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Evidence in Action: Impact of Statistical Capacity, Data Uptake, and Institutional Factors in Policymaking across the Globe.

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ABSTRACT

This research examines the impact of evidence on policymaking through an investigation of the effects of statistical capacity, policymakers' willingness, and political institutions in a cross-country context. It emphasizes the importance of statistical infrastructure, policymakers' capacity, and effective linkages in the research-policy nexus. It looks at the willingness of policymakers more deeply, by exploring the assumptions of its significance and the complex interaction with political structures. The study finds the importance of long-term investment in statistical capacity and institutional reform, as well as highlighting the importance of further research into the relationship between political institutions in policy making. It further emphasizes the time-variant effects of statistical capacity and multiple facets of data utilization by policymakers.

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ABBREVIATIONS

Term	**Abbreviation**
Evidence-based Policymaking	EBP
Listening to Leaders Project	LTL
Varieties of Democracy Database	V-Dem
World Development Indicators	WDI
World Governance Indicators	WGI

INTRODUCTION

In the modern era of multi-faceted and complex global issues, policy responses are increasingly being expected to be founded on evidence and data. Since the advent of Evidence-based Medicine practice after World War II and the focus on the New Public Management approach, there has been a growing expectation of policy decisions be informed through data and statistics. This approach has further expanded since the 2000s in other policy areas such as education, and international development assistance (Baron 2018). While there is an increasing expectation for policies to be grounded in evidence and research, and for investigating them further for informing future policies, however, it is important to recognize that the policymaking process is inherently complex. Even though significant emphasis is given to this approach, there are important gaps that still underline our comprehension of various dynamics that may or may not foster evidence-based policy, especially in a global context.

To this aim, the research that follows examines a central question: What is the impact of evidence on policy making? Literature on the subject has shown significance of the statistical capacity, willingness of policymakers to uptake data and political institutions, as critical to the process. This study revolves around these central factors, with the idea that countries that have a high level of statistical capacity, embodying best practices of production and utilization of evidence, are more effective in evidence-based policymaking. Further, the willingness of policymakers stands as an important factor that fosters the evidence-informed approach. Furthermore, political institutions that are more open, accountable, and democratic foster conditions for effective policymaking that is grounded in evidence. These ideas are explored further through a literature review and empirical analysis.

Within the study, we use the BTI (Bertelsmann Transformation Index), containing comprehensive variables that measure the quality of governance and economic policy

outcomes, as our main variable under investigation. To see the impact of the factors mentioned above, we utilize the data from World Development Index's Statistical Capacity score, the electoral democracy score from Varieties of Democracy Database (V-DEM), data from Listening to Leaders (LTL) project by the AidData Lab, Government effectiveness, GDP per capita, net official development assistance and population from the World Development and Governance databases.

The empirical setting of the research is based on a panel data set of 112 countries over 14 years, from 2006 to 2020. This wide geographical and temporal data allows us to investigate the diverse policy contexts, which enhances the generalizability of the results. Using different econometric regression models, the relationship between various factors is investigated, while controlling for other factors that may have a muddling impact on the overall results.

In an increasingly complicated and interconnected world, with multifaceted policy problems, the aim is understanding the how of evidence in shaping policy making. Apart from the goal of contributing to the existing body of work on evidence-based policy, this research also aims to provide insights to academics, researchers, and policy practitioners alike. The findings, we hope, can guide efforts towards better informed investments in statistical capacity, dissemination of evidence and overall institutional reform, to enable governments to become more responsive to the needs of the citizens. Through bridging the gap between theory and empirical findings, the study aims to further nuance our understanding of the underlying dynamics of evidence-based policymaking through a cross-country analysis that makes the findings more transferable. While it is important to acknowledge the vast degree of factors that may not be captured in the limited scope of this research, given the complex nature of policymaking itself; this study, aims to test it quantitatively and inspire direction of future research.

The paper has the following structure. In the following section, we explore the existing literature on evidence-based policymaking, the inherent contention in its definition, and the role of statistical capacity, data uptake and political institutions in shaping policy decisions. The chapter that follows lays out the methodology, our data, variables, as well as the econometric methods used to analyze the given data. Following that, the next section goes in-depth with our empirical analysis and presents the results. This paper then discusses the findings considering the existing literature and our research question and relevant hypotheses, while also highlighting policy implications and avenues for future research. After which the study acknowledges limitations and potential risk of bias in the results. Finally, we conclude with a reflection on the research question and implications of the study.

