An analysis of democracy’s effect on e-government development globally.

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An Analysis of Democracy’s Effect on E-government Development Globally

By
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Dedication

I would like to dedicate this work to my mother and father who gave up their lives in academia in Cuba so that I would have a better future in the United States of America. They stepped away from their lives as professors 24 years ago. They have supported me during my entire life at their own great expense. If one could say that poverty is a black hole from which it would take infinite amounts of energy to escape, then it can be said that my parents in their infinite love became the fuel necessary so that I could be where I am today reaching for the stars. I write this paper as a minor tribute to the papers they could have written. I hope to someday be a man worthy of the sacrifice they have made.

I would also like to extend my gratitude to Jason Gainous for being an excellent mentor and guiding me through the process of thesis-writing. It has been a new and strange and adventure and without whose guidance I would have been lost in the weeds. Any faults contained herein this paper are mine and mine alone. Thanks also goes to Julie Bunck whose conversations in the rooms of Ford Hall guided my thoughts as I wrote.

Special thanks are extended to the Trustee’s scholarship, the McConnell Center, and the KEES scholarship for funding my undergraduate education. I would not have been able to afford to write this thesis without the financial support these programs have supplied me and their existence is a testament to the importance of providing students with the means to devote their time to studies without having to rely upon working long hours.

Final thanks go to my love and friend Miranda Mason. Without your reminders that food and sleep are apparently things that humans need, I surely would have perished somewhere along my college career. Thanks for your unending support and love.
Abstract

This study looks to examine E-government’s relationship with Democracy on a global scale to assess the impact of how democratic a state is on how much it invests in E-government. I use the Economist’s democracy index and compare that to the United Nations E-government index in the years between 2008 to 2016 to find a pattern between the two factors. Once I identify the pattern, I use GDP per capita as a control variable to ensure that the relationship holds when how much capital a state has for each of its residents is taken into account. After that, I analyze the data and discuss how further research into the topic could contribute to the topic.

Lay Summary

This study looks to examine the relationship between democracy and how much the development of e-government. In order to look for patterns in the relationship, I use data that looks at the regime style of a country and compare that to data pertaining to the development of that country’s e-governance. Once I establish a pattern between the two, I control for GDP with the variable of GDP per capita.

Keywords and Concepts
E-Government, Democracy, Authoritarianism, Digital Divide
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Introduction

In 2017 a reported 3.58 billion individuals used the internet globally, up from 1.55 billion users in 2008. Globally governments are attempting to use the uptick in internet users to streamline the process of delivering information and services to citizens. (United Nations, 2016) Countries around the globe increasingly depend on the utilization of information communication technologies (ICTs) to deliver services, detect public opinion, and facilitate transactions. From the United Nations perspective, E-government can enable breakthroughs “in Government and the provision of public services, education, healthcare and employment, as well as in business, agriculture and science, with greater numbers of people having access to services and data that might previously have been out of reach or unaffordable”. (United Nations, 2016) In 2015 the UN general assembly spoke on the “potential of e-government in promoting transparency, accountability, efficiency and citizen engagement in public service delivery.” (United Nations, 2015)

E-Government, however, is not without its critics. Opponents argue that movement of government services to internet communications technologies leave isolated regions and poorer citizens out of the loop. (Lim, Cyr, Pan, Tan, & Xiao, 2010) Utilizing e-government requires having the capital to acquire internet-capable devices and a location that possesses the infrastructure for fast, reliable internet. (Kaylor, Deshazo, & Eck, 2001) Some critics also point out how expanded e-government technologies could assist government surveillance and theoretically hamper opposition parties. (Kluver, 2005) This leads to fears that e-government will become a tool of antidemocratic regimes globally. This presents the following question: Which
countries are most heavily developing and investing in E-government and the needed infrastructure?

This study uses the countries in both the United Nations E-Government Index and in the *Economist’s* democracy index in the years 2008 to 2016 in order to paint a complete picture of how both factors change over time in relation to one another. This provides my study with 163 countries that I can look at over the course of 8 years on a biannual basis. Once I define E-government and discuss some of its benefits and limitations, I will define the methodology behind both the United Nations E-government Index and the *Economist’s* democracy index. Next, I will establish a pattern between E-government, as it is two years ahead of democracy. This bivariate relationship is then measured against GDP per capita, as measured by the World Bank, as a controlling variable. I chart the regression between E-government and democracy with the mean of per GDP per capita globally taken into account.

