

E-government and Political Trust: A Cross-national Study for 59 Countries

by

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Defense Date: April 1, 2024

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Thesis submitted in partial fulfillment of the requirements for the degree of  
Master of Arts in the Department of Department of Political Science in The Graduate School of  
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ABSTRACT

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## **Abstract**

My thesis aims to investigate both the direct effect of e-government development levels and its indirect effect on political trust that operates by reducing corruption. By analyzing a nine-year panel dataset for 59 countries, I find that there is no significant relationship between e-government development levels and political trust. Similarly, there is no significant relationship between e-government development levels and corruption. These findings remind us to be cautious about the enthusiasm for e-government advancement projects; and rethink the underlying assumption that the use of ICTs can deliver better governance.

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# 1. Introduction

E-government, or electronic government, refers to the use of ICTs (information and communication technologies) in government operations, including electronic exchanges of public services and information between governmental actors, citizens, and businesses (United Nations 2024a). E-government first emerged in the 1990s, with technologically advanced established democracies being the forerunner of digitalizing the government (Chadwick and May 2003). Since the Millennium, the advancement of e-government has been high on the agenda of international organizations such as the United Nations, the World Bank, and the OECD. The latest monumental event for e-government development is the COVID-19 pandemic, which has underpinned the role of e-government in governance (United Nations 2020). The concrete examples of e-government have evolved from the simple online cataloging and one-way information provision of public agencies' activities to interactive, integrated "one-stop" online public service portals, along with enablers such as e-payment, e-identity, and open data policies (Calista and Melitski 2007; Layne and Lee 2001; Parent et al. 2005; Reddick 2005; Santiso 2022; World Bank 2016). Overall, e-government has become an ever more salient element of contemporary governance. In light of this, I examine the impact of e-government development levels on political trust.

Previous scholarship has documented a link between e-government and political trust (Parent et al. 2005; Tolbert and Mossberger 2006; Welch and Hinnant 2003). However, this line of research is based on single-country contexts whose generalizability is limited. My thesis fills this gap by testing the explanatory power of e-government in accounting for the cross-national variations in political trust, with e-government operationalized by one country's e-government development level. I argue that e-government can enhance political trust both directly and indirectly. Specifically, I propose three hypotheses. First, e-government has a direct positive

effect on political trust, that is, higher levels of e-government development are associated with higher levels of political trust. Second, e-government reduces both petty and grand corruption, that is, higher levels of e-government development are associated with lower levels of corruption. Third, e-government has an indirect, positive effect on political trust that operates by lowering corruption levels. By analyzing a nine-year panel dataset for 59 countries, I find no support for these three hypotheses. The statistical results demonstrate that there is no significant relationship between e-government development levels and political trust. Likewise, there is no significant relationship between e-government development levels and corruption. These findings advance our understanding of the political implications of e-government, by reminding us to exercise prudence in the e-government advancement projects and the underlying assumption that the use of ICTs can deliver better governance.

My thesis is structured as follows. Section 2 synthesizes the literature on the relationship between e-government and political trust. Section 3 puts forward my theories and hypotheses. Section 4 introduces my data, variables, and measurement. Section 5 presents my empirical strategy and results. The final section concludes the findings and suggests a few research agendas.

## **2. The Relationship between E-government and Political Trust**

Political trust is considered a critical governance outcome, which bears direct relevance to the well-functioning of one political system and critical sociopolitical outcomes including fabrics of social lives, political engagement, policy compliance, institutional effectiveness, and regime stability (Dalton 2007; Hetherington 2005; Levi 1988; Norris 1999; 2011; Putnam 2000; Tyler 1990). By reviewing the relevant literature, this section elucidates how e-government can potentially influence political trust. This section is structured as follows. Section 2.1 introduces the concept and correlates of political trust. Section 2.2 synthesizes the general literature on the relationship between e-government and political trust, and analyzes how e-government can enhance political trust directly. Section 2.3 focuses on the literature on the relationship between e-government and corruption, and analyzes how e-government can enhance political trust indirectly that operates by reducing corruption.

### ***2.1 Political Trust and its Correlates***

Before proceeding any further with the question of how e-government can potentially influence political trust, it will be analytically beneficial to clarify the concept of political trust and its correlates. Political trust is citizens' evaluative orientation toward political authorities and institutions (Craig 2021). Political trust measures the extent to which these political entities perform in accordance with citizens' expectations (Hetherington 2008; Miller and Borrelli 1991). In most cases, political trust is used interchangeably with confidence in political institutions (Citrin and Stoker 2018). For this reason, I do not distinguish between these two in my thesis.