LITERATURE REVIEW

This research focuses on the constituents that shape evidence-based policymaking, that is, statistical capacity, policymakers' willingness, the nature of political institutions, and their impact on evidence in policy making. These variables are critical in forming the policymaking and governance landscape, determining the extent to which empirical evidence informs policy decisions. In this literature review, we undertake a comprehensive examination of the academic discourse concerning these dimensions and explore their interrelationships. We begin by clearly defining evidence-based policymaking, its importance, and challenges. Followed by an analysis of the importance of the independent variables. The insights gained from this review will inform our empirical research, which employs cross-country analysis to investigate these dynamics. The objective is to bridge theoretical understanding with empirical evidence through this methodology.

Evidence-Based Policymaking (EBP) is mostly defined in literature as an approach to policy making that utilizes systematic use of scientific data and evidence. EBP emphasizes rigorous research methodologies that facilitate the identification and evaluation of various policy alternatives to enhance the quality and effectiveness of policies. This overarching objective of EBP is centered around the use of the most reliable and pertinent evidence. EBP does not limit just to the use of empirical data alone but also includes a wider range of evidence, such as economic data, attitudinal insights, and behavioural patterns (Cairney 2017; Strydom et al. 2010). It includes various approaches, like the usage of research findings to guide new policies or enhance the efficacy of existing programs, enabling data collection and analysis for research, creating incentives that enable the use of evidence, and so forth. This approach emphasizes using rigorous methods for research findings, data, analytics and evaluation (Urban Institute 2016).

EBP in its essence, is based on two purposes: using existing evidence from various development programs and generating new knowledge for future policy making. Such an approach emphasizes the use of research findings, data, analytics, and evaluation while on the other hand, maintaining a hierarchy by placing "hard" evidence above anecdotal, ideological and any tendency to maintain "status-quo" (Urban Institute, 2016).

This also aligns with the studies of Abhijit Banerjee and Esther Duflo who emphasize the use of a 'bottoms up' approach in EBP, through which a more holistic understanding of different policy problems can be gained. Banerjee and Duflo are the pioneers and strong proponents of the use of Randomized Control Trails (RCTs), which group individuals into "treatment" and "control" groups and employ sophisticated econometric techniques to discern the impact of interventions, suggesting that RCTs are the gold standard for generating evidence that informs policy (Banerjee and Duflo 2011). Within the same context, a study conducted recently provides an in-depth political economy analysis of evidence. It argues that RCTs do not only generate reliable evidence, but also help secure a 'policy legacy' through the use of credible data (Corduneanu Huci, Dorsch, and Maarek 2021).

It is important to keep the complexities of the concept of EBP, hailing from different understandings of 'policy', 'policymaker', 'evidence', and 'scientific evidence'. While 'policy' means any action or inaction taken by a 'policymaker', 'evidence' can range from empirical data to personal experiences. These complexities may lead to oversimplification of the multifaceted relationship between evidence and policy decisions (Cairney 2017). Further exploring this notion, Corduneanu Huci et al. argue that RCTs are more likely to sustain in societies that are more polarized and is augmented by the scale of political competition, emphasizing the criticality of open and democratic political institutions as facilitators of evidence-based policymaking (Corduneanu Huci, Dorsch, and Maarek 2021). This is further

substantiated by research showing that political context, especially strong institutions that are committed to effective policymaking can have a significant and positive impact on the use of evidence (Bédécarrats et al. 2020).

Evidence is generally understood as a body of facts that validates or invalidates any belief or proposition. Donaldson et al. (2009) widen the definition of evidence by inclusion of multiple data sources, mixed methods, and stakeholder perspectives. They also assert that investigating the credibility of evidence is as crucial as collection of the evidence itself, emphasizing the need for transparency in documentation of research, data analysis, and assessment of data quality and relevance (I.Donaldson, A.Christie, and M.Mark 2009; Milner and Eldridge 2016).