After showing the positive correlation between the level of democratic a regime type is and the extent to which it utilizes to develop E-government, I draw conclusions regarding potential reasons why democratic regimes all over the world, regardless of gross domestic product per capita, are choosing to invest in E-government at a higher rate than their less democratic counterparts. I will then conclude with a discussion of possible avenues further research into this bivariate relationship could take and additional controlling variables I would like to add in a further study.
**Defining E-Government**

**Definition of E-government**

Dr. John C. Reitz of the University of Iowa defines E-government as the usage of information and computer technology to facilitate interaction between a public authority and individual citizens, businesses, or non-governmental organizations. (Reitz, 2006) The Center for Democracy and Technology defines it as the transformation of government via the improvement of accessibility, effectiveness, and responsibility. (CDT, 2002) (Spirakis, Spirakis, & Nikolopoulos, 2010) The UN describes E-government as “the government which applies the information communication technologies to convert its internal and external relations. (United Nations, 2003) For this study we will be focusing on E-government as the use of ICTs to carry out the following four activities between a sovereign state and its citizens. (Bretschneider & Ahn, 2011) These definitions have several implications. First, E-government offers communication with the public about information pertaining to government services, activities, or regulations. For example, the United States’ Internal Revenue Service website displays the changes to the tax code on the homepage. Secondly, it assumes two-way communications between the agency and the citizen, a business or another government agency. Thirdly, it is involved in conducting transactions, either in the form of applying for services or filing tax returns. Finally, e-government can be used to facilitate the actual business of governance which enables the citizens to become more active in the government via involving the citizen, encouraging the population to vote, consulting the citizen, and informing them. (Reitz, 2006)

In order for a government “to have a relationship” with its people, it must have a means of communication with the people. It must have a means of informing them of new legislation, of
hearing public opinion, and of conducting transactions such as collecting taxes. Over the course of history, various methods have been employed to accomplish these tasks, from town criers and pamphlets to communicate legislation and events, to a sheriff who would physically travel from property to property to collect taxes. Since formal systems were first codified to establish a process to accomplish these tasks governments and been experimenting with new methods of making the systems more efficient. Using ICTs to carry out these functions through E-government is called E-governance. (Kluver, 2005)

**Benefits of E-Government**

Traditional democracy, as postulated by the Greeks, was an intensive process which required high levels of participation from all citizens for voting. In every election, each citizen had to vote on every issue. As cities and states developed, such a system became unrealistic because of the constraints of attempting to get ever-growing populations to vote together at the same time and place. This led nations that wished for a democratic system to establish representative democracies. In representative democracies citizens elect people to represent them in voting on everyday matters. This limits the citizens average involvement with the process of government to simple voting for representatives. This has historically led to a sense of alienation between the citizenry and their representatives in some countries. Proponents of E-government argue that because of its easy distribution and rapid time of exchange, E-government can help aid in making a more involved democracy a practical reality. In 2010 Grigoris Spirkais and Konstantinos Nikolopoulos laid out four potential advantages e-government systems could have for citizens: 1) more power to make their opinions known on a widespread scale 2) local government systems that can precisely gauge the opinion of constituents in a quantitative and
qualitative method 3) clearer view of options and participation in discussions without having to be present at a “town hall” i.e. someone in Louisville could partake in a forum based out of Washington D.C. 4) access to information on any issue up for debate from any ICT they could find. (Spirakis , Spirakis , & Nikolopoulos , 2010)

**Limitations of E-Government**

One of the main concerns as governments move their processes over to digital is inequality in terms of public access to internet enabled devices. This is known as the “digital divide.” The digital divide “involves the gap between individuals that have the resources to participate in the information era and those that do not.” A risk of instituting e-government is that requires citizens to access computers, associated software and infrastructure. (Chen & Wellman, 2004) For internet based services to be effective three preconditions must be met: solid telecommunication policies, infrastructures, and ICT education. (Layne & Lee, 2001) (Bretschneider & Ahn, 2011) Without these, marginalized communities may remain unable to utilize these services. Even if their conditions are met, three other obstacles may remain: language (English dominate), lack of content that is relevant, and the lack of IT support. (Chen & Wellman, 2004) The divide within the same country is usually the result of differences in geography and/or socioeconomic status. Although four factors have been identified that affect internet participation. Globally, people who are socioeconomically well off are more likely to access the internet regularly and engage with internet-based services, men are more likely to use the internet than women, younger people more likely to use it than older people, and urban people more likely to use the internet than rural people. (Chen & Wellman, Comparing Socioeconomic, Gender, Life Stage, and Rural-Urban Internet Access and Use in Eight
As governments are motivated to adopt e-government as a way of more cheaply distributing information, these citizens who fall into the digital divide may find themselves disenfranchised. This raises concerns for democracies seeking to adopt e-government.
Methods