Prior studies have identified multiple factors that account for the fluctuations in trust. Regarding this topic, there are two major theories. One is the institutional theory, and the other one is the cultural theory (Mishler and Rose 2001). The institutional theory argues that political

trust is largely performance-based. That is, the “output” of political institutions, say, the government’s performance in promoting economic growth, and controlling inflation, unemployment, and corruption, plays a major role in determining the overall level of political trust, while these “objective” performance can sometimes be filtered by individual citizens’ preferences and predispositions (Anderson and Tverdova 2003; Chanley et al. 2000; Miller and Listhaug 1999; Mishler and Rose 2001; Seligson 2002). On the other hand, the cultural theory contends that cultural norms and standards of legitimacy vary between countries, which can influence people’s attitudes toward government (Inglehart 1997; Shi 2000). This line of research has yielded insights into the determinants of political trust dynamics, especially the within-country variations in response to short- and medium-term contextual factors (Norris 2011). However, existing research has largely neglected two questions: how institutional arrangements (i.e. e-government<sup>1</sup>) may affect political trust, and what factors may account for the different levels of political trust across countries. Among the few studies that indeed use the cross-national comparative approach, they disproportionately focus on democracies (Dalton 2007; Dalton and Welzel 2014; Norris 1999). This makes current explanations for the cross-national variations in political trust not generalizable across a wider range of countries with different socioeconomic and political conditions.

## ***2.2 How Can E-government Enhance Political Trust Directly?***

Before discussing the direct, positive effect of e-government on political trust, it will be analytically beneficial to understand the mechanisms through which political trust is produced.

---

<sup>1</sup> As Porumbescu et al. (2022) point out, e-government itself is a component of “political institutions”, because it involves the delivery of public services and information dissemination concerning political processes and outcomes.

Thomas (1998) identifies three production modes of political trust: characteristic-based trust is associated with individual biological and socioeconomic features, such as gender, race, and family background; process-based trust is derived from utilitarian interactions between citizens and governments in which citizens seek public services from the government; and the institution-based trust arises from political institutions' establishment of professional practice standards and government regulations in which citizens' trust in these institutions is based on the latter's expertise and professionalism. Enhancements in political trust enabled by e-government hold greater relevance to the process- and institution-based production modes. Theoretically, the use of ICTs in government operations can enhance political trust by improving the quality of citizen-government interactions and raising the capabilities of governments. E-government, with its "new public management" ethos of "reinventing" government, has a concern with the use of ICTs to facilitate the information flows between public agencies and citizens, and enhance the effectiveness and efficiency of service delivery (Chadwick and May 2003). Tolbert and Mossberger (2006) further theorize that e-government can increase political trust through two paradigms: the entrepreneurship paradigm refers to ICTs-enabled improvements (i.e. automation and digitalization of administrative processes) in both effectiveness and efficiency of service delivery to government "customers", whereas the participatory paradigm points to ICT-enabled citizen engagement into the administrative processes. Specifically, 24/7 integrated e-services portals and links enhance the accessibility of public services; the interactive citizen-government electronic communication channels foster responsiveness by incorporating citizens' opinions that can be used to provide better services and policies; and electronically-based release of information increases transparency, empowering citizens to better audit governments. Overall, the two paradigms collectively enhance process- and institution-based trust. Empirically, Tolbert and Mossberger (2006) find that the use of e-government in the United States is associated with

citizens' improved perceptions of transparency, effectiveness, accessibility, and responsiveness. In a similar vein, Welch and Hinnant (2003) argue that e-government increases political trust through transparency and interactivity mechanisms. Specifically, the transparency mechanism emphasizes that citizens react positively to the Internet-based information provision that alleviates the asymmetric principle-agent relations between citizens and government, while the interactivity mechanism refers to the government's willingness and readiness to incorporate citizens' feedback into the administrative processes (responsiveness). Empirically, Welch and Hinnant (2003) report that citizens' satisfaction with transparency and interactivity is positively associated with their trust in government.

Overall, studies directly addressing the relationship between e-government and political trust have identified the mechanism through which e-government can enhance political trust. These underlying mechanisms have pinpointed key factors like transparency, effectiveness and efficiency (of service quality), and responsiveness. This line of research has predominantly been conducted by public administration scholars, but their findings echo the performance and procedural justice theories of political trust in political science. That is, confidence in the government is primarily related to citizens' evaluation of the quality of governance, the probity and fairness of political processes and outcomes, and the responsiveness of public officials (Engel 2005; Miller and Listhaug 1999; Norris 2011; Tyler 1990). In this sense, e-government-enabled better public services, easier access to government information (by which the government signals that it invites public scrutiny and operates in the "sunshine"), and smoother communication channels (which facilitate responsiveness) not only improve the government's objective performance instrumental to citizens' satisfaction, but also contribute to citizens' perceptions that the government is legitimately exercising power. Given the established theoretical and empirical

foundations for the relationship between e-government and political trust, I expect that e-government can directly enhance political trust.