This focus on credibility segues into an important tension between the idea of using anecdotal or non-scientific data within the use of policy. As Banerjee and Duflo (2011), the proponents of the RCTs, and additional literature like the principles of EBP published by Urban Institute (2016) strongly advocate the use of scientific data and place it higher than other form of evidence. However, this view is not unanimous as Strydom et al., (2010) and the work by I. Donaldson et al. (2009) further include the use of behavioral and 'anecdotal' evidence for policy decision making. A notable debate surrounding the credibility and definition of evidence was witnessed in 2006, when a symposium was held at the Claremont Graduate University to reconcile the different perspectives on evidence and develop a shared understanding. Its participants sought to determine the best methodologies for generating such evidence, which underscores the important debate on the nature and scope of evidence in policy making (I.Donaldson, A.Christie, and M.Mark 2009). While rigorous methods are emphasized in EBP, the wider policy context is important to consider where many different types of evidence are weighed differently (Cairney 2017). While presenting "hard" quantitative evidence generally

has better chances of being taken up as compared to more experiential evidence, this is highly dependent on the context of the specific policy under discussion (Callen et al. 2021).

In the above context, it is necessary to understand the inclinations and practices of policymakers – the main consumer of evidence. It is important to investigate what the preference for data sources is, their reliance on different types of data, and the openness to utilize such data, all have important implications for EBP in the practical policy decisions. Policymakers, under the constraints of time and resources, may not always have the bandwidth for what is deemed 'scientific evidence'. Therefore, adapting and adhering to different policy contexts beyond the realm of EBP is crucial (Cairney 2017).

To explore the above, the Listening to Leaders' project – a longitudinal study looking at development priorities, challenges, use of data and more by over 5000 policy makers around the world – provides valuable insights. Specifically, the project's database includes a variable 'data uptake' that serves as a proxy for the willingness of policymakers to use available data within the context of our research.

According to published report by this project, a survey was conducted with asking policymakers their preference for sources of data for informing policy. Most leaders, specifically 67%, find domestically produced data from government institutions such as Central Statistical Offices (CSOs) to be more advantageous. This finding is in alignment with the fact that 81% of respondents acknowledge national statistics as the most dependable source of data (Masaki et al. 2017).

A significant observation is that policymakers predominantly rely on government officials and staff for their information requirements. This response was quoted by a majority (87%) of policymakers as their primary source of information. Academic researchers were considered

an important source of information by 70% of the respondents, followed by non-governmental organizations (NGOs) which was mentioned by 68% of the pool. The World Bank and United Nations amongst other international organizations were considered pertinent sources of evidence as illustrated by 57% of the respondents. Furthermore, leaders tend to utilize national level information more frequently than cross-national and subnational information (Masaki et al. 2017). This may be potentially attributed to the relevance and specificity of national data to their context or the ease of access and comprehensibility of such data.

The report in section 2.3 highlights that leaders in low- and middle-income countries gather information from diverse sources. In addition to government, academic, and international organization sources, they also rely on personal networks, particularly when official sources are deemed unreliable or insufficient. Social media platforms have emerged as another significant source of information, aiding leaders in staying updated with current events (Masaki et al. 2017). This diverse nature of information sources, their perceived reliability, and frequency of use can provide insights into how policymakers engage with and utilize data, thereby influencing the effectiveness of evidence-based policy making.

Evidence-based policymaking as the advocates argue, can guide policymaking in the right direction. Data can help policymakers understand the underlying causes of complex problems, and design policies that can specifically address these root causes. EBP can also help policymakers evaluate and decipher which policies are the most effective and efficient. It can help policymakers in choosing the right interventions, establishing realistic and feasible objectives, and allocate resources most efficiently. Additionally, data and evidence can enable policymakers to monitor policy implementation and to make necessary adjustments when required. Through continuous policy learning aided by the use of data, policymakers can improve the effectiveness and efficiency of their policies over time (Bédécarrats et al. 2020).

Nonetheless, as promising of a concept as it is, it is not without its contentions as noted before. Within the field, researchers and academics are broadly categorized into two camps. The first camp argues evidence-based policy is crucial and possible but requires a significant amount of commitment to rigorous methodologies for evaluating policies, while the second camp argues that although such an idea is highly plausible, decision making should be based on the best available evidence, while accepting a broader role of professional expertise to inform policy decisions (Head 2016).

The integration of evidence into policymaking has overly complex dynamics, which is significantly impacted by a multitude of factors such as statistical capacity of countries to produce and disseminate data, political willingness of policymakers to use data, and institutional capacity. This intricate interplay is further shaped by the political systems that are in place, and the degree of openness that they exhibit towards the utilization of evidence. Within this concept, a lack of resources, time, staff, and funding, essentially the statistical capacity, becomes a bottleneck. Moreover, organizational culture and structure of institutions can either facilitate or hinder the use of evidence in policy making, especially if there is a tendency for lack of coordination amongst government agencies (Ogden 2017; Oliver et al. 2014). The lack of statistical capacity has a direct impact on the political willingness to use data, as elaborated further below.