To understand how the level of democracy of a country’s regime can affect the country’s development of e-government, this thesis compares an index for measuring the development of e-government against an index that measures how democratic a state is over eight years from 2008 to 2016 with biannual data reports. The 163 countries that are being measured comprises all the countries that were measured in both indices on the same years. The time period from 2008 to 2016 marks the only period for which reliable indices measuring both e-government and democracy appeared on the same years. With this data, I observe the bivariate relationship between the level of democracy in a state is and how developed it is in e-government in two years to analyze the relationship between these two variables.

The United Nations E-Government Index

Every two years the Division of Public Administration and Development Management (DPAPM) conducts a survey that entitles a section named the E-Government Development Index (EGDI). The EGDI offers a comparative ranking of the 193 UN recognized countries according to three key indicators: 1) the OSI- Online Service Index measures the online presence of the government in term of delivery of service; 2) the TII- Telecommunication Infrastructure Index and 3) the HCI -Human Capital Index. (United Nations , 2016) This particular survey constructs a framework for to measuring digitized services through the 193 states according to a multivariate composite index of e-government readiness based on an assessment of websites, a country’s telecommunication infrastructure and its human resources. The information for the OSI comes from data collected from an independent survey questionnaire that assesses the national online presence of all 193 UN member states. The information for the TII comes from data
provided by the International Telecommunications Union (ITU). The information for the HCI comes from data provided by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The EDGI focuses essentially on assessing e-government development at the national level and forms a composite index based on the average of the OSI, the TII, and the HCI. (United Nations, 2016) The EGDI is carried out by a team of 100 researchers from around the world who engaged with the United Nations Department of Economic Affairs (UN DESA) to carry out 386 research surveys across the member states. (United Nations, 2016)

**The Democracy Index**

The Democracy Index is compiled by the *Economist* Intelligence Unit. This index sets out to measure the state of democracy in 167 countries of which 165 are UN member states. The index, first carried out in 2006, has offered an annual schedule since then. The index is grounded in 60 indicators that fall under five categories measuring civil liberties, electoral process, functioning government, pluralism, and political culture. Scores in the index, numeric in nature, fall in the range of 0-10. In addition to the numeric score, the index places countries into one of four government types: full democracies, flawed democracies, hybrid regimes, and authoritarian regimes. (*Economist* Intelligence Unit, 2017)

The overall score for each country is based on a weighted average of the answers for the 60 indicator questions. Each indicator questions have two to three permitted alternative answers. Some answers are provided by experts in the field and others are formed from public opinion surveys from the respective countries. Each two-option response is translated into either a 0 or a 1. The three tier questions have 0, 0.5, and 1 as possible responses. Within each of the 5 categories the sums added, multiplied by a factor of 10, and then divided by the total number of questions within the particular category. Four questions are considered “key questions” in
determining the status of a regime that to score a 0 on them would penalize the total score sum for the category.

1) "Whether national elections are free and fair";
2) "The security of voters";
3) "The influence of foreign powers on government";
4) "The capability of the civil servants to implement policies"

If the answer to one of these questions is 0, then 0.5 is deduced from the index in the corresponding category. Also, there are questions in which the response to one may affect the response to another. For example, if general elections being fair receives a zero, then specialized election will automatically receive a zero. Then the average of the five categories is taken to find the Democracy Index number for a country. That number then determines the regime classification. Full democracies will have a score between 8-10, flawed democracies will have a score from 6 to 7.9, hybrid regimes will have scores from 4 to 5.9, and authoritarian regimes will score below 4. (World Bank, 2017) (Economist Intelligence Unit, 2017)