### ***2.3 How Can E-government Enhance Political Trust Indirectly Through Reducing Corruption?***

Before describing the process through which the reduction of corruption comes into effect, a clarifying question needs to be answered: why does corruption undermine political trust? The erosive effect of corruption on political trust has been well-established both theoretically and empirically. From a normative perspective, corruption, commonly defined as “the abuse of entrusted power for private gain” (Transparency International 2024), imposes “unjustifiable disenfranchisement” upon citizens when public officials demand extra payments for public services (Warren 2004), undermines democratic principles of openness and equality by rendering public services exclusive rights for a privileged few who are politically connected and wealthy (Anderson and Tverdova 2003; Treisman 2000), and runs counter to the tenets of Weberian bureaucracy that public agencies are supposed to act with impartiality and adherence to rules (Sandholtz and Koetzle 2000). Empirical evidence has added credence to this line of reasoning by reporting a negative association between corruption and political trust (Anderson and Tverdova 2003; Mishler and Rose 2001; Seligson 2002; Villoria et al. 2012). This strand of research has demonstrated that corruption can be a major cause of citizens’ non-confidence in the government. Accordingly, it can be reasonably inferred that distrust can be countered by the reduction of corruption.

How can e-government curb corruption? In theory, the adoption of e-government can mitigate both petty and grand corruption: petty corruption mainly occurs in citizens’ routine interactions with street-level bureaucrats in which small payments are made to obtain or expedite public services, whereas grand corruption often takes the form of collusion between senior

officials and business people in tendering processes of large public procurement projects in which substantial bribes or kickbacks are offered by beneficiary businesses (Basel Institute 2017). For the reduction of petty corruption, e-government can achieve this by reducing the discretionary powers that street-level bureaucrats can exercise and limiting direct contact between citizens and street-level bureaucrats (Kalesnikaite et al. 2022). Street-level bureaucrats take the role of applying policies to specific situations, and effectively determine numerous administrative outcomes (Bovens and Zouridis 2002). Street-level bureaucrats possess considerable discretionary powers, such as deciding whether to issue licenses or determining the amount of fines for illegal parking. This not only gives street-level bureaucrats a monopoly over citizens, but also creates opportunities for rent-seeking, as bureaucrats may ask for bribes from citizens in exchange for expedited or preferential behavior (Klitgaard 1988; Roseth et al. 2018). For public services that can be adequately provided online, e-government can replace carbon-based bureaucracies with computerized online service portals guided by predetermined algorithms (Reddick 2005; Kalesnikaite et al. 2022). Through the automation of service delivery, e-government not only significantly reduces or eliminates the need for physical presence and discretionary decision-making by street-level bureaucrats, but also leaves digital footprints of administrative processes and facilitates citizen feedback mechanisms that discourage rent-seeking behavior and make bureaucrats more accountable (Garcia-Murillo 2013; Santiso 2022; World Bank 2016). Consistent with these theoretical expectations, empirical studies uncover that e-government has prevented petty corruption in Latin America and the Caribbean for public services in which face-to-face interactions between citizens and street-level bureaucrats can be avoided (Kalesnikaite et al. 2022), the electronic filing and payment of taxes (e-filing) in Kenya has reduced perceived corruption of tax officials (Ndung'u 2017), and customs clearance portals (e-customs) in Colombia has resulted in a decrease in related corruption cases (Laajaj et al. 2019).

Ordinary citizens at the grassroots bear the brunt of abuse of power by street-level bureaucrats. Accordingly, e-government's ability to curtail petty corruption should aid in building public trust.

For the reduction of grand corruption, e-government can achieve this by increasing transparency. An important form of grand corruption occurs when senior public officials manipulate public procurement processes either to siphon off a share of the gains into their own pockets, or to divert resources into their cronies in exchange for loyalty (Dávid-Barrett and Fazekas 2020). Given this, opaque government procurement procedures and tenders only aggravate the propensity for collusion and corruption (Ohashi 2009). These clientelist practices within government contracting not only breed grand corruption but also erode public trust (Hicken 2011). The principal-agent framework offers one theoretical perspective to elucidate the “purifying” effect of transparency. It argues that when the agent (the government) possesses an informational edge over the principal (citizens), the agent is likely to exploit the asymmetries of information for self-dealing corruption (Klitgaard 1988; Lio et al. 2010; Murillo 2015). In this sense, the adoption of e-procurement featuring online release of information on government procurement procedures can promote transparency by expanding knowledge of what the government is doing and inviting public oversight. Here, the logic is straightforward: when there is a higher possibility of being caught, corruption decreases (Prat 2005; Bauhr et al. 2019). However, empirical studies have produced mixed results. While Kenny and Crisman (2016) and Bauhr et al. (2019) find that publicity of government procurement has reduced corruption substantially, Kochanova et al. (2020) observe a small or non-significant effect. This inconsistency may be partly driven by the considerable discretion retained by senior public officials in determining bidder qualifications, and partly by the fact that preexisting socioeconomic and institutional factors specific to each country can condition the impact of ICT (Kochanova et al. 2020; Santiso 2022; World Bank 2016).

Relatedly, there is cross-national evidence suggesting that e-government development levels are associated with lower perceived levels of corruption. For example, Andersen (2009) finds that e-government has reduced perceived levels of corruption in 149 countries between 1996 and 2006; however, this effect is statistically significant only in non-OECD countries. In a similar vein, Garcia-Murillo (2013) analyzes a six-year panel dataset (covering 2002–2005 and 2008) for 208 countries and discovers that the presence of government websites has reduced perceptions of corruption. Similar patterns are also reported by Choi (2014) and Zhao and Xu (2015), who use e-government development levels as an independent variable.