Strydom et. Al (2010) emphasizes the differing world views and accountability structures that exist between researchers and policymakers. Policymakers are more likely to use data if the right incentivizes and accountability structures are in place(Bédécarrats et al. 2020). These differences can create a divide that is further exasperated by communication challenges and the time frames that are required for scientific evidence to be generated and absorbed. Nutley et al.

(2010) on the other hand, draw attention to the disconnect that exists between research, policy, and practice (Nutley et al. 2010; Strydom et al. 2010).

Liverani et al. highlights that the usage of evidence in health policy is closely tied to political systems, with centralized systems often being less receptive to research findings than decentralized systems. Moreover, the authors note financial and corporate interest groups' role in influencing decision makers, further emphasizing the complexity of policy-making and the diversity of stakeholders involved (Liverani, Hawkins, and Parkhurst 2013).

Many authors collectively emphasize the critical role that strong statistical capacity plays within national institutions. Masaki et al. elaborate on the view that policymakers show a clear preference for domestically produced data from government institutions such as Central Statistical Offices, and so, highlighting the importance of accurate, relevant, and accessible data for evidence-based policymaking. Hawkes et al. have further substantiated by arguing for the significance of capacity building within institutions to enable sustained consumption of evidence in policy-making (Hawkes et al. 2016; Masaki et al. 2017; Serajuddin et al. 2015). This is further substantiated by Bédécarrats et al. who mention the lack of reliable and systematic data collection infrastructure as important predicaments to effective use of evidence (Bédécarrats et al. 2020).

A study among civil servants in Pakistan also highlighted the challenges brought forth by the lack of capacity to understand and use data in policy making, it shows how numerical information can be misinterpreted and dependence on experiential tendencies poses a challenge. While acknowledging the importance of the use of evidence, policymakers cited reasons such as lack of capacity to analyze data, time constraints and the lack of incentives as key reasons (Callen et al. 2021). This is also echoed by Bédécarrats et al. (2020) in the context of their research.

Liverani et al. also point out the effect of institutional mechanisms, bureaucratic structures, and regulations, on the use of evidence. The authors suggest that institutional silos and path-dependency can function as a predicament to the assimilation of evidence into complex public policy issues, such as in public health. Additionally, high staff turnover in health departments can undermine the systematic use of evidence for policy or planning (Liverani, Hawkins, and Parkhurst 2013). Additionally, the dissemination of research in a way that can be absorbed by policymakers and is pertinent to the needs of the context, should be considered by researchers for evidence to be more likely picked up, which hints again towards the overall statistical capacity bottlenecks. Furthermore, the political context, public opinion and media coverage, essentially the overall state of political institutions is an important factor in the use of evidence in policy making (Oliver et al. 2014). Civil Servants in Pakistan also emphasized the inertia of status-quo at the top level decision making, which discourages innovation, echoing the importance of open and transparent governance which incentivizes empirical decision-making, the same concept is echoed in the work of Bédécarrats et al. (2020) (Bédécarrats et al. 2020; Callen et al. 2021). The lack of capacity in African parliamentarians for utilizing data has been significantly explored by others, gaps in access to data, lack of skills to appraise and use data, and the broken linkages between researchers and policy makers are important challenges (Khumalo et al. 2022).

The Institutional Assessment and Development (IAD) framework in this instance gives us a holistic understanding of institutional contexts, agents, and the interplay between these. It aligns with the understanding of institutional and political set ups' complexity as highlighted by several authors such as Liverani et al. (2013) and Bédécarrats et al. (2020) above. The IAD can help explain the role of institutional factors, bureaucratic structures, regulations, and political systems that can enhance or hinder the use of evidence in policy making. By

considering the above, it helps identify the implicit rules, norms and culture that govern the behavior of various actors in the policy process (Polski and Ostrom 1999).