**Definitions of regime classifications**

The following four definitions are categories of regimes as laid out in the democracy index. (Economist Intelligence Unit, 2017) They broadly define different regime styles based on how democratic they are and provide categories for discussion and interpretation of data.
The Full democracies
In Full democracies as defined by the Democracy Index, a political culture exists that is conducive to the thriving of political principles. These countries respect basic political freedoms and civil liberties. Governments function well. Media sources operate independent from the government and there is a diverse set of sources. A clear and effective system of checks and balances functions. The judiciary is not under the direct control of the executive, but the executive branch enforces judicial decisions. (Economist Intelligence Unit, 2017)

The Flawed democracies
Flawed democracies under the Democracy Index system have fair and free elections. They may have some problems, including restrictions on of the freedom of the press. However, basic civil liberties are respected. These countries have significant problems with other aspects of democracy, including problems with governance, an underdeveloped political culture, or low levels of participation. (Economist Intelligence Unit, 2017)

The hybrid regimes
In the hybrid regimes, elections possess “substantial irregularities” that prevent them from being fair and free. The government pressures opposition parties. Political culture is weaker, government functions poorly, and few citizens participate in politics. Widespread corruption undermines democracy and laws are enforced poorly. The judiciary is not independent, and the government pressures the media to conform to government aims. (Economist Intelligence Unit, 2017)
**The authoritarian regimes**

In authoritarian regimes, the key distinction is a lack of the concept of state political pluralism. In this category, many countries are simple dictatorships. Formal institutions of democracy are few and elections do not generally occur. The country lacks a political culture of respect and protections for civil liberties. Media tend to be either state-owned or owned by groups connected to the government regime. The regime censors criticism, and government groups that break the censor are repressed. The judiciary and the executive are connected. *(Economist Intelligence Unit, 2017)*
In 2008, of the 163 countries studied none fell below a 0.86 in the democracy index survey for that year. Approximately 25 percent fell below a 3.455, placing them in the authoritarian regimes category. 50 percent fell below a 5.87 making them a hybrid regime or lower. Nearly 75 percent fell below a 7.355, making them flawed democracies or lower and 100 percent of states fell below a 9.88. The average global democracy level for 2008 amongst these countries was 5.54, which would make the world a hybrid regime. The two peaks we can observes are between 3-4 and 6-7, which are in the “high” authoritarian regime range and the “lower” flawed democracy range.

(Economist Intelligence Unit, 2017)
In 2008 of the 163 countries we studied, none fell below a 0 in the UN e-government index survey for that year. This means that some countries did not have any developed e-government. About 25 percent fell below a 0.29, 50 percent fell below a 0.46 75 percent fell below a 0.57 and 100 percent of states fell below a 0.91. The average e-government index score for 2008 among these countries was 0.45. The two peaks we can observe are between 0.2-0.3 and 0.4-0.5. This all means that the majority of countries had a weaker investment in developing e-government.
In 2010 of the 163 countries, none fell below a 1.08 in the democracy index survey for that year, 25 percent fell below a 3.425, placing them in the authoritarian regimes category, 50 percent fell below a 5.86 making them a hybrid regime or lower. About 75 percent fell below a 7.215 making them flawed democracies or lower. Fully 100 percent of states fell below a 9.8. The average global democracy level for 2010 amongst these countries was 5.47, which would make the world overall a hybrid regime. The two peaks we can observe are between 3-4 and 6-7 which are in the “high” authoritarian regime range and the “lower” flawed democracy range.
In 2010 of the 163 countries none fell below a 0 in the e-government index survey for that year. This means that some countries did not have any developed e-government. Approximately 25 percent fell below a 0.28, 50 percent fell below a 0.45, 75 percent fell below a 0.56 and all of the states fell below a 0.91. The average e-government index score for 2010 among these countries was 0.44, which is slightly down from 2008. The two peaks we can observe are between 0.2-0.3 and 0.4-0.5. This means that the majority of countries had a weaker investment in developing e-government.
In 2012, of the 163 countries none fell below a 1.08 in the democracy index survey for that year. About 25 percent fell below a 3.58, placing them in the authoritarian regimes category; 50 percent fell below a 5.86 making them a hybrid regime or lower; 75 percent fell below a 7.2, making them flawed democracies or lower. Fully 100 percent of states fell below a 9.8. The average global democracy level for 2012 among these countries was 5.52, which would make the world overall a hybrid regime. The two peaks we can observe are between 3-4 and 6-7, which are in the “high” authoritarian regime range and the “lower” flawed democracy range.
In 2012 of the 163 countries none fell below a 0 in the e-government index survey for that year. This means that some countries did not have any developed e-government. Approximately 25 percent fell below a 0.31, 50 percent fell below a 0.50, 75 percent fell below a 0.66, and all states fell below a 0.93. The average e-government index score for 2012 amongst these countries was 0.49 which is slightly up from 2010. The two peaks we can observes are between 0.2-0.3 and 0.4-0.6. This means that there is shift towards a larger amount of countries investing more heavily in developing their e-government.
In 2014 of the 163 countries none dropped below a 1.08 in the democracy index survey for that year. Fully 25 percent fell below a 3.83, placing them in the authoritarian regimes category; 50 percent fell below a 5.79, making them a hybrid regime or lower; 75 percent fell below a 7.4, making them flawed democracy or lower. 100 percent of states fell below a 9.93. The average global democracy level for 2014 among these countries was 5.55, which would make the world overall a hybrid regime. The two peaks we can observe are between 3-4 and 6-7, which are in the “high” authoritarian regime range and the “lower” flawed democracy range.
In 2014 of the 163 countries not one fell below a 0.09 in the e-government index survey for that year. This means that for the first time no countries reported no development of any e-government at all. About 25 percent fell below a 0.27, 50 percent fell below a 0.48, 75 percent fell below a 0.63, and all states fell below a 0.94. The average e-government index score for 2014 among these countries was 0.48, down slightly from 2012. The two peaks we can observe are between 0.2-0.3 and 0.5-0.6. This shows a divergence where some countries are invested in developing their e-government at an exponentially faster pace, and countries that have not developed their e-government are remaining stagnant.