Notably, case studies of e-government tools at the micro level also provide evidence of their ability to reduce corruption. For example, the OPEN system in Seoul that makes the administrative procedures of licensing and registration services online, with information on responsible officials and decision timelines, and complaint mechanisms, has curbed corruption (Kim et al. 2009). In India, electronic payment systems have lowered leakages in governmental redistributive transfers by creating clear audit trails and directly channeling money to target recipients that bypass intermediate bureaucratic agencies (Muralidharan et al. 2016). In Rwanda, lack of records of land information created substantial rent-seeking opportunities for land officials and courts in land disputes, who were often bribed to fabricate documentation. However, land management reforms in Rwanda have alleviated land services-related corruption in Rwanda by establishing a publicly accessible digital database for land parcels. The presence of an open, referable land information source has reduced opportunities for manipulation in land disputes (Shiple 2020).

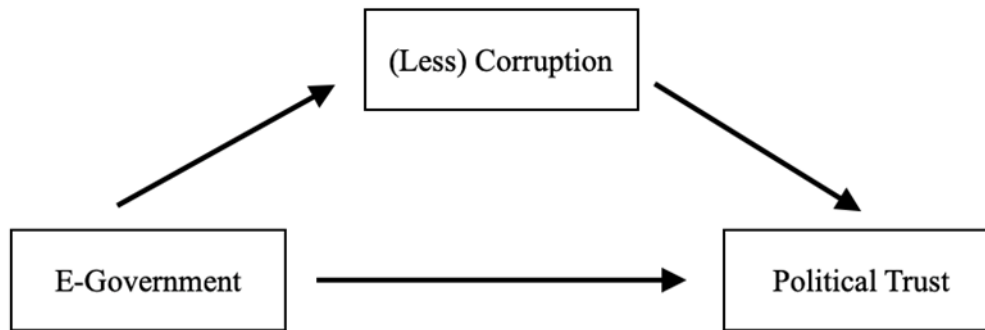
By far, I have sketched the linkage between e-government and political trust with e-government. However, I have not explicitly established how e-government practices, for example, citizens' use of e-government tools for benefit applications, permit requests, fine

payments, and their access to information on public-sector project bidding processes via governmental websites, can have a bearing on citizens' confidence in the political institutions as a whole. In other words, how do citizens' mundane interactions with these "capillaries" of the political system finally aggregate into their evaluations of major political institutions (i.e. the government and the parliament)? Most citizens are rarely involved in the internal workings of the political system. Rather, they engage in the process indirectly through their day-to-day interactions with front-line bureaucrats and bureaucracies. From the quality of these interactions, citizens can draw inferences about the overall competence and integrity of the political system. Notably, previous studies document that evaluations of individual public officials can spill over to other political objects (i.e. politicians, political parties, and political institutions) at large (Bowler and Karp, 2004; Lee 2018; Magalhães 2022; von Sikorsky et al. 2019). Therefore, citizens' everyday encounters with grassroots vehicles of the political system matter during which citizens develop positive or negative feelings not only toward the specific public officials and bureaucracies involved but toward the entire political system more generally. For this reason, everyday e-government practices should shape public trust.

In summary, the theoretical foundations for the relationship between e-government and corruption control are well-established. There is also empirical evidence of e-government's potential to reduce both petty and grand corruption, with some important contextual nuances pointed out. Therefore, I expect that e-government can indirectly enhance political trust through reducing corruption. The rationale for this theoretical prediction is that corruption is a cause for political distrust, and curtailing corruption should accordingly increase political trust.

### 3. Research Questions and Hypotheses

As previously discussed, there is a lack of studies that examine cross-national variations in political trust. My thesis fills this gap by investigating both the direct effect of e-government development levels and its indirect effect on political trust that operates by reducing corruption. In the context of my thesis, it should be noted that e-government is not a dummy variable indicative of whether e-government is present or not. All countries in my dataset have some form of e-government, as evidenced by the non-zero E-government Development Indexes by the United Nations (discussed further in the next section). By e-government, I refer to levels of e-government development, in which the capacity of e-government varies between countries. For example, countries with higher e-government development levels usually have more public services delivered online, more convenient communication channels between citizens and the government, and better-designed and -implemented e-government tools (Basel Institute 2017). With this in mind, three hypotheses are developed regarding the effect of e-government on political trust.



**Figure 1: The Relationship between E-government Development Levels and Political Trust**

*Hypothesis 1: E-government has a direct, positive effect on political trust, that is, higher levels of e-government development are associated with higher levels of political trust.*

*Hypothesis 2: E-government reduces both petty and grand corruption, that is, higher levels of e-government development are associated with lower levels of corruption.*

*Hypothesis 3: E-government has an indirect, positive effect on political trust that operates by lowering corruption levels.*

## **4. Data, Variables, and Measures**

To empirically test the hypotheses of interest, I analyze a nine-year panel dataset for 59 countries. Most of my data comes from online repositories like the World Bank’s World Development Indicators (WDI) and the World Values Survey (WVS) databases.

### ***4.1 Independent Variable: E-government Development Levels***

My primary explanatory variable of interest is e-government development levels, which rely on the E-Government Development Index (EGDI) compiled by the United Nations. The EDGI is composed of three sub-indices: online service index (OSI), telecommunication index (TII), and human capital index (HCI), with each capturing the scope and quality of online services, the status of the development of telecommunication infrastructure, and inherent human capital, respectively (United Nations 2024b). The EGDI values range from 0 to 1, the bigger the number, the higher the e-government development levels. Among all country-year observations, Netherlands has the highest average EGDI score of 0.92545, with South Korea (0.8841) and Singapore (0.8812) taking second and third places, respectively, and down to Haiti (0.1931) and Nigeria (0.2676).

### ***4.2 Dependent Variable: Political Trust***

My dependent variable of interest is political trust, which is drawn upon the “confidence in the government” and “confidence in parliament” variables in the World Values Survey database. In the World Values Survey, respondents are asked about their levels of confidence in the government and parliament. For each dimension, the valid response items are: (1) a great deal; (2) quite a lot; (3) not very much; and (4) none at all, with each option taking integer values 1, 2, 3, and 4, respectively. I construct indexes of political trust in the government or parliament for each country-year observation in the sample by multiplying the percentage of each response

option and its corresponding value, while dismissing the response items including “don’t know” and “no answer” (either not asked by interviewers or missing for other reasons). Then, I construct political trust in the government and parliament into a single additive index by summing the two indexes up and then dividing by 2 (Dalton and Shin 2014). The resulting index of political trust ranges from 1 to 4, the smaller the number, the greater trust in the government. Across all observation years, Tajikistan registers the greatest average political trust in the government (1.541), followed by two communist one-party states China (1.576) and Vietnam (1.670), whereas governments of Peru and Haiti are least trusted by their citizens taking values of 3.423 and 3.271, respectively.

### ***4.3 Mediating Variable: Corruption***

My mediating variable of interest is corruption, which comes from the Control of Corruption (COC) index compiled by the World Bank. The COC index “captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as ‘capture’ of the state by elites and private interests” (Kaufman et al. 2009, 6). The COC index scores between -2.5 and 2.5, the bigger the number, the cleaner the government. Another candidate for measure of corruption is the Corruption Perceptions Index (CPI) compiled by Transparency International, which is also commonly used in academic research. I do not use the CPI Index because it does not capture citizens’ perceptions of corruption, whose scores are primarily based on subjective judgments of experts and businesspeople (Transparency International 2024). This methodology makes the CPI Index more adept at capturing grand corruption rather than petty corruption (Kalesnikaite et al. 2022). It is important to note that my theoretical expectation is that e-government can reduce both petty

and grand corruption. Therefore, the COC index reflecting both petty and grand corruption is a more viable choice.

#### ***4.4 Control Variables***

I control for several variables that are identified by previous scholarship as factors influencing political trust or corruption. These control variables include economic development (logged GDP per capita), economic performance (inflation, annual GDP growth, and unemployment), trade openness (the share of trade in the GDP), fuel exports (the share of fuel exports in the merchandise exports), regulatory quality, and political freedom (Andersen 2009; Citrin and Stoker 2018; Treisman 2000; 2007;). The last two political factors are measured by the World Bank's Regulatory Quality Index (GEI), and Voice and Accountability Index (VAI), respectively, with each capturing the government's ability to formulate and implement policies conducive to private sector development, and citizens' ability to select their government and freedom of speech and media (Kaufman et al. 2009). For these two factors, they all have scores ranging from -2.5 and 2.5, the higher the number, the better the outcome.

#### ***4.5 Instrumental Variable: The Proportion of Population Living in Urban Areas***

Apart from the above control variables, I also introduce an instrumental variable — the share of the urban population in the total population — to correct the potential endogeneity problem. Detailed discussions on this instrument's validity can be found in the next section.

Descriptive information on the key variables in my analysis is presented in Table 1 and 2: Table 1 presents the description and sources of the key variables, while Table 2 reports the basic statistics for the variables in the models, including mean, median, standard deviation, maximum, and minimum.

**Table 1: The Description and Sources of the Key Variables**

Variable Names	Sources and Years Collected	Description	Scale
E-government Development Index (EGDI)	United Nations (2004 - 2022)	the e-government development level within one country	[0, 1]: the bigger the number, the higher the e-government development level
Political Trust (Confidence in the Government)	The World Values Survey (2004 - 2022)	the aggregate confidence level in the government within one country	[1, 4]: the smaller the number, the greater trust in the government
Corruption of Corruption	World Bank (2004 - 2022)	the aggregate confidence level in the government within one country	[-2.5, 2.5]: the bigger the number, the cleaner the government
Share of Urban Population	World Bank (2004 - 2022)	the share of population living in urban areas	[0, 1]: the bigger the number, the higher share of urban population
Economic Development	World Bank (2004 - 2022)	the GDP per capita (US dollars)	the bigger the number, the higher economic development level
Trade Openness (Trade Percent of GDP)	World Bank (2004 - 2022)	the share of trade in the GDP	the bigger the number, the higher economic development level

Fuel Export (Percent of Merchandise Exports)	World Bank (2004 - 2022)	the share of fuel exports in the merchandise exports	the bigger the number, the higher level of export concentration on fuel
Regulatory Quality	World Bank (2004 - 2022)	the government's ability to formulate and implement policies conducive to private sector development	the bigger the number, the higher regulatory quality
Political Freedom (Voice and Accountability)	World Bank (2004 - 2022)	citizens' ability to select their government and freedom of speech and media	the bigger the number, the higher political freedom level

**Table 2: The Summary Statistics for the Key Variables**

Variable Names	Mean	Median	Standard Deviation	Minimum	Maximum
E-government Development Index (EGDI)	0.6133765	0.6441	0.1929622	0.1931	0.9384
Political Trust (Confidence in the Government)	2.580341	2.621	0.4007094	1.541	3.423
Corruption of Corruption	0.03587285	0.3399706	1.103902	-1.565298	2.352138
Share of Urban Population	0.6651782	0.71974	0.205907	0.16943	1
Economic Development	15364.89	8702.1	17272.13	706.2	68078

Trade Openness (Trade Percent of GDP)	0.7663529	0.62	0.562149	0.24	3.69
Fuel Export (Percent of Merchandise Exports)	0.206801	0.07752233	0.2876495	0	0.9998648
Regulatory Quality	0.2077281	0.09850329	1.022935	-2.097787	2.205299
Political Freedom (Voice and Accountability)	0.03886782	0.08929265	0.9570484	-1.778478	1.687097

## 5. Empirical Strategy and Results

In this section, I discuss my empirical strategy and the results. Subsection 5.1 presents the analyses conducted without employing the instrumental variable, while Subsection 5.2 presents the analyses conducted employing the instrumental variable.

### *5.1 Analyses without Employing the Instrumental Variable*

To test “Hypothesis 1: E-government has a direct, positive effect on political trust, that is, higher levels of e-government development are associated with higher levels of political trust”, I perform two-way fixed (2FE) regressions to account for both unobserved country-specific and year-specific factors. Table 3 summarizes the regression results with political trust being regressed on e-government development levels: the left column presents the bivariate regression results, whereas the right column presents the multivariate regression results with control variables for political trust. The coefficients for e-government development levels are not statistically significant at any reasonable levels in both models. Therefore, no evidence supports Hypothesis 1.

To test “Hypothesis 2: E-government reduces both petty and grand corruption, that is, higher levels of e-government development are associated with lower levels of corruption”, I perform two-way fixed (2FE) regressions to account for both unobserved country-specific and year-specific factors. Table 4 summarizes the regression results with corruption being regressed on e-government development levels: the left column presents the bivariate regression results, whereas the right column presents the multivariate regression results with control variables for corruption.

In the bivariate model, the p-value for e-government development is less than 0.1, which indicates that the coefficient for e-government development levels is only statistically significant

at the 90% confidence level, rather than the conventionally accepted 95% confidence level. After controlling for correlates of corruption, the coefficient for e-government development levels becomes statistically insignificant at any reasonable levels. Therefore, I can conclude that the estimates are mostly insignificant, and there is no sufficient support for Hypothesis 2.

**Table 3: The Direct Effect of E-government Development Levels on Political Trust**

	Dependent variable:	
	Political Trust	
	(1)	(2)
E-government Development Levels	-0.082 (1.100)	-0.214 (1.257)
GDP Per Capita (Logged)		-0.041 (0.322)
Annual Percent of GDP Growth		-1.722 (2.385)
Inflation		-0.006 (0.097)
Unemployment		-3.105 (4.092)
Observations	85	85
R2	0.0003	0.075
Adjusted R2	-3.940	-4.974
F Statistic	0.006 (df = 1; 17)	0.212 (df = 5; 13)

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

**Table 4: The Effect of E-government Development Levels on Corruption**

	Corruption	
	(1)	(2)
E-government Development Levels	-2.188* (1.083)	-1.655 (1.249)
GDP Per Capita (Logged)		0.212 (0.320)
Trade Openness		0.053 (0.610)
Regulatory Quality		0.104 (0.527)
Fuel Export		-0.086 (0.784)
Political Freedom		0.494 (0.287)
Observations	85	85
R2	0.194	0.477
Adjusted R2	-2.984	-2.663
F Statistic	4.084* (df = 1; 17)	1.822 (df = 6; 12)
Note:	*p<0.1; **p<0.05; ***p<0.01	

To test “Hypothesis 3: E-government has an indirect, positive effect on political trust that operates by lowering corruption levels”, I perform the mediation analysis to test whether the effect of e-government development levels on political trust operates through reducing corruption. For mediation to hold in the first place, the dependent variable “political trust” should not cause the mediator variable “corruption”. Table 5 summarizes the regression results with corruption being regressed on political trust: the left column presents the bivariate regression results, whereas the right column presents the multivariate regression with additional controls.

The coefficients on e-government development levels are not statistically significant at any reasonable levels in both models.

**Table 5: The Effect of Political Trust on Corruption**

	Corruption	
	(1)	(2)
Political Trust	-0.383 (0.242)	-0.366 (0.217)
GDP Per Capita (Logged)		0.179 (0.307)
Trade Openness		-0.112 (0.576)
Regulatory Quality		0.437 (0.437)
Fuel Export		-0.492 (0.720)
Political Freedom		0.449 (0.272)
Observations	85	85
R2	0.129	0.515
Adjusted R2	-3.306	-2.393
F Statistic	2.508 (df = 1; 17)	2.126 (df = 6; 12)

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Having excluded the possibility that the dependent variable “political trust” causes the mediator variable “corruption”, I proceed to perform the mediation test through three sets of regression models. According to Baron and Kenny (1986), three conditions must be satisfied to support meditation. First, there is a total effect of the

independent variable on the dependent variable: the independent variable should significantly affect the dependent variable. Second, the independent variable should significantly affect the mediating variable. Third, the mediating variable should significantly influence the dependent variable. In my case, these three conditions can be reframed as follows: first, e-government development levels should significantly influence political trust; second, e-government development levels should significantly influence corruption; and third, corruption should significantly influence political trust, controlling for e-government development levels.

Dependent variable:	
<b>Table 6: The Effect of Corruption on Political Trust, Controlling for E-government Development Levels</b>	
Corruption	-0.318 (0.241)
E-government Development Levels	-0.778 (1.199)
Observations	85
R2	0.098
Adjusted R2	-3.733
F Statistic	0.874 (df = 2; 16)
Note:	*p<0.1; **p<0.05; ***p<0.01

For the first condition, Table 3 has proved that there is no relationship between e-government development levels and political trust. For the second condition, Table 4 has demonstrated that there is no significant relationship between e-government development

levels and corruption. For the third condition, Table 6 summarizes the regression results with political trust being regressed on corruption, controlling for e-government development levels. The coefficient on corruption is not statistically significant, which suggests that there is no relationship between corruption and political trust, controlling for e-government development levels. For the hypothetical mediating effect to exist, all of the three conditions must be met simultaneously. After being subject to regression analyses, none of the conditions are met. Therefore, I can conclude that there is no evidence supportive of Hypotheses 3.

## ***5.2 Analyses Employing the Instrumental Variable***

By far, I find no support for the hypothetical relationship among e-government development levels, corruption, and political trust. Still, I employ an instrumental variable (IV) — the proportion of the population living in urban areas — to address potential endogeneity. To be a valid IV, the share of the urban population needs to satisfy the following requirements: it should affect e-government; it should have no partial effect on political trust or corruption, after controlling for e-government and other omitted variables; and, it should be uncorrelated with any other unobserved factors affecting political trust or corruption (Wooldridge 2021). First, the rationale for the share of urban population instrument is that the costs of diffusing ICTs usually decrease with a higher urban density in which complementary technological infrastructure and literacy are well-endowed (Andersen 2009) — the relevance condition. Second, to meet the exclusion restriction condition, the share of the urban population only affects political trust or corruption through its effect on e-government. The exclusion restriction condition

is empirically unverifiable, and has to be maintained. However, the likelihood that the share of the urban population can have a direct effect on the decade-long variations in political trust is reasonably low. Although there is preliminary evidence of the urban-rural differences in political trust in European countries, these differences are also explained by demographics, individual economic conditions, socioeconomic values, and perceptions of public service quality (Mitsch et al. 2021). In light of this, I have reason to believe that the exclusion restriction is not violated. Table 7 summarizes the first-stage regression results with e-government development levels being regressed on the proportion of the urban population. The coefficient on urban population share is statistically significant at the 95% confidence level. However, the F-statistic of the urban population share is less than 10, indicative of weakness<sup>1</sup>. As evidenced by Tables 8 and 9, the estimates of the effects of e-government development levels are larger in magnitude than those of Tables 3 and 4 which do not include the IV, indicative of an amplification of bias in coefficient estimates induced by the weak instrument.

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<sup>1</sup> I have considered an alternative instrument Internet bandwidth. However, the missing data problem is so severe that I have to drop this option.

**Table 7: The Effect of Corruption on Political Trust, Controlling for E-government Development Levels**

Dependent variable:	
E-government Development Levels	
Urban Population Share	1.261** (0.562)
Observations	85
R2	0.229
Adjusted R2	-2.812
F Statistic	5.036** (df = 1; 17)
Note:	*p<0.1; **p<0.05; ***p<0.01

To test Hypothesis 1 and 2, I run the same specifications as Tables 3 and 4, but using the IV estimates. Table 8 summarizes the second-stage regression results with political trust being regressed on the e-government development levels predicted in the first stage, whereas Table 9 summarizes the second-stage regression results with corruption being regressed on the e-government development levels predicted in the first stage. The qualitative explanation remains the same as that of Tables 3 and 4: there is no relationship between e-government development levels and political trust, as well as e-government development levels and corruption.

To test Hypothesis 3, I run the same specifications as Table 6, but using IV estimates. Table 10 summarizes the second regression results with political trust being regressed on corruption, controlling for e-government development levels predicted in the first stage. The qualitative explanation remains the same as that of Table 6: the

coefficient on corruption is not statistically significant, which suggests that there is no relationship between corruption and political trust, controlling for e-government development levels predicted in the first stage. Therefore, there is no evidence supportive of the hypothetical mediation. Whether employing the IV or not, I cannot find that there is significant relationship between e-government development levels and political trust. Similar results hold true for the relationship between e-government development levels and corruption. Therefore, I can conclude that based on my dataset, Hypothesis 1, 2, and 3 have been disconfirmed.

**Table 8: The Effect of E-government Development Levels on Political Trust Using IV Estimates**

	Political Trust	
	(1)	(2)
Predicted E-government Development Levels	1.081 (2.286)	2.518 (2.848)
GDP Per Capita (Logged)		0.071 (0.324)
Annual Percent of GDP Growth		-1.835 (2.316)
Inflation		0.009 (0.095)
Unemployment		-3.518 (3.965)
Observations	85	85
R2	0.013	0.126
Adjusted R2	-3.877	-4.648
F Statistic	0.224 (df = 1; 17)	0.375 (df = 5; 13)
Note:	*p<0.1; **p<0.05; ***p<0.01	

**Table 9: The Effect of E-government Development Levels on Corruption Using IV Estimates**

	Dependent variable:	
	Corruption	
	(1)	(2)
Predicted E-government Development Levels	-3.520 (2.374)	-1.522 (3.730)
GDP Per Capita (Logged)		0.160 (0.345)
Trade Openness		-0.291 (0.786)
Regulatory Quality		0.322 (0.588)
Fuel Export		-0.414 (0.794)
Political Freedom		0.432 (0.301)
Observations	85	85
R2	0.115	0.408
Adjusted R2	-3.375	-3.142
F Statistic	2.199 (df = 1; 17)	1.380 (df = 6; 12)

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

**Table 10: The Effect of Corruption on Political Trust, Controlling for E-government Development Levels**

Dependent variable:	
Political Trust	
Corruption	-0.242 (0.233)
Predicted E-government Development Levels	0.229 (2.423)
Observations	85
R2	0.075
Adjusted R2	-3.855
F Statistic	0.651 (df = 2; 16)

Note: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

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## 6. Conclusion

My thesis aims to fill the gap in the existing literature on factors that account for cross-national variations in political trust by testing both the direct effect of e-government development levels on political trust and the indirect effect of e-government development levels on political trust that operates through reducing corruption. By analyzing a nine-year panel dataset for 59 countries, I find that there is no significant relationship between e-government development levels and political trust, as well as e-government development levels and corruption. I acknowledge that my sample size is relatively small with 85 country-year observations, and no strong claims should be made on the generalizability of the results drawn. However, my sample is reasonably representative in terms of geographical distribution, development levels, regime types, and political cultures. The findings of my thesis should remind us to exercise caution when evaluating ICTs-enabled political changes, especially given that many governance practitioners have placed high expectations of e-government's potential to enhance public service quality, reduce corruption, and foster trust between governments and citizens. This "technological infatuation" has fueled a "big bang" advancement of public sector ICT projects, with a belief in technology's capacity to promote good governance (Gauld and Goldfinch 2006). International organizations like the United Nations, the World Bank, and the OECD have been providing targeted funding for ICT projects and establishing specialized working groups to offer technical and investment advice for their roll-outs. However, even the World Bank has admitted that many of these projects fail to meet expectations due to a neglect of accounting for local contexts, particularly preexisting state capacity, regime characteristics, and patron-client relations (Fukuyama, 2015; World Bank, 2016). Ultimately, "e-government" is not only about "e", but also about "government": changes in governance outcomes resulting from e-government initiatives are

typically institutionally enabled (Lips, 2008). In the case of my thesis, the statistical non-significance of the e-government development levels coefficient can be attributed to three reasons. First, the relatively small sample size of my thesis may hamper the regression analyses' ability to detect the potentially statistically significant estimate. Second, regarding political trust, other factors unidentified in my thesis play a more significant role in determining political trust. Third, regarding corruption, suppose that e-government can indeed curb corruption within its reach, however, there is a considerable amount of public services and political activities occurring outside the reach of e-government, which, by nature, cannot be fully digitalized or requires substantial discretion from individual bureaucrats. For these activities, preexisting formal and informal political institutions (as previously noted) may be of more importance in determining levels of corruption.

On the subject of e-government's impact on political trust or corruption, two issues are worthwhile for future research to consider. First, future research can increase the number of country-year observations and data granularity to test the explanatory power of e-government development levels. Second, given that there is a theoretical foundation on the positive impact of e-government on both political trust and corruption. Further research can explore what institutional configurations may facilitate or hamper the e-government to deliver presumably positive outcomes.

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