When considering the factors that influence EBP, the political willingness to use data should be given its due importance. Policymakers, as shown by Masaki et al., show an inclination to rely heavily on government officials and staff for information, essentially domestic sources. This political willingness to use data that is generated domestically, alongside inputs from diverse sources, underlines the importance of accessibility and comprehensibility in data (Masaki et al. 2017). J-PAL's governance initiate's publication for Latin America also emphasizes the need to through generating buy-in by senior policy officials, and advanced this by stating that concrete and pertinent demonstration of the use of evidence in public policy decisions can generate that momentum towards a culture of use of evidence (Carter et al. 2018). Furthered by the findings in Brazil, improving the linkages between research information and political leaders can encourage the use of evidence for policy change, and predicaments in information sharing is an important challenge for EBP (Hjort et al. 2019). In Pakistan, a need was identified to enhance the capacity, communication, and incorporation of evidence into policy by considering the policy context, supporting capacity building, and limiting the inertia towards status-quo. Furthermore, it highlighted how research contributions are heavily biased towards the priorities of the donors (Haq et al. 2017). Donor agencies may prioritize interventions with strong evidence bases, potentially neglecting local context, needs, and capabilities (Liverani, Hawkins, and Parkhurst 2013). Complimented by the earlier finding that policymakers depend more on nationally generated data, underlines the importance of having robust statistical capacity within countries to enable evidence-based policy making.

The above studies underscore the significance of strong statistical capacity, political willingness to use data, and institutional set up – the key independent variables in our study –

in achieving effective EBP. Furthermore, it highlights the influence of political systems on the uptake of evidence in policymaking. By highlighting these influences and their interconnectedness, these studies offer valuable insights for strengthening the integration of evidence into policy-making processes.

The role of GDP per capita in shaping effective policies, in high economic growth countries, has been noted in earlier studies, emphasizing it's role in shaping policy (D'Agostino and Scarlato 2016). This finding supports other researchers' work that suggests that countries that have higher GDP per capita, invest more in HDI through effective policy making. GDP per capita as a welfare indicator – one of the metrics for economic index used in the study – substantives its importance for effective policy evaluation (Elistia and Syahzuni 2018). Additionally, works cited earlier show how a lack of resources and cost of producing evidence becomes an important challenge(Ogden 2017; Oliver et al. 2014). thereby making it essential to include GDP per capita as a control variable for isolating its impact on evidence-based policies.

Further exploration of literature shows us that foreign aid tends to increase economic growth in countries with robust policy environments, suggesting interplay between aid, institutions and policy making(Tang and Bundhoo 2017). Additionally, it's been argued that a significant portion of aid is dedicated to facilitating EBP, thus emphasizing the linkage between aid and effective policy (Howes et al. 2017). Further evidenced by International agencies and research institutes committed to evidence-based policymaking, such as the World Bank's initiatives, INASP dedicated to further policy research, the J-PAL and Evidence for Policy Design at Harvard are all examples of such. Thus, foreign aid is a key contributor to our independent and dependent variables of interest.

The link between population and effective policymaking has been argued as low population in high-income countries and low-income countries with high population both challenge economic growth and by extension, the evidence-based policymaking (Peterson 2017). Furthered by other authors arguing that high population also leads to high economic growth, which may affect our variables in the study (Obere, Thuku, and Gachanja 2013). Thus, necessitating the inclusion of population as a control variable in our study.

Given the literature exploration above, it is important to highlight the research question again, i.e., What is the impact of evidence on policymaking? To investigate, we explore the following hypotheses:

First, countries with higher statistical capacity are more effective in evidence-based policymaking. Second, willingness of policymakers to uptake evidence is critical to the process of evidence-based policy. Third, countries with more democratic institutions tend to better foster evidence-based policymaking.

METHDOLOGY

This paper conducts a quantitative analysis of time-series panel data across 112 countries from the year 2006 to 2020 to answer the main research question, and the relevant hypotheses. The data, variables and model specifications are laid out in this section.

The dependent variables are the Economic Policy and Governance Change index from the BTI database. The independent variables consist of statistical capacity, data uptake by policymakers, electoral democracy, and government effectiveness. The control variables include the log of GDP per capita, population and net official aid received. The details of each of the variable's operationalization and databases follow:

The Bertelsmann Transformation Index:

The Bertelsmann Stiftung is a foundation that is independent and based out of Germany. It was founded in 1977 to build a "future-oriented" society through initiating and tracking "reform processes" and principals of "entrepreneurial actions" (Bauer 2006). One of the projects of the foundation, called the BTI – Bertelsmann Transformation Index (BTI). The BTI examines and assesses how developing and transitioning countries are guiding social change toward a democracy and a market economy. Dictated by a standardized codebook, country specialists survey the degree to which a sum of 17 conditions have been met for every one of the 137 countries. (BTI Transformation Index 2022).

For this paper, we take the aggregate score of the governance and economy index for each of the 112 countries that we are examining. This score is collected and published on a biennial basis, this paper examines ranges from the year 2006 to 2020.

i – Economy Status Index

The economic transformation state as measured by BTI is based on a total of 14 different indicators describing the state of the economy's transition. The economy status index aggregates scores across all these indicators. The concept of economic transformation to a market economy is based on economic performance, market competition and property rights, as well as social safety, compensation, and equity of opportunity. The score ranges from 0 to 10, with 0 being the lowest, and 10 being a complete transformation being achieved given the above criteria.

ii – Governance Index

The Governance index is an aggregate score based on each country's steering capability i.e., policy prioritization, implementation, learning, the level of difficulty in governance, resource efficiency, consensus building and international cooperation. This gives us important insights into each country's ability to incorporate evidence in their governance decision making (BTI Transformation Index 2022).

BTI scores are used as proxies for "evidence-based policymaking" in our study as it gives us a comprehensive, comparable and non-partisan measure of economic and governance outcomes across several countries. A well-functioning economy and governance are a result of policies that are designed and evaluated using credible evidence. These indicators capture a wide range of factors in its assessment which are reflective of the use of evidence in policy. Furthermore, these allow for a standardized assessment of a cross-country context, which is an important facet of this research.

Statistical Capacity Indicator – (WDI)

The Statistical Capacity Indicator is a holistic score that assesses each country's statistical system's capacity based on the data collection methodology, sources, and periodicity. Each

country is scored in 25 different criterion in the above domains, using available sources that are public and input provided by each country. The Statistical Capacity indicator in this study is an simple average of scores from all three areas, scaled from 0 to 100 (The World Bank 2022a).

Data Uptake Variable - Listening to Leaders Aggregate Dataset – Aid Data Lab (LTL):

Listening to leaders (LTL) is a multi-year project implemented by the AidData research lab at the College of William & Mary, this project is a 360-degree feedback via surveys of over 7000 leaders across several countries gauging development priorities, and progress by triangulating information from biennial surveys, interviews and polls which then feed into public reports and analysis. During the 2017 round of survey, about 3500 leaders working in over 22 different areas of policy were surveyed, the survey provided data on the helpfulness of development partners, their influence, and uptake of data provided by development partners (AidData 2018; Custer et al. 2018; Masaki et al. 2017).

For this study, we look at one particular variable of interest from the 2017 aggregate database, i.e. Data Uptake. This variable shows a proportion of respondents who mentioned using at least one type of analysis or raw data from a given development partner. This variable gives us insight into willingness of a country's leadership, across several countries, to uptake data, which is one of the main predictor variable in this study. For this study, we have taken the data uptake weighted variable to ensure that the response bias is mitigated (Custer et al. 2018). It is important to recognize that this variable specifically addresses the data uptake for the data provided by international donors and development partners. It does not gauge uptake of domestic data. While most statistical capacity is supported by donors, there may be an overlap in data uptake in statistical capacity. However, for this study, we operationalize these distinctly.

Two limitation of this score are that it is only consolidated at a regional level, the regions used are the ones defined by the World Bank. Second, that it is only captured once, in 2017, and thus it is not time-variant. Another important consideration is that both the BTI database and the LTL database regional assignment of countries had some differences. This was standardized by assigning each country the corresponding region from the World Bank classification, please see data merge and cleaning section in Appendix B.

Electoral Democracy Score - Varieties of Democracy (V-Dem) Database:

This comprehensive and global dataset provides covers different facets of democracy, and democratic governance. The dataset is produced in collaboration with over 50 experts, who meticulously code and analyze many historical and current documents and records for each country.

For this study, to get a holistic score of the democratic status of each country, we used the Electoral Democracy Index (v2x__polyarchy). This index is a combined score of various indicators, such as the extent of political suffrage, freedom of political and civil society organization operations, free and fair elections, level of freedom of expression, and more (Coppedge, et al., 2023). This variable is used to account for the extent of democratic political institutions. The variable is scaled from 0 to 1, with 1 being the ideal existence of electoral democracy.

Government Effectiveness - World Governance Indicators:

The World Governance Indicator is a dataset summarizing a vast amount of citizen, expert, and private sector enterprises survey respondents in both developed and developing countries, showing views on governance quality. This data is sourced from over 30 sources produced by

think tanks, international organizations, private sector companies and survey firms (The World Bank 2022b).

The indicator of interest for this study is Government Effectiveness. This measures the extent of civil service's freedom from political interferences, quality of public services, and the capacity of public administration overall. It also encompasses the policy formulation and implementation conditions in each country (The World Bank 2022b). It serves as a reliable indicator of a government's ability to use data and evidence to enhance policy outcomes.

Control Variables - World Development Indicators

We include GDP per capita, Net Official Development Assistance and Aid Received, and Population as three main control variables. These are taken from the World Development Indicators (WDI) Database compiled and published on annual basis by the World Bank (The World Bank 2023).

For this study, the variables GDP per capita, population and aid are converted into logarithm for normalizing variance, reducing the impact of outliers and proportionality.

Model Specification

This study uses 3 different econometric models to assess the research question, and the link between independent variables and dependent variables. Namely, the Ordinary Least Squares (OLS) method, the Panel Data method, and Panel Data with Fixed effects.

These models were chosen so that we could compare their estimates and assess the reliability of our results. A primary insight of the relationships between the variables is provided by the OLS regression model. However, it assumes that the observations are independent of one another, which may not be true for panel data that we are investigating.

The Panel Data Regression model (without random or fixed effects) takes benefit of the panel data's greater number of observations to improve the accuracy of the estimations. This model is important to analyze the time-invariant variable, the data uptake.

The Panel Data with Fixed Effects model accounts for the properties of the individual units (countries) that are time-invariant. If there are unobserved time-invariant properties that are linked with the independent variables, it can produce more precise estimates and focus on changes within every country. This is by far the most effective method for the time-series and cross-country data that we are analyzing for this study.

Apart from the 3 main regression models for the larger set of variables, this paper will also employ an Ordinary Least Squares (OLS) method to look at the first-year difference between economic policy and governance index, and the effect of the main independent variables on this. Furthermore, for checking robustness of the results for Statistical Capacity Indicator and Data Uptake indicators, the paper will include bivariate OLS regression with the economic policy and governance index as dependent variables, statistical capacity, and data uptake variables as independent variables – while including the three main control variables for GDP, population and official aid received by each country.

EMPIRICAL ANALYSIS

Regression Set 1 (Economy & Governance): The first set of regressions is done on the dataset which excludes the Government Effectiveness indicator, as inclusion of that brings down the total number of observations (as described in the Data and Merge section). The following dataset includes BTI index, Statistical Capacity Index, Listening to Leaders Dataset, V-Dem dataset, and control variables from the WDI dataset. The total number of countries in the following dataset is 112 with the total observations being 893.

Regression Equation #1: $Economy\ Status\ Index\_it = \beta_0 + \beta 1\ Statistical\ Capacity + \beta_2\ Data\ Uptake + \beta_3\ Electoral\ Democracy + \beta_4\ Log\_GDP + \beta_5\ Log\_ODA + \beta_6\ Log\_population + \epsilon\_it$

Where: i = country | t = time | ϵ = error term

Table 1: Regression Equation Results #1

	OLS (1)	***Panel (2)***	***Panel, FE (3)***
Variables	**Economy Status**	**Economy Status**	**Economy Status**
Statistical Capacity	0.0306***	0.0133***	0.00540
	(0.00459)	(0.00415)	(0.00461)
Data Uptake	1.014	1.825	
	(1.561)	(2.0006)	
Electoral Democracy	2.228***	0.863***	-0.130
	(0.385)	(0.379)	(0.347)
GDP per Capita	0.628***	0.760***	0.934***
	(0.0689)	(0.0809)	(0.230)
Population	-0.0398	-0.0157	-0.835***
	(0.0266)	(0.0512)	(0.161)
Net Aid	0.0442	-0.0169	-0.0115
	(0.0307)	(0.0275)	(0.0276)
Constant	-3.244***	-1.912	11.74**
	(0.773)	(1.228)	(2.371)
Observations	751	751	751
R-squared	0.709		0.124
Number of countries		106	106

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The above models were used to investigate the correlation between the independent variables and the dependent variable, Economic Policy BTI Index. The ensuing section delineates an analysis of the results:

Table 2: Regression 1 - Variable Significance and Direction

Independent Variables	**MODEL 1**	**Model 2**	**Model 3**
Statistical Capacity	*Significant at 1%, Positive Coefficient*	*Significant at 1%, Positive Coefficient*	*Not significant, positive*
Data Uptake	*Not significant, positive*	*Not significant, positive*	*N/A*
Electoral Democracy	*Significant at 1%, Positive Coefficient*	*Significant at 1%, Positive Coefficient*	*Not significant, negative*
GDP	*Significant at 1%, Positive Coefficient*	*Significant at 1%, Positive Coefficient*	*Significant at 1%, Positive Coefficient*
Aid	*Not significant, positive*	*Not significant, positive*	*Not significant, positive*
Population	*Not significant, positive*	*Not significant, negative*	*Significant at 1%, negative*

The findings indicate that statistical capacity has a positive and significant relationship with economic policy outcomes – statistical capacity is therefore a strong predictor of EBP – although the magnitude and significance of the effect decreases when moving from OLS to panel regressions. Showing time-variant and country specific factors impact this. Data uptake does not appear to have a significant impact on economic policy outcomes in the models where it is included. Electoral democracy exhibits a positive and significant relationship with economic policy outcomes in the OLS and Panel without fixed effects models, but this relationship becomes insignificant when fixed effects are introduced. Among the control variables, GDP per capita remains consistently positive and significant, while population becomes negative and significant only in the Panel with fixed effects model. Net Aid does not show any significant relationship with the Economic Policy Index across the three models.

Regression Equation #2 $Governance\ Index\_it = \beta_0 + \beta 1\ Statistical\ Capacity + \beta_2\ Data\ Uptake + \beta_3\ Electoral\ Democracy + \beta_4\ Log\_GDP + \beta_5\ Log\_ODA + \beta_6\ Log\_population + \epsilon\_it$

Where: i = country | t = time | ϵ = error term

Table 3: Regression Equation Results #2

	OLS (1)	***Panel (2)***	***Panel, FE (3)***
Variables	**Governance Index**	**Governance Index**	**Governance Index**
Statistical Capacity	0.0215***	0.0124***	0.00532
	(0.00410)	(0.00385)	(0.00495)
Data Uptake	-1.102	-1.084	
	(1.508)	(1.840)	
Electoral Democracy	4.051***	2.622***	1.501***
	(0.345)	(0.362)	(0.406)
GDP Per Capita	0.0136	0.219***	0.511***
	(0.0387)	(0.0661)	(0.143)
Population	-0.133*	-0.118*	-0.530
	(0.0675)	(0.0667)	(0.361)
Net Aid	0.105*	0.0809*	0.0696
	(0.0619)	(0.0463)	(0.0489)
Constant	1.811**	1.722	7.175**
	(0.827)	(1.286)	(3.077)
Observations	750	750	750
R-squared	0.612		0.077
Number of countries		106	106

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Similarly, 3 distinct models are applied to the above equation, with total number of countries being 106 with 750 observations. An explication of the results is presented below.

Table 4: Regression 2 - Variable Significance and Direction

INDEPENDENT VARIABLES	MODEL 1	Model 2	Model 3
Statistical Capacity	*Significant at 1%, Positive Coefficient*	*Significant at 1%, Positive Coefficient*	*Not significant, positive*
Data Uptake	*Not significant, negative*	*Not significant, negative*	*N/A*
Electoral Democracy	*Significant at 1%, Positive Coefficient*	*Significant at 1%, Positive Coefficient*	*Significant at 1%, Positive Coefficient*
GDP	*Not significant, Positive Coefficient*	*Significant at 1%, Positive Coefficient*	*Significant at 1%, Positive Coefficient*
Aid	*Significant at 10%, positive*	*Significant at 10%, positive*	*Not significant, positive*
Population	*Significant at 10%, negative*	*Significant at 10%, negative*	*Not significant, negative*

Statistical capacity displays a positive and significant relationship with governance outcomes across all three models, although the magnitude of the effect and significance weakens when moving from OLS to panel regressions. Data uptake does not appear to have a significant impact on governance outcomes in the models where it is included. Electoral democracy exhibits a positive and significant relationship with governance outcomes in all models. Among the control variables, GDP per capita becomes consistently positive and significant only in the panel models, while Population is consistently negative and significant. Net Aid illustrates a positive and significant relationship with the Governance Index across all three models. This illustrates the importance of statistical capacity and electoral democracy, important to also see that population and governance are negatively associated, countries with bigger populations tend to generally see lower governance outcomes.

Regression Set 2 (Economy & Governance): The following regressions are run on a dataset which includes the Government Effectiveