transnational civil society network pioneered by the Zapatistas was more about *élites* who had Internet access and how the Zapatistas tapped this group and projected their ideological views through the Internet, even though, in Mexico, the Internet only reached a tiny portion of the general population. Therefore, it was not high levels of Internet *diffusion* among the Mexican citizens in 1994, but rather influential Internet users that contributed democratic change during that time period.

Altogether, the research questions posed returned primarily negative results, although they did not rule out the potential for Internet diffusion to have contributed to democratic development. With regard to RQ2, this seems rather convincing evidence that the democratic effects of the Internet were limited, even after it reached a critical mass of self-sustaining diffusion as described by Rogers (2003). It is imprudent to position Internet diffusion as a general causal mechanism for a majority of countries, at least through 2003, with the sample of countries analyzed here. Yet under certain circumstances, such as those observed in Croatia and Mexico, it is possible that Internet diffusion may contribute to democratic change — even if those effects are indirect and linked to access by a relatively small percentage of the general citizen population.

### *Conclusions*

Under any circumstances, the opportunity to evaluate national and global patterns of communication technologies and the democratic effect they may impart on their social systems is a valuable one. Before work on this study began, relatively little was known about the relationship between the Internet and democracy in similar, cross-national and time-series-based empirical terms. One key feature that was well reported, though, was that the Internet was more prevalent in more democratic countries (Dimitrova, 2002; Norris, 2001; Milner, 2006). Another central finding was that increased Internet diffusion was correlated with democratic growth in some regions, even when controlling for other factors (Best & Wade, 2005; Kedzie, 2002). The results from this study not only fill a void left by previous research, but also provide a predictive context for democratic effects based on comparable data sources and time–series forecast modeling.

There was relatively limited support for the predictive research questions that were advanced. Only three of 72 counties in this study — Croatia, Indonesia, and Mexico — exhibited actual democracy scores that were greater than the upper confidence intervals based on ARIMA forecasts for the years 1994 through 2003. Moreover, the rate of Internet diffusion in these countries was relatively low during the years that the democracy levels became greater than the statistically-predicted values. This counter-intuitive finding clearly identifies that it matters who within the population has access to communication resources during periods of democratic change. It is therefore difficult to generate a comprehensive understanding of the contribution the Internet may have made to those transformations — and even more difficult to make promising generalizations about other countries based on measures of diffusion, rather than those of influence and uses.

When considering whether or not Internet diffusion can impact democratic change from diffusion theory and network society perspectives, the simple and direct answer is that the Internet (or any other current or future media technology) should generally not be expected to summarily "cause" democratization in any given country. Of course, the time–series data analyzed here can only lend support to such a causal argument, but evidence of that was limited, and procedural linkages could not be clearly identified in this study. Indeed, the countries in this sample that showed the greatest increases in Internet diffusion (South Korea, Israel, Estonia, etc.) were not more democratic than they were statistically forecasted to be (see Appendix for complete rankings). It is therefore important to note that, for 95.8% of countries studied here, democracy figures were *within* confidence interval ranges, which suggests that no exogenous factors drastically altered national-level democracy in these countries from 1994 to 2003.

Although the democratic potential of the Internet seems inestimable, it has been tempered in forecasting regression models, and it is likely that we will see that trend stabilize over time as penetration rates reach equilibrium. The nature of the method used here is based on fairly constrictive, but seemingly accurate, time–series models from which case studies were drawn. Had a less constrained or more imprecise modeling technique been utilized, it is possible that the effect of the Internet might have appeared greater — even though Best and Wade (2005) report that surveillance and filtration software can limit the democratic potential of the Internet.

The patterns identified in this study suggest that the time–series models employed here were highly efficient, at least statistically. Case study analyses of countries identified through these statistical models found only limited and conditional support for the notion that Internet diffusion might be a viable causal mechanism of democratization. It is therefore prudent to consider the Internet a potentially potent but underutilized democratic tool, one that is only as useful as the citizens who employ and implement it for political purposes (Schudson, 2003). Thus far, the Internet has not been diffused or activated to an extent that this technology has sustained the third democratic wave (Huntington, 1991). Importantly, virtuosity and democratic agency are not inherent in media technologies, no matter how interactive or participatory. Rather, these exist in individuals, and in the crucial applications and uses they make of communicative technologies (Nord, 2001; Schudson, 1999, 2003).

The democratic capacities that new media may present are under constant negotiation, both technologically and socially, much like public spheres that "must be continually achieved" (Dahlgren,

1995, p. 147). Indeed, the cultural and political applications of the Internet are yet to be determined (Lessig, 2004), and they almost certainly vary across countries and regions (O'Loughlin et al., 1998). The results reported here are not unlike the work of Castells, who writes that the Internet, "by relatively leveling the ground of symbolic manipulation, and by broadening the source of communication…does contribute to democratization" (2001, p. 164). However, he also notes that "we still need political representation, participatory democracy, consensus-building procedures, and effective public policy" (p. 282), societal qualities which begin with truly democratic governments.

The results of the investigations undertaken in this study yield no conclusive evidence that the democratic growth from 1994 to 2003 was due singularly, or even primarily, to the diffusion of the Internet. This finding was also consistent in three countries (Croatia, Indonesia, and Mexico) that had actual democracy scores greater than the statistically-predicted forecasted democracy scores. Thus, the general conclusion of this study is that the Internet has *not* catalyzed transformative, national-level democratic growth, although there is some reason to believe that it may contribute to these changes, as the cases of Mexico and Croatia exhibit. This finding, of course, does not rule out the possibility that there may be national-level democratic effects related to Internet diffusion in the future, nor does it rule out possible effects on personal or other sub-national levels.

Ultimately, neither media technologies nor any resultant democratic effects can be divorced from the social and cultural environments that promote or diminish their introduction and subsequent diffusion. Any such democratic effects, including those observed here, are by and large integral extensions — not powerful drivers — of sociopolitical conditions that shape and structure media technologies themselves. Thus, Internet diffusion can reasonably be positioned and understood as a coincidental developmental condition that contributes to the general democratic trajectory of a given nation.

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***Appendix***. Comparisons of Actual Democracy Scores (ln) to the Upper and Lower Forecasted Values of 95% Confidence Intervals Constructed around Forecasted Democracy Scores (ln) for Each Country with Internet Diffusion Rates from 1994 to 2003.

| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
|---|---|---|---|---|---|---|---|---|
| Year | *Albania* | | | | *Argentina* | | | |
| 1994 | 3.20 | 2.83 | 2.40 | 0.00 | 3.67 | 2.94 | 1.99 | 0.04 |
| 1995 | 3.33 | 2.83 | 2.21 | 0.01 | 3.84 | 2.94 | 1.62 | 0.08 |
| 1996 | 3.42 | 2.48 | 2.07 | 0.03 | 3.91 | 2.94 | 1.38 | 0.14 |
| 1997 | 3.48 | 2.83 | 1.94 | 0.05 | 3.95 | 2.94 | 1.20 | 0.28 |
| 1998 | 3.54 | 2.83 | 1.84 | 0.06 | 3.96 | 2.94 | 1.06 | 0.83 |
| 1999 | 3.58 | 2.83 | 1.74 | 0.08 | 3.96 | 3.00 | 0.96 | 3.30 |
| 2000 | 3.61 | 2.83 | 1.66 | 0.11 | 3.95 | 3.00 | 0.88 | 7.07 |
| 2001 | 3.64 | 2.83 | 1.58 | 0.32 | 3.93 | 3.00 | 0.81 | 9.82 |
| 2002 | 3.66 | 2.94 | 1.51 | 0.38 | 3.92 | 3.00 | 0.76 | 11.20 |
| 2003 | 3.68 | 2.94 | 1.44 | 0.97 | 3.91 | 3.00 | 0.72 | 13.17 |
| | *Armenia* | | | | *Azerbaijan* | | | |
| 1994 | 3.30 | 2.94 | 2.46 | 0.01 | 2.39 | 2.20 | 1.87 | 0.00 |
| 1995 | 3.40 | 2.71 | 2.25 | 0.05 | 2.42 | 1.79 | 1.72 | 0.00 |
| 1996 | 3.46 | 1.79 | 2.08 | 0.08 | 2.43 | 1.79 | 1.61 | 0.01 |
| 1997 | 3.49 | 1.79 | 1.95 | 0.09 | 2.42 | 1.79 | 1.52 | 0.03 |
| 1998 | 3.51 | 2.83 | 1.83 | 0.11 | 2.41 | 1.61 | 1.45 | 0.04 |
| 1999 | 3.52 | 2.83 | 1.73 | 0.79 | 2.39 | 1.61 | 1.39 | 0.10 |
| 2000 | 3.53 | 2.83 | 1.64 | 1.05 | 2.38 | 1.61 | 1.34 | 0.15 |
| 2001 | 3.53 | 2.83 | 1.56 | 1.32 | 2.36 | 1.61 | 1.29 | 0.31 |
| 2002 | 3.53 | 2.83 | 1.49 | 1.57 | 2.34 | 1.61 | 1.25 | 3.68 |
| 2003 | 3.52 | 2.83 | 1.42 | 3.68 | 2.33 | 1.61 | 1.22 | 4.83 |
| | *Bangladesh* | | | | ***Belarus*** | | | |
| 1994 | 3.39 | 2.89 | 2.20 | 0.00 | 3.25 | 2.94 | 2.65 | 0.00 |
| 1995 | 3.48 | 2.89 | 1.96 | 0.00 | 3.29 | **2.48** | 2.63 | 0.00 |
| 1996 | 3.51 | 2.89 | 1.81 | 0.00 | 3.30 | **1.61** | 2.63 | 0.00 |
| 1997 | 3.51 | 2.89 | 1.71 | 0.00 | 3.31 | **1.61** | 2.64 | 0.05 |
| 1998 | 3.50 | 2.89 | 1.65 | 0.00 | 3.32 | **1.61** | 2.64 | 0.07 |
| 1999 | 3.49 | 2.89 | 1.60 | 0.04 | 3.33 | **1.61** | 2.65 | 0.50 |
| 2000 | 3.48 | 2.89 | 1.56 | 0.08 | 3.33 | **1.61** | 2.66 | 1.87 |
| 2001 | 3.47 | 2.89 | 1.54 | 0.14 | 3.34 | **1.61** | 2.67 | 4.32 |
| 2002 | 3.46 | 2.89 | 1.52 | 0.15 | 3.35 | **1.61** | 2.68 | 8.15 |
| 2003 | 3.45 | 2.89 | 1.50 | 0.17 | 3.36 | **1.61** | 2.69 | 14.09 |
| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
| Year | *Bhutan* | | | | *Bolivia* | | | |
| 1994 | 1.55 | 1.39 | 1.20 | 0.00 | 3.40 | 3.04 | 2.59 | 0.00 |
| 1995 | 1.61 | 1.39 | 1.12 | 0.00 | 3.50 | 3.04 | 2.41 | 0.07 |
| 1996 | 1.65 | 1.39 | 1.07 | 0.00 | 3.56 | 3.04 | 2.27 | 0.20 |
| 1997 | 1.68 | 1.39 | 1.02 | 0.00 | 3.60 | 3.04 | 2.15 | 0.45 |
| 1998 | 1.70 | 1.39 | 0.99 | 0.00 | 3.63 | 3.04 | 2.06 | 0.63 |
| 1999 | 1.72 | 1.39 | 0.95 | 0.11 | 3.64 | 3.04 | 1.98 | 0.98 |
| 2000 | 1.73 | 1.39 | 0.93 | 0.34 | 3.65 | 3.04 | 1.91 | 1.46 |
| 2001 | 1.74 | 1.39 | 0.90 | 0.74 | 3.65 | 3.04 | 1.85 | 2.18 |
| 2002 | 1.75 | 1.39 | 0.88 | 1.45 | 3.65 | 3.04 | 1.80 | 3.23 |
| 2003 | 1.76 | 1.39 | 0.86 | 2.04 | 3.65 | 3.00 | 1.76 | 3.90 |

| | *Brazil* | | | | *Bulgaria* | | | |
|---|---|---|---|---|---|---|---|---|
| 1994 | 3.41 | 3.00 | 2.53 | 0.04 | 3.32 | 3.00 | 2.61 | 0.02 |
| 1995 | 3.55 | 3.00 | 2.35 | 0.11 | 3.43 | 3.00 | 2.44 | 0.12 |
| 1996 | 3.65 | 3.00 | 2.22 | 0.47 | 3.49 | 3.00 | 2.31 | 0.72 |
| 1997 | 3.71 | 3.00 | 2.11 | 0.82 | 3.54 | 3.00 | 2.20 | 1.20 |
| 1998 | 3.76 | 3.00 | 2.03 | 1.51 | 3.58 | 3.00 | 2.11 | 1.80 |
| 1999 | 3.80 | 3.00 | 1.95 | 2.08 | 3.61 | 3.00 | 2.02 | 2.83 |
| 2000 | 3.83 | 3.00 | 1.89 | 2.94 | 3.63 | 3.00 | 1.95 | 5.28 |
| 2001 | 3.86 | 3.00 | 1.84 | 4.66 | 3.65 | 3.04 | 1.88 | 7.67 |
| 2002 | 3.88 | 3.00 | 1.79 | 8.22 | 3.66 | 3.04 | 1.82 | 8.07 |
| 2003 | 3.89 | 3.00 | 1.75 | 12.18 | 3.67 | 3.04 | 1.77 | 20.58 |
| | *Chile* | | | | *China* | | | |
| 1994 | 3.36 | 3.00 | 2.57 | 0.14 | 1.79 | 1.61 | 1.42 | 0.00 |
| 1995 | 3.47 | 3.00 | 2.41 | 0.35 | 1.84 | 1.61 | 1.36 | 0.00 |
| 1996 | 3.55 | 3.00 | 2.29 | 0.69 | 1.87 | 1.61 | 1.31 | 0.01 |
| 1997 | 3.59 | 3.00 | 2.19 | 1.07 | 1.89 | 1.61 | 1.29 | 0.03 |
| 1998 | 3.63 | 3.00 | 2.12 | 1.69 | 1.91 | 1.61 | 1.26 | 0.17 |
| 1999 | 3.65 | 3.00 | 2.06 | 4.16 | 1.92 | 1.61 | 1.25 | 0.70 |
| 2000 | 3.67 | 3.04 | 2.01 | 16.68 | 1.92 | 1.61 | 1.24 | 1.74 |
| 2001 | 3.68 | 3.04 | 1.96 | 20.14 | 1.93 | 1.61 | 1.23 | 2.57 |
| 2002 | 3.69 | 3.04 | 1.92 | 23.75 | 1.93 | 1.61 | 1.22 | 4.60 |
| 2003 | 3.69 | 3.04 | 1.89 | 27.19 | 1.93 | 1.61 | 1.21 | 6.32 |
| | *Colombia* | | | | ***Croatia*** | | | |
| 1994 | 3.35 | 3.04 | 2.68 | 0.10 | 2.42 | 2.20 | 1.97 | 0.27 |
| 1995 | 3.44 | 2.94 | 2.55 | 0.18 | 2.51 | 1.95 | 1.88 | 0.53 |
| 1996 | 3.48 | 2.94 | 2.46 | 0.31 | 2.57 | 1.95 | 1.81 | 0.89 |
| 1997 | 3.51 | 2.94 | 2.40 | 0.52 | 2.63 | 1.95 | 1.76 | 1.78 |
| 1998 | 3.53 | 2.94 | 2.35 | 1.06 | 2.67 | 1.95 | 1.71 | 3.35 |
| 1999 | 3.54 | 2.94 | 2.31 | 1.60 | 2.71 | 2.56 | 1.66 | 4.47 |
| 2000 | 3.54 | 2.94 | 2.28 | 2.07 | 2.75 | **2.94** | 1.63 | 6.69 |
| 2001 | 3.55 | 2.94 | 2.25 | 2.70 | 2.78 | **2.94** | 1.59 | 11.84 |
| 2002 | 3.55 | 2.94 | 2.24 | 4.62 | 2.81 | **2.94** | 1.56 | 18.03 |
| 2003 | 3.55 | 2.94 | 2.22 | 5.25 | 2.83 | **2.94** | 1.53 | 23.18 |
| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
| Year | *Cuba* | | | | *Czech Republic* | | | |
| 1994 | 2.08 | 1.61 | 1.20 | 0.00 | 3.56 | 3.09 | 2.53 | 1.26 |
| 1995 | 2.24 | 1.61 | 1.09 | 0.00 | 3.70 | 3.09 | 2.30 | 1.45 |
| 1996 | 2.34 | 1.61 | 1.02 | 0.03 | 3.79 | 3.09 | 2.12 | 1.94 |
| 1997 | 2.42 | 1.61 | 0.99 | 0.07 | 3.85 | 3.09 | 1.99 | 2.91 |
| 1998 | 2.47 | 1.61 | 0.96 | 0.22 | 3.89 | 3.09 | 1.87 | 3.89 |
| 1999 | 2.51 | 1.61 | 0.95 | 0.31 | 3.92 | 3.09 | 1.77 | 6.81 |
| 2000 | 2.54 | 1.61 | 0.94 | 0.54 | 3.94 | 3.09 | 1.69 | 9.73 |
| 2001 | 2.56 | 1.61 | 0.94 | 1.07 | 3.96 | 3.09 | 1.62 | 14.67 |
| 2002 | 2.58 | 1.61 | 0.94 | 1.41 | 3.97 | 3.09 | 1.55 | 25.63 |
| 2003 | 2.60 | 1.61 | 0.94 | 0.86 | 3.97 | 3.09 | 1.50 | 30.80 |
| | *Dominican Republic* | | | | *Ecuador* | | | |
| 1994 | 3.29 | 2.83 | 2.45 | 0.00 | 3.34 | 3.04 | 2.65 | 0.03 |
| 1995 | 3.42 | 2.83 | 2.26 | 0.02 | 3.41 | 3.04 | 2.49 | 0.04 |
| 1996 | 3.52 | 3.00 | 2.12 | 0.08 | 3.44 | 3.04 | 2.39 | 0.09 |
| 1997 | 3.59 | 3.00 | 2.00 | 0.16 | 3.45 | 3.00 | 2.31 | 0.11 |
| 1998 | 3.65 | 3.00 | 1.90 | 0.26 | 3.45 | 3.04 | 2.25 | 0.12 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1999 | 3.70 | 3.00 | 1.81 | 1.22 | 3.45 | 3.04 | 2.20 | 0.81 |
| 2000 | 3.74 | 3.00 | 1.73 | 4.09 | 3.44 | 2.89 | 2.17 | 1.42 |
| 2001 | 3.77 | 3.00 | 1.66 | 4.91 | 3.44 | 2.89 | 2.14 | 2.59 |
| 2002 | 3.80 | 3.00 | 1.59 | 6.07 | 3.43 | 2.89 | 2.11 | 4.33 |
| 2003 | 3.82 | 3.00 | 1.53 | 10.23 | 3.42 | 2.89 | 2.09 | 4.59 |
| | *Egypt* | | | | *El Salvador* | | | |
| 1994 | 2.05 | 1.79 | 1.55 | 0.01 | 3.17 | 2.94 | 2.70 | 0.00 |
| 1995 | 2.14 | 1.79 | 1.47 | 0.03 | 3.25 | 2.94 | 2.59 | 0.00 |
| 1996 | 2.21 | 1.79 | 1.42 | 0.07 | 3.31 | 2.94 | 2.51 | 0.09 |
| 1997 | 2.27 | 1.79 | 1.38 | 0.10 | 3.36 | 2.94 | 2.44 | 0.25 |
| 1998 | 2.31 | 1.79 | 1.35 | 0.16 | 3.40 | 2.94 | 2.37 | 0.41 |
| 1999 | 2.34 | 1.79 | 1.33 | 0.32 | 3.43 | 2.94 | 2.32 | 0.81 |
| 2000 | 2.37 | 1.79 | 1.31 | 0.71 | 3.46 | 2.94 | 2.27 | 1.12 |
| 2001 | 2.39 | 1.79 | 1.30 | 0.93 | 3.49 | 2.94 | 2.22 | 2.34 |
| 2002 | 2.41 | 1.79 | 1.29 | 2.82 | 3.51 | 2.94 | 2.18 | 4.64 |
| 2003 | 2.43 | 1.79 | 1.28 | 4.37 | 3.53 | 2.94 | 2.14 | 8.28 |
| | *Estonia* | | | | *Ethiopia* | | | |
| 1994 | 3.10 | 2.89 | 2.67 | 1.13 | 2.91 | 2.56 | 1.91 | 0.00 |
| 1995 | 3.18 | 2.89 | 2.57 | 2.70 | 3.02 | 2.56 | 1.66 | 0.00 |
| 1996 | 3.24 | 2.89 | 2.49 | 3.40 | 3.08 | 2.56 | 1.48 | 0.00 |
| 1997 | 3.28 | 2.89 | 2.43 | 5.49 | 3.11 | 2.56 | 1.34 | 0.00 |
| 1998 | 3.32 | 2.89 | 2.37 | 10.35 | 3.12 | 2.56 | 1.23 | 0.01 |
| 1999 | 3.36 | 2.89 | 2.32 | 13.87 | 3.12 | 2.56 | 1.13 | 0.01 |
| 2000 | 3.39 | 2.89 | 2.28 | 27.21 | 3.12 | 2.56 | 1.04 | 0.02 |
| 2001 | 3.41 | 2.89 | 2.23 | 30.05 | 3.12 | 2.56 | 0.97 | 0.04 |
| 2002 | 3.44 | 2.89 | 2.19 | 32.76 | 3.11 | 2.56 | 0.91 | 0.07 |
| 2003 | 3.46 | 2.89 | 2.15 | 44.41 | 3.10 | 2.56 | 0.86 | 0.10 |
| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
| Year | *France* | | | | *Georgia* | | | |
| 1994 | 3.12 | 3.04 | 2.96 | 0.90 | 2.97 | 2.77 | 2.56 | 0.00 |
| 1995 | 3.14 | 3.04 | 2.94 | 1.64 | 3.05 | 2.83 | 2.47 | 0.01 |
| 1996 | 3.15 | 3.04 | 2.92 | 2.59 | 3.11 | 2.83 | 2.40 | 0.04 |
| 1997 | 3.16 | 3.04 | 2.90 | 4.27 | 3.15 | 2.83 | 2.34 | 0.06 |
| 1998 | 3.17 | 3.04 | 2.89 | 6.34 | 3.19 | 2.83 | 2.29 | 0.10 |
| 1999 | 3.17 | 3.04 | 2.88 | 9.16 | 3.23 | 2.83 | 2.24 | 0.39 |
| 2000 | 3.18 | 3.04 | 2.88 | 14.37 | 3.26 | 2.83 | 2.20 | 0.46 |
| 2001 | 3.18 | 3.04 | 2.87 | 26.38 | 3.29 | 2.83 | 2.16 | 0.93 |
| 2002 | 3.18 | 3.04 | 2.87 | 31.38 | 3.32 | 2.83 | 2.12 | 1.48 |
| 2003 | 3.18 | 3.04 | 2.86 | 36.56 | 3.34 | 2.83 | 2.08 | 2.39 |
| | *Greece* | | | | *Guatemala* | | | |
| 1994 | 3.46 | 3.09 | 2.67 | 0.38 | 3.07 | 2.71 | 2.31 | 0.00 |
| 1995 | 3.57 | 3.09 | 2.51 | 0.77 | 3.19 | 2.71 | 2.17 | 0.00 |
| 1996 | 3.63 | 3.09 | 2.40 | 1.43 | 3.26 | 3.00 | 2.07 | 0.02 |
| 1997 | 3.67 | 3.09 | 2.32 | 1.90 | 3.31 | 3.00 | 2.00 | 0.10 |
| 1998 | 3.69 | 3.09 | 2.26 | 3.30 | 3.34 | 3.00 | 1.94 | 0.46 |
| 1999 | 3.71 | 3.09 | 2.22 | 7.06 | 3.37 | 3.00 | 1.90 | 0.59 |
| 2000 | 3.72 | 3.09 | 2.18 | 9.47 | 3.39 | 3.00 | 1.86 | 0.70 |
| 2001 | 3.73 | 3.09 | 2.15 | 8.64 | 3.40 | 3.00 | 1.83 | 1.71 |
| 2002 | 3.73 | 3.09 | 2.12 | 13.48 | 3.41 | 3.00 | 1.81 | 3.33 |
| 2003 | 3.73 | 3.09 | 2.10 | 14.99 | 3.42 | 3.00 | 1.79 | 5.97 |
| | ***Haiti*** | | | | *Honduras* | | | |

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|---|---|---|---|---|---|---|---|---|
| 1994 | 2.25 | **2.94** | 1.01 | 0.00 | 2.99 | 2.89 | 2.79 | 0.00 |
| 1995 | 2.47 | **2.94** | 0.82 | 0.00 | 3.02 | 2.89 | 2.74 | 0.03 |
| 1996 | 2.62 | **2.94** | 0.70 | 0.01 | 3.05 | 2.89 | 2.71 | 0.04 |
| 1997 | 2.73 | **2.94** | 0.62 | 0.00 | 3.07 | 2.89 | 2.68 | 0.16 |
| 1998 | 2.80 | **2.94** | 0.57 | 0.03 | 3.09 | 2.89 | 2.66 | 0.29 |
| 1999 | 2.86 | 2.64 | 0.53 | 0.07 | 3.11 | 2.94 | 2.63 | 0.55 |
| 2000 | 2.91 | 2.30 | 0.50 | 0.25 | 3.12 | 2.94 | 2.61 | 0.88 |
| 2001 | 2.95 | 2.30 | 0.48 | 0.36 | 3.13 | 2.94 | 2.59 | 1.38 |
| 2002 | 2.98 | 2.30 | 0.46 | 0.96 | 3.14 | 2.94 | 2.57 | 2.51 |
| 2003 | 3.00 | 2.30 | 0.45 | 1.80 | 3.15 | 2.94 | 2.56 | 3.96 |
| | *Hungary* | | | | *India* | | | |
| 1994 | 3.29 | 3.09 | 2.90 | 0.49 | 3.03 | 3.00 | 2.97 | 0.00 |
| 1995 | 3.33 | 3.09 | 2.87 | 0.68 | 3.05 | 3.04 | 2.97 | 0.03 |
| 1996 | 3.35 | 3.09 | 2.86 | 0.98 | 3.06 | 3.04 | 2.97 | 0.05 |
| 1997 | 3.36 | 3.09 | 2.87 | 1.97 | 3.06 | 3.04 | 2.97 | 0.07 |
| 1998 | 3.37 | 3.09 | 2.87 | 3.92 | 3.07 | 3.04 | 2.97 | 0.14 |
| 1999 | 3.38 | 3.09 | 2.88 | 5.91 | 3.07 | 3.04 | 2.97 | 0.28 |
| 2000 | 3.39 | 3.09 | 2.89 | 7.01 | 3.07 | 3.04 | 2.97 | 0.54 |
| 2001 | 3.40 | 3.09 | 2.90 | 14.55 | 3.07 | 3.04 | 2.97 | 0.68 |
| 2002 | 3.41 | 3.09 | 2.91 | 15.76 | 3.08 | 3.04 | 2.97 | 1.59 |
| 2003 | 3.42 | 3.09 | 2.92 | 23.22 | 3.08 | 3.04 | 2.97 | 1.74 |
| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
| Year | ***Indonesia*** | | | | *Iran* | | | |
| 1994 | 1.93 | 1.61 | 1.34 | 0.00 | 2.41 | 1.79 | 1.16 | 0.00 |
| 1995 | 2.07 | 1.61 | 1.25 | 0.03 | 2.62 | 1.79 | 0.93 | 0.00 |
| 1996 | 2.18 | 1.61 | 1.19 | 0.06 | 2.75 | 1.79 | 0.78 | 0.02 |
| 1997 | 2.27 | 1.61 | 1.15 | 0.19 | 2.85 | 2.71 | 0.67 | 0.05 |
| 1998 | 2.35 | 1.95 | 1.12 | 0.25 | 2.92 | 2.71 | 0.58 | 0.11 |
| 1999 | 2.42 | **2.89** | 1.09 | 0.44 | 2.97 | 2.71 | 0.52 | 0.40 |
| 2000 | 2.49 | **2.89** | 1.08 | 0.92 | 3.01 | 2.71 | 0.46 | 0.98 |
| 2001 | 2.54 | **2.89** | 1.06 | 2.01 | 3.05 | 2.71 | 0.42 | 1.56 |
| 2002 | 2.60 | **2.89** | 1.05 | 2.12 | 3.07 | 2.71 | 0.39 | 4.84 |
| 2003 | 2.65 | **2.89** | 1.04 | 3.75 | 3.09 | 2.71 | 0.36 | 7.23 |
| | *Ireland* | | | | *Israel* | | | |
| 1994 | 3.11 | 3.09 | 3.07 | 0.56 | 3.06 | 3.04 | 3.03 | 0.54 |
| 1995 | 3.12 | 3.09 | 3.06 | 1.11 | 3.07 | 3.04 | 3.03 | 0.89 |
| 1996 | 3.13 | 3.09 | 3.05 | 2.21 | 3.08 | 3.04 | 3.02 | 2.08 |
| 1997 | 3.13 | 3.09 | 3.04 | 4.10 | 3.08 | 3.04 | 3.02 | 4.23 |
| 1998 | 3.13 | 3.09 | 3.04 | 8.10 | 3.09 | 3.04 | 3.02 | 10.03 |
| 1999 | 3.14 | 3.09 | 3.03 | 10.95 | 3.09 | 3.09 | 3.02 | 13.11 |
| 2000 | 3.14 | 3.09 | 3.03 | 17.93 | 3.09 | 3.09 | 3.02 | 20.26 |
| 2001 | 3.14 | 3.09 | 3.03 | 23.31 | 3.10 | 3.09 | 3.02 | 27.66 |
| 2002 | 3.14 | 3.09 | 3.02 | 28.03 | 3.10 | 3.09 | 3.02 | 30.14 |
| 2003 | 3.14 | 3.09 | 3.02 | 31.66 | 3.10 | 3.09 | 3.02 | 46.63 |
| | *Italy* | | | | *Jordan* | | | |
| 1994 | 3.14 | 3.09 | 3.04 | 0.19 | 2.79 | 2.30 | 1.66 | 0.00 |
| 1995 | 3.15 | 3.09 | 3.02 | 0.52 | 2.92 | 2.30 | 1.39 | 0.02 |
| 1996 | 3.17 | 3.09 | 3.00 | 1.02 | 2.99 | 2.30 | 1.19 | 0.05 |
| 1997 | 3.18 | 3.09 | 2.99 | 2.27 | 3.03 | 2.30 | 1.04 | 0.58 |
| 1998 | 3.18 | 3.09 | 2.98 | 4.53 | 3.05 | 2.30 | 0.92 | 1.28 |
| 1999 | 3.19 | 3.09 | 2.97 | 14.30 | 3.06 | 2.30 | 0.81 | 2.45 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2000 | 3.20 | 3.09 | 2.96 | 23.04 | 3.06 | 2.30 | 0.72 | 2.53 |
| 2001 | 3.20 | 3.09 | 2.95 | 26.89 | 3.05 | 2.30 | 0.65 | 4.52 |
| 2002 | 3.20 | 3.09 | 2.94 | 35.24 | 3.05 | 2.30 | 0.58 | 5.76 |
| 2003 | 3.21 | 3.09 | 2.94 | 33.66 | 3.04 | 2.30 | 0.53 | 8.10 |
| | *Kazakhstan* | | | | *Korea South* | | | |
| 1994 | 2.38 | 2.20 | 1.95 | 0.00 | 3.46 | 2.89 | 2.10 | 0.31 |
| 1995 | 2.43 | 2.08 | 1.83 | 0.01 | 3.56 | 2.89 | 1.83 | 0.82 |
| 1996 | 2.45 | 2.08 | 1.75 | 0.03 | 3.60 | 2.89 | 1.66 | 1.63 |
| 1997 | 2.47 | 2.08 | 1.68 | 0.06 | 3.60 | 2.89 | 1.54 | 3.62 |
| 1998 | 2.48 | 2.08 | 1.61 | 0.12 | 3.59 | 3.00 | 1.46 | 6.83 |
| 1999 | 2.48 | 2.08 | 1.56 | 0.43 | 3.58 | 3.00 | 1.41 | 23.77 |
| 2000 | 2.48 | 2.08 | 1.51 | 0.62 | 3.57 | 3.00 | 1.36 | 41.40 |
| 2001 | 2.48 | 2.08 | 1.47 | 0.93 | 3.55 | 3.00 | 1.33 | 51.50 |
| 2002 | 2.48 | 1.79 | 1.43 | 1.56 | 3.54 | 3.00 | 1.31 | 55.14 |
| 2003 | 2.47 | 1.79 | 1.39 | 2.60 | 3.53 | 3.00 | 1.29 | 60.96 |
| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
| Year | *Kyrgyzstan* | | | | *Laos* | | | |
| 1994 | 2.38 | 2.20 | 1.95 | 0.00 | 1.85 | 1.61 | 1.39 | 0.00 |
| 1995 | 2.43 | 2.08 | 1.83 | 0.00 | 1.96 | 1.61 | 1.31 | 0.00 |
| 1996 | 2.45 | 2.08 | 1.75 | 0.00 | 2.04 | 1.61 | 1.26 | 0.00 |
| 1997 | 2.47 | 2.08 | 1.68 | 0.00 | 2.10 | 1.61 | 1.22 | 0.00 |
| 1998 | 2.48 | 2.08 | 1.61 | 0.07 | 2.16 | 1.61 | 1.19 | 0.01 |
| 1999 | 2.48 | 2.08 | 1.56 | 0.21 | 2.21 | 1.61 | 1.16 | 0.04 |
| 2000 | 2.48 | 2.08 | 1.51 | 1.06 | 2.25 | 1.61 | 1.14 | 0.11 |
| 2001 | 2.48 | 2.08 | 1.47 | 3.04 | 2.29 | 1.61 | 1.12 | 0.19 |
| 2002 | 2.48 | 1.79 | 1.43 | 2.98 | 2.33 | 1.61 | 1.10 | 0.27 |
| 2003 | 2.47 | 1.79 | 1.39 | 3.84 | 2.36 | 1.61 | 1.09 | 0.33 |
| | *Latvia* | | | | *Lithuania* | | | |
| 1994 | 3.22 | 3.00 | 2.76 | 0.00 | 3.33 | 3.09 | 2.84 | 0.00 |
| 1995 | 3.30 | 3.00 | 2.65 | 0.00 | 3.42 | 3.09 | 2.73 | 0.00 |
| 1996 | 3.36 | 3.00 | 2.57 | 0.80 | 3.48 | 3.09 | 2.64 | 0.27 |
| 1997 | 3.41 | 3.00 | 2.51 | 2.02 | 3.53 | 3.09 | 2.57 | 0.94 |
| 1998 | 3.46 | 3.00 | 2.44 | 3.25 | 3.58 | 3.09 | 2.50 | 1.89 |
| 1999 | 3.49 | 3.00 | 2.39 | 4.30 | 3.62 | 3.09 | 2.45 | 2.78 |
| 2000 | 3.52 | 3.00 | 2.34 | 6.19 | 3.65 | 3.09 | 2.39 | 6.09 |
| 2001 | 3.55 | 3.00 | 2.29 | 7.23 | 3.68 | 3.09 | 2.34 | 7.17 |
| 2002 | 3.58 | 3.00 | 2.25 | 13.31 | 3.71 | 3.09 | 2.30 | 14.44 |
| 2003 | 3.60 | 3.00 | 2.21 | 40.35 | 3.74 | 3.09 | 2.25 | 20.19 |
| | *Macedonia* | | | | ***Mexico*** | | | |
| 1994 | 3.14 | 2.89 | 2.62 | 0.00 | 2.64 | **2.77** | 2.33 | 0.04 |
| 1995 | 3.23 | 2.89 | 2.50 | 0.04 | 2.70 | **2.77** | 2.27 | 0.10 |
| 1996 | 3.29 | 2.89 | 2.41 | 0.08 | 2.74 | **2.77** | 2.22 | 0.20 |
| 1997 | 3.34 | 2.89 | 2.33 | 0.50 | 2.78 | **2.89** | 2.18 | 0.62 |
| 1998 | 3.38 | 2.89 | 2.26 | 1.00 | 2.81 | **2.89** | 2.14 | 1.28 |
| 1999 | 3.41 | 2.89 | 2.20 | 1.49 | 2.84 | **2.89** | 2.11 | 1.87 |
| 2000 | 3.44 | 2.89 | 2.15 | 2.47 | 2.87 | **3.00** | 2.08 | 5.12 |
| 2001 | 3.47 | 2.89 | 2.10 | 3.42 | 2.89 | **3.00** | 2.06 | 7.47 |
| 2002 | 3.49 | 3.04 | 2.05 | 4.84 | 2.91 | **3.00** | 2.03 | 9.96 |
| 2003 | 3.51 | 3.04 | 2.01 | 7.70 | 2.93 | **3.00** | 2.01 | 11.99 |
| | *Moldova* | | | | *Mongolia* | | | |
| 1994 | 3.15 | 2.94 | 2.73 | 0.00 | 3.34 | 3.04 | 2.71 | 0.00 |

| 1995 | 3.23 | 2.94 | 2.63 | 0.00 | 3.45 | 3.04 | 2.57 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| 1996 | 3.29 | 2.94 | 2.56 | 0.01 | 3.52 | 3.09 | 2.46 | 0.02 |
| 1997 | 3.33 | 2.94 | 2.50 | 0.03 | 3.58 | 3.09 | 2.36 | 0.11 |
| 1998 | 3.37 | 2.94 | 2.44 | 0.30 | 3.63 | 3.09 | 2.28 | 0.15 |
| 1999 | 3.41 | 2.94 | 2.39 | 0.68 | 3.67 | 3.09 | 2.21 | 0.51 |
| 2000 | 3.44 | 2.94 | 2.35 | 1.45 | 3.71 | 3.09 | 2.14 | 1.26 |
| 2001 | 3.47 | 3.00 | 2.31 | 1.65 | 3.74 | 3.09 | 2.08 | 1.67 |
| 2002 | 3.50 | 3.00 | 2.27 | 4.14 | 3.77 | 3.09 | 2.02 | 2.05 |
| 2003 | 3.52 | 3.00 | 2.23 | 7.98 | 3.79 | 3.09 | 1.96 | 5.81 |
| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
| Year | *Myanmar (Burma)* | | | | *Nepal* | | | |
| 1994 | 1.99 | 1.61 | 1.26 | 0.00 | 3.37 | 2.83 | 2.02 | 0.00 |
| 1995 | 2.14 | 1.61 | 1.14 | 0.00 | 3.47 | 2.83 | 1.69 | 0.00 |
| 1996 | 2.26 | 1.61 | 1.05 | 0.00 | 3.50 | 2.83 | 1.46 | 0.00 |
| 1997 | 2.36 | 1.61 | 0.99 | 0.00 | 3.50 | 2.83 | 1.29 | 0.02 |
| 1998 | 2.44 | 1.61 | 0.93 | 0.00 | 3.48 | 2.83 | 1.16 | 0.07 |
| 1999 | 2.51 | 1.61 | 0.89 | 0.00 | 3.46 | 2.89 | 1.05 | 0.16 |
| 2000 | 2.57 | 1.61 | 0.85 | 0.01 | 3.44 | 2.89 | 0.97 | 0.22 |
| 2001 | 2.63 | 1.61 | 0.82 | 0.02 | 3.41 | 2.89 | 0.90 | 0.26 |
| 2002 | 2.68 | 1.61 | 0.80 | 0.05 | 3.39 | 1.79 | 0.85 | 0.34 |
| 2003 | 2.73 | 1.61 | 0.77 | 0.05 | 3.37 | 1.79 | 0.80 | 0.68 |
| | *Nicaragua* | | | | *Oman* | | | |
| 1994 | 3.22 | 2.89 | 2.51 | 0.01 | 1.41 | 1.10 | 0.80 | 0.00 |
| 1995 | 3.34 | 3.00 | 2.34 | 0.03 | 1.53 | 1.10 | 0.69 | 0.00 |
| 1996 | 3.42 | 3.00 | 2.22 | 0.09 | 1.62 | 1.10 | 0.62 | 0.00 |
| 1997 | 3.48 | 3.00 | 2.11 | 0.22 | 1.68 | 1.10 | 0.56 | 0.44 |
| 1998 | 3.52 | 3.00 | 2.02 | 0.32 | 1.74 | 1.10 | 0.52 | 0.87 |
| 1999 | 3.56 | 3.00 | 1.94 | 0.51 | 1.78 | 1.10 | 0.48 | 2.15 |
| 2000 | 3.59 | 3.00 | 1.87 | 0.99 | 1.82 | 1.10 | 0.45 | 3.75 |
| 2001 | 3.62 | 3.00 | 1.80 | 1.44 | 1.86 | 1.10 | 0.43 | 4.84 |
| 2002 | 3.64 | 3.00 | 1.74 | 1.72 | 1.88 | 1.39 | 0.41 | 7.09 |
| 2003 | 3.66 | 3.00 | 1.68 | 2.23 | 1.91 | 1.39 | 0.39 | 8.35 |
| | *Pakistan* | | | | *Panama* | | | |
| 1994 | 3.53 | 3.00 | 2.18 | 0.00 | 3.45 | 3.04 | 2.41 | 0.01 |
| 1995 | 3.59 | 3.00 | 1.89 | 0.00 | 3.57 | 3.04 | 2.18 | 0.06 |
| 1996 | 3.60 | 3.00 | 1.72 | 0.00 | 3.63 | 3.04 | 2.02 | 0.22 |
| 1997 | 3.58 | 2.94 | 1.60 | 0.03 | 3.66 | 3.04 | 1.89 | 0.55 |
| 1998 | 3.56 | 2.94 | 1.53 | 0.05 | 3.67 | 3.04 | 1.80 | 1.08 |
| 1999 | 3.54 | 1.79 | 1.47 | 0.06 | 3.68 | 3.04 | 1.72 | 1.60 |
| 2000 | 3.52 | 1.79 | 1.43 | 0.22 | 3.68 | 3.04 | 1.66 | 3.17 |
| 2001 | 3.50 | 1.79 | 1.40 | 0.35 | 3.67 | 3.04 | 1.61 | 5.82 |
| 2002 | 3.49 | 1.95 | 1.38 | 1.02 | 3.67 | 3.04 | 1.57 | 6.18 |
| 2003 | 3.47 | 1.95 | 1.37 | 1.32 | 3.66 | 3.04 | 1.53 | 6.16 |
| | *Paraguay* | | | | *Philippines* | | | |
| 1994 | 3.35 | 2.94 | 2.44 | 0.00 | 3.43 | 3.00 | 2.50 | 0.01 |
| 1995 | 3.48 | 2.94 | 2.22 | 0.00 | 3.57 | 3.00 | 2.31 | 0.03 |
| 1996 | 3.57 | 2.94 | 2.06 | 0.02 | 3.67 | 3.00 | 2.17 | 0.06 |
| 1997 | 3.63 | 2.94 | 1.92 | 0.10 | 3.73 | 3.00 | 2.06 | 0.14 |
| 1998 | 3.67 | 2.89 | 1.80 | 0.19 | 3.78 | 3.00 | 1.97 | 1.13 |
| 1999 | 3.70 | 2.94 | 1.69 | 0.37 | 3.81 | 3.00 | 1.89 | 1.46 |
| 2000 | 3.72 | 2.94 | 1.60 | 0.73 | 3.84 | 3.00 | 1.83 | 2.01 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2001 | 3.74 | 2.94 | 1.52 | 1.06 | 3.86 | 3.00 | 1.77 | 2.56 |
| 2002 | 3.75 | 2.94 | 1.44 | 1.72 | 3.88 | 3.00 | 1.72 | 4.40 |
| 2003 | 3.76 | 3.00 | 1.37 | 2.02 | 3.89 | 3.00 | 1.68 | 5.32 |
| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
| Year | *Poland* | | | | *Portugal* | | | |
| 1994 | 3.29 | 3.00 | 2.66 | 0.39 | 3.40 | 3.09 | 2.75 | 0.73 |
| 1995 | 3.39 | 3.04 | 2.52 | 0.65 | 3.52 | 3.09 | 2.61 | 1.51 |
| 1996 | 3.46 | 3.04 | 2.41 | 1.29 | 3.60 | 3.09 | 2.50 | 3.02 |
| 1997 | 3.51 | 3.04 | 2.31 | 2.07 | 3.67 | 3.09 | 2.40 | 5.02 |
| 1998 | 3.56 | 3.04 | 2.23 | 4.08 | 3.73 | 3.09 | 2.32 | 10.02 |
| 1999 | 3.59 | 3.04 | 2.16 | 5.42 | 3.77 | 3.09 | 2.25 | 15.00 |
| 2000 | 3.62 | 3.04 | 2.10 | 7.25 | 3.82 | 3.09 | 2.18 | 16.76 |
| 2001 | 3.64 | 3.04 | 2.04 | 9.84 | 3.86 | 3.09 | 2.12 | 18.00 |
| 2002 | 3.66 | 3.09 | 1.98 | 22.99 | 3.89 | 3.09 | 2.06 | 19.35 |
| 2003 | 3.68 | 3.09 | 1.93 | 23.24 | 3.92 | 3.09 | 2.00 | 29.30 |
| | *Romania* | | | | *Russia* | | | |
| 1994 | 3.10 | 2.83 | 2.54 | 0.03 | 2.99 | 2.77 | 2.54 | 0.05 |
| 1995 | 3.20 | 2.83 | 2.41 | 0.07 | 3.07 | 2.77 | 2.44 | 0.15 |
| 1996 | 3.27 | 3.00 | 2.32 | 0.22 | 3.13 | 2.77 | 2.37 | 0.27 |
| 1997 | 3.32 | 3.00 | 2.23 | 0.44 | 3.18 | 2.77 | 2.30 | 0.47 |
| 1998 | 3.37 | 3.00 | 2.16 | 2.22 | 3.22 | 2.77 | 2.25 | 0.81 |
| 1999 | 3.40 | 3.00 | 2.10 | 2.68 | 3.26 | 2.77 | 2.20 | 1.02 |
| 2000 | 3.44 | 3.00 | 2.04 | 3.57 | 3.29 | 2.94 | 2.15 | 1.97 |
| 2001 | 3.46 | 3.00 | 1.99 | 4.47 | 3.32 | 2.94 | 2.11 | 2.93 |
| 2002 | 3.49 | 3.00 | 1.94 | 10.09 | 3.35 | 2.94 | 2.06 | 4.09 |
| 2003 | 3.51 | 3.00 | 1.90 | 18.40 | 3.37 | 2.94 | 2.03 | 11.10 |
| | *Slovakia* | | | | *Slovenia* | | | |
| 1994 | 3.41 | 2.94 | 2.39 | 0.32 | 3.37 | 3.09 | 2.76 | 1.06 |
| 1995 | 3.56 | 2.94 | 2.16 | 0.52 | 3.47 | 3.09 | 2.62 | 2.87 |
| 1996 | 3.65 | 2.94 | 1.99 | 0.78 | 3.54 | 3.09 | 2.51 | 5.03 |
| 1997 | 3.71 | 2.94 | 1.86 | 1.17 | 3.59 | 3.09 | 2.41 | 7.56 |
| 1998 | 3.76 | 3.04 | 1.76 | 2.68 | 3.63 | 3.09 | 2.33 | 10.04 |
| 1999 | 3.79 | 3.04 | 1.66 | 5.42 | 3.66 | 3.09 | 2.26 | 12.57 |
| 2000 | 3.81 | 3.04 | 1.59 | 9.39 | 3.69 | 3.09 | 2.19 | 15.08 |
| 2001 | 3.82 | 3.04 | 1.52 | 12.53 | 3.71 | 3.09 | 2.13 | 30.08 |
| 2002 | 3.83 | 3.04 | 1.46 | 16.04 | 3.73 | 3.09 | 2.07 | 37.57 |
| 2003 | 3.84 | 3.04 | 1.41 | 25.58 | 3.74 | 3.09 | 2.02 | 40.06 |
| | *South Africa* | | | | *Spain* | | | |
| 1994 | 3.08 | 3.04 | 3.02 | 0.26 | 3.26 | 3.09 | 2.95 | 0.28 |
| 1995 | 3.12 | 3.04 | 3.05 | 0.71 | 3.30 | 3.09 | 2.94 | 0.38 |
| 1996 | 3.13 | 3.04 | 3.06 | 0.88 | 3.32 | 3.09 | 2.95 | 1.34 |
| 1997 | 3.15 | 3.04 | 3.08 | 1.70 | 3.35 | 3.09 | 2.97 | 2.82 |
| 1998 | 3.15 | 3.04 | 3.08 | 3.00 | 3.37 | 3.09 | 2.99 | 4.40 |
| 1999 | 3.16 | 3.04 | 3.09 | 4.23 | 3.40 | 3.09 | 3.01 | 7.04 |
| 2000 | 3.17 | 3.04 | 3.10 | 5.49 | 3.42 | 3.09 | 3.04 | 13.67 |
| 2001 | 3.17 | 3.04 | 3.10 | 6.49 | 3.44 | 3.09 | 3.06 | 18.27 |
| 2002 | 3.18 | 3.04 | 3.10 | 6.82 | 3.47 | 3.09 | 3.09 | 19.31 |
| 2003 | 3.18 | 3.04 | 3.11 | 7.89 | 3.49 | 3.09 | 3.11 | 23.91 |
| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
| Year | *Sri Lanka* | | | | *Sudan* | | | |
| 1994 | 2.88 | 2.83 | 2.80 | 0.00 | 2.36 | 1.61 | 1.02 | 0.00 |

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|---|---|---|---|---|---|---|---|---|
| 1995 | 2.90 | 2.83 | 2.79 | 0.01 | 2.62 | 1.61 | 0.90 | 0.00 |
| 1996 | 2.91 | 2.83 | 2.78 | 0.06 | 2.77 | 1.61 | 0.85 | 0.00 |
| 1997 | 2.92 | 2.83 | 2.77 | 0.17 | 2.88 | 1.61 | 0.83 | 0.00 |
| 1998 | 2.93 | 2.83 | 2.77 | 0.31 | 2.95 | 1.61 | 0.83 | 0.01 |
| 1999 | 2.94 | 2.83 | 2.77 | 0.36 | 3.01 | 1.61 | 0.83 | 0.02 |
| 2000 | 2.94 | 2.83 | 2.77 | 0.66 | 3.05 | 1.61 | 0.84 | 0.10 |
| 2001 | 2.95 | 2.89 | 2.77 | 0.80 | 3.08 | 1.61 | 0.85 | 0.47 |
| 2002 | 2.96 | 2.89 | 2.77 | 1.05 | 3.10 | 1.79 | 0.85 | 0.25 |
| 2003 | 2.96 | 2.83 | 2.76 | 1.30 | 3.11 | 1.79 | 0.86 | 0.90 |
| | *Tajikistan* | | | | *Thailand* | | | |
| 1994 | 2.05 | 1.79 | 1.52 | 0.00 | 3.50 | 3.04 | 2.37 | 0.05 |
| 1995 | 2.14 | 1.79 | 1.41 | 0.00 | 3.59 | 3.04 | 2.11 | 0.10 |
| 1996 | 2.21 | 1.79 | 1.34 | 0.00 | 3.61 | 3.04 | 1.94 | 0.23 |
| 1997 | 2.25 | 1.95 | 1.28 | 0.00 | 3.61 | 3.04 | 1.82 | 0.64 |
| 1998 | 2.29 | 2.40 | 1.23 | 0.00 | 3.60 | 3.04 | 1.73 | 0.84 |
| 1999 | 2.32 | 2.40 | 1.19 | 0.03 | 3.58 | 3.04 | 1.66 | 2.17 |
| 2000 | 2.34 | 2.40 | 1.16 | 0.05 | 3.57 | 3.04 | 1.60 | 3.79 |
| 2001 | 2.36 | 2.40 | 1.13 | 0.05 | 3.55 | 3.04 | 1.56 | 5.77 |
| 2002 | 2.38 | 2.40 | 1.10 | 0.05 | 3.53 | 3.04 | 1.53 | 7.75 |
| 2003 | 2.39 | 2.20 | 1.08 | 0.06 | 3.52 | 3.04 | 1.50 | 11.05 |
| | *Turkey* | | | | *Turkmenistan* | | | |
| 1994 | 3.37 | 3.00 | 2.54 | 0.05 | 1.49 | 1.10 | 0.82 | 0.00 |
| 1995 | 3.40 | 3.00 | 2.45 | 0.08 | 1.63 | 1.10 | 0.77 | 0.00 |
| 1996 | 3.41 | 3.00 | 2.41 | 0.19 | 1.72 | 1.10 | 0.76 | 0.00 |
| 1997 | 3.40 | 2.94 | 2.40 | 0.48 | 1.79 | 1.10 | 0.75 | 0.00 |
| 1998 | 3.40 | 2.94 | 2.39 | 0.71 | 1.83 | 1.10 | 0.76 | 0.00 |
| 1999 | 3.40 | 2.94 | 2.39 | 2.33 | 1.87 | 1.10 | 0.77 | 0.05 |
| 2000 | 3.40 | 2.94 | 2.39 | 3.83 | 1.89 | 1.10 | 0.77 | 0.13 |
| 2001 | 3.40 | 2.94 | 2.39 | 5.11 | 1.91 | 1.10 | 0.78 | 0.17 |
| 2002 | 3.40 | 2.94 | 2.39 | 6.17 | 1.93 | 1.10 | 0.79 | 0.16 |
| 2003 | 3.40 | 2.94 | 2.39 | 8.48 | 1.94 | 1.10 | 0.80 | 0.73 |
| | *Ukraine* | | | | *Uruguay* | | | |
| 1994 | 3.04 | 2.94 | 2.61 | 0.01 | 3.52 | 3.09 | 2.60 | 0.06 |
| 1995 | 3.12 | 2.94 | 2.51 | 0.04 | 3.65 | 3.09 | 2.40 | 0.32 |
| 1996 | 3.18 | 2.94 | 2.43 | 0.10 | 3.73 | 3.09 | 2.26 | 1.90 |
| 1997 | 3.23 | 2.94 | 2.37 | 0.20 | 3.78 | 3.09 | 2.16 | 3.47 |
| 1998 | 3.27 | 2.94 | 2.31 | 0.29 | 3.82 | 3.09 | 2.07 | 7.23 |
| 1999 | 3.31 | 2.94 | 2.26 | 0.40 | 3.84 | 3.09 | 2.00 | 10.34 |
| 2000 | 3.34 | 2.89 | 2.21 | 0.71 | 3.86 | 3.09 | 1.94 | 10.93 |
| 2001 | 3.37 | 2.89 | 2.17 | 1.23 | 3.87 | 3.09 | 1.89 | 11.52 |
| 2002 | 3.39 | 2.89 | 2.13 | 1.87 | 3.88 | 3.09 | 1.85 | 11.90 |
| 2003 | 3.42 | 2.89 | 2.09 | 7.79 | 3.89 | 3.09 | 1.82 | 20.98 |
| | Upper | Actual | Lower | Internet | Upper | Actual | Lower | Internet |
| Year | *Uzbekistan* | | | | *Venezuela* | | | |
| 1994 | 1.56 | 1.10 | 0.80 | 0.00 | 3.17 | 3.00 | 2.80 | 0.06 |
| 1995 | 1.71 | 1.10 | 0.76 | 0.00 | 3.23 | 3.00 | 2.72 | 0.12 |
| 1996 | 1.80 | 1.10 | 0.76 | 0.00 | 3.27 | 3.00 | 2.66 | 0.25 |
| 1997 | 1.86 | 1.10 | 0.77 | 0.01 | 3.30 | 3.00 | 2.61 | 0.39 |
| 1998 | 1.90 | 1.10 | 0.78 | 0.02 | 3.33 | 3.00 | 2.57 | 1.39 |
| 1999 | 1.93 | 1.10 | 0.79 | 0.03 | 3.35 | 2.94 | 2.53 | 2.87 |
| 2000 | 1.95 | 1.10 | 0.80 | 0.49 | 3.36 | 2.94 | 2.50 | 3.39 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2001 | 1.96 | 1.10 | 0.81 | 0.60 | 3.38 | 2.89 | 2.47 | 4.66 |
| 2002 | 1.97 | 1.10 | 0.81 | 1.08 | 3.39 | 2.89 | 2.44 | 5.05 |
| 2003 | 1.98 | 1.10 | 0.82 | 1.92 | 3.40 | 2.89 | 2.41 | 6.02 |

*Notes: 1) The democracy score distributions of Hungary, South Africa, and Spain required first-order differencing for the purposes of stationarity. These countries were thus specified using an ARIMA (1, 1, 0) mode. 2) Countries in* ***bold*** *identify those where the actual democracy score was greater or less than the statistically predicted upper or lower democracy levels.*