*2016 Data Democracy Index and E-government Index*
In 2016 of the 163 countries none fell below a 1.08 in the democracy index survey for that year. Fully 25 percent fell below a 3.58, placing them in the authoritarian regimes category, about 50 percent fell below a 5.73 making them hybrid regimes or lower. The 75 percent that fell below a 7.27 were flawed democracies or lower. All states fell below a 9.93. The average global democracy level for 2016 among these countries was 5.52, which would make the world overall a hybrid regime. The two peaks we can observe are between 3-4 and 6-7, which are in the “high” authoritarian regime range and the “lower” flawed democracy range.

(Economist Intelligence Unit, 2017)
In 2016 of the 163 countries none fell below a 0.06 in the e-government index survey for that year. This means that all countries had developed some e-government. Approximately 25 percent fell below a 0.33; 50 percent fell below a 0.51; 75 percent fell below a 0.68, and all states fell below a 0.92. The average e-government index score for 2016 amongst these countries was 0.50, which had risen since 2014. The two peaks we can observes are between 0.2-0.4 and 0.5-0.6. This means that a divide exists between one grouping of countries with weak development of e-government and one grouping of countries with a stronger development of e-government.
Graphing the Bivariate Relationship

The following pages include four scatterplot graphs that visually represent the relationship between how democratic a country is on the Economists’ Democracy index and how developed its E-government is in the United Nations E-Government Survey Index two years forward. Each of the graphs, constructed in r-commander, has a line of least squares to represent the average relationship each year between how democratic a state was and how developed its e-government was two years later.
As we can see from these four graphs, with the exception of some outliers, an overall positive relationship exists between how democratic a state is one year and how well developed its e-government will be in two years. This data allows us to predict if this linear relationship will hold up when controlled for levels of GDP per capita. The data suggests that e-government is contingent on how much capital a state has at its disposal. Consequently, in this study it makes sense to use this as the controlling variable in a series of regression tables that will take place on the same biennial basis. For this thesis, we will use GDP per capita data from the World Bank data repository. The World Bank calculates GDP per capita by adding all resident producers in the economy plus adding product taxes and subtracting subsidies not included in the value of products. It then divides this amount by the midyear population of the respective country. This amount is supposed to be representative of the amount of dollars each person would have if all production was divided equally among the people living in a country. (World Bank, 2017)
Regression Tables with GDP per Capita as a Control

Regression Table for 2010 E-Government vs. 2008 Democracy and GDP per capita

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>P-Value</th>
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<tbody>
<tr>
<td>Intercept</td>
<td>0.181604</td>
<td>0.02373</td>
<td>0.00</td>
</tr>
<tr>
<td>DI 2008</td>
<td>0.036405</td>
<td>0.004478</td>
<td>0.00</td>
</tr>
<tr>
<td>GDP 2008 (M)</td>
<td>4.258811</td>
<td>0.490941</td>
<td>0.00</td>
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Regression Table for 2012 E-Government vs. 2010 Democracy and GDP per capita

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<th>Coefficient</th>
<th>Standard Error</th>
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<tbody>
<tr>
<td>Intercept</td>
<td>0.186573</td>
<td>0.029747</td>
<td>0.00</td>
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<tr>
<td>DI 2010</td>
<td>0.043443</td>
<td>0.005729</td>
<td>0.00</td>
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<tr>
<td>GDP 2010 (M)</td>
<td>5.529072</td>
<td>0.680334</td>
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Regression Table for 2014 E-Government vs. 2012 Democracy and GDP per capita

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<th>Coefficient</th>
<th>Standard Error</th>
<th>P-Value</th>
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<tbody>
<tr>
<td>Intercept</td>
<td>0.20357</td>
<td>0.03229</td>
<td>0.00</td>
</tr>
<tr>
<td>DI 2012</td>
<td>0.03637</td>
<td>0.00607</td>
<td>0.00</td>
</tr>
<tr>
<td>GDP 2012 (M)</td>
<td>5.77788</td>
<td>0.64204</td>
<td>0.00</td>
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Regression Table for 2016 E-Government vs. 2014 Democracy and GDP per capita

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<th></th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>P-Value</th>
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<tbody>
<tr>
<td>Intercept</td>
<td>0.213621</td>
<td>0.031323</td>
<td>0.00</td>
</tr>
<tr>
<td>DI 2014</td>
<td>0.040735</td>
<td>0.005884</td>
<td>0.00</td>
</tr>
<tr>
<td>GDP 2014 (M)</td>
<td>4.971173</td>
<td>0.601044</td>
<td>0.00</td>
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</tbody>
</table>


The P-value is the probability that a statistical inference is caused by pure chance. A P-value is compared to a significance level that represents the maximum amount of risk that one can accept that an inference is wrong. The standard for statistical evidence is 0.05. As evidenced by the very low P-values in each of the regression tables where Democracy and E-government intersect, we are extremely confident that it is approximately a 0.04-unit increase for every 1 unit that the Democracy index goes up. As the regression table takes into account the average GDP per capita (mean) of all 163 countries that this thesis concerns we can see that an independent effect exists here. We can safely reject the null hypothesis and thus accept the alternative hypothesis.
Conclusion

To conclude, a positive correlation exists between the level of democracy within a regime and how much it develops its e-government. For every additional 1 unit of democracy we see a rise of between 0.03 to 0.04 in e-government development in the follow two-year interval. If corrected for the fact that the e-government index operates on a 0 to 1 scale and the democracy index operates on a 1-10 scale, this becomes a positive relationship of 0.4 units more of e-government development in two years for every additional unit in the democracy index. This begs the question: Why would democracies, regardless of GDP level, be the countries to most heavily develop their e-government?

First, e-government is expensive. While correcting for GDP per capita showed that the more democratic a regime is regardless of capital, it will develop e-government at a higher level on average than a less democratic state. Clearly, the costs to develop the infrastructure and systems to operate it remain a large concern. In 2009 the United States alone spent $5.8 billion dollars on e-government. Most states have limited capital and competing interests. For a state to decide to invest in e-government and the necessary infrastructure for e-government to operate, it needs to be a solid investment. (Belanger & Carter, 2009) E-government has to serve the country’s interests. If we review the previously mentioned four key activities that E-government is used for: communicating information about government services, creating a forum for discussion between a citizen and their government, conducting transactions, and encouraging participation, we see a common theme of states’ using the internet to involve citizens more in the process of governance. While critics say that, theoretically, a more authoritarian regime could decide to build up its e-government as a means of diverting public sentiments toward a forum
that has no significance, the up-front costs make this a far too expensive option for this tactic. (Hamdan & Nagi, 2009) (Belanger & Carter, 2009)

How effective is e-government as a tool for encouraging citizenry to think? If a state creates a forum to discuss and address concerns, then citizens will start to identify issues they face in their daily lives and push government to address them. (Lim, Cyr, Pan, Tan, & Xiao, 2010) Speaking about an issue will only go so far; ignoring an issue that the populace cares about will only highlight the lack of communication, which will drive social instability. (Economy, 2014) Such an issue was seen in China during the early 2000s when the Communist Party of China increased funding for e-government as a means to add stability, order and to centralize power in order to govern more effectively a country so large. (Kluver, 2005) To the Communist Party, this would quell concerns abroad by creating a public forum of discussion that the party could point to when foreign governments and NGOs called them authoritarian. Moreover, expanded internet infrastructure would allow them to enhance their surveillance programs in order to root out opposition. As of 2005 China had spent $121 billion on developing e-government to fulfill these roles with the annual budget increasing by 40 percent each year. (Kluver, 2005) Once the forums were up, the Chinese citizenry began to discuss issues that concerned them, such as corruption, infrastructure problems, and other quality-of-life concerns. While the government focused on using the internet infrastructure to locate dissidents and maintain appearances, it did not focus on the citizen-driven concerns which lead to public instability and concern. (Kluver, 2005) Chinese Communist leaders such as Xi Jinping have tried to deal with this through unilateral swift action such as imprisonment of corrupt officials and infrastructure development programs, but often times in a show of power weakens the
government’s overall position by making one figurehead the solution to all problems. Final authority makes a figurehead liable to absolute blame. (Economy, 2014) (Bloch, 1986)

Here we have an example of a country that falls under the “authoritarian regime” classification at 3.14 in 2016 and has chosen to develop its e-government to a 0.60. Such development places China high on the e-government spectrum, above other authoritarian regimes that hover on average in the 0.25 to 0.35 range. To the Communist Party, e-government seems to support its goals of fostering order and stability and rooting out opposition. However, given nature of a forum space for decentralized communication, it took a program of stability and created instability. We will see big changes in the Chinese regime system as it moves to deal with this. (Economy, 2014)

A more democratic regime will not be hampered by e-government in this way; it will benefit from it. Democracies seek to create a political culture of discussion and involvement, respecting basic freedoms and liberties. The independent media derives its information from a variety of sources. This will make for many viewpoints across the spectrum in a democratic state. E-government, while having high upfront costs, is much cheaper to operate once in place and facilitates the communication of all these viewpoints to representatives. (Reitz, 2006) While there exist such obstacles as the digital divide, democracies seek to use e-government as one option for communication, while retaining other options for the elderly, geographically isolated, or technologically illiterate, such as paper forms and traditional landlines. Democracies have gained experience using agencies that are made to take public opinion data to shape polices. This process is referred to as “notice and comment.” (Reitz, 2006) In studying the intersection of democracy and e-government, we find that generally countries that rely on allowing citizen input in government are most likely to continue developing new ways of listening to citizens. (Reitz,
2006) Democracies invest in developing e-government because they depend on that citizen-government bond and gain the most from a reliable, multiuse infrastructure for communication and transactions.

**Further Analysis**

To continue studying the relationship between the level of democracy in a state and the extent to which a government develops e-government further, I would explore for a causal relationship between democracy and e-government. I would add more control variables to the regression table, including four that need more attention. The first variable that I would like to add in further research would be literacy. The bulk of electronic content is in written form, and if a large segment of the population remains illiterate it would not be able to use e-government, and the state have no incentive to establish e-government. The second control variable would be population. The population for each country today is exponentially larger than it was in the past. Countries with particularly large populations may turn to e-government regardless of regime type as a cost savings measure for reaching more people. The most populous country in the world, China, has a large index number for e-government compared to its regime type, so population would be an important factor to assess. Third, I would explore the level of information communication technologies per capita. A government may see high distribution of the ICTs as an opportunity to reach people, then push the development of e-government. The fourth controlling variable I would test would be geographic population distribution. I suspect that a more urban country would have a culture of integrating more technology into everyday life than a less urban one, so I would like to test that.

Another aspect I would like to look into in further research would be outliers. Above we saw that China was an outlier as a country with high e-government but low democracy. I would
like to look into countries that have a high democracy score and low e-government to see what factor explains that. Studying what factors keep e-government development low may lead to additional control variables to better test the relationship between how democratic a regime is and how developed its e-government will be.
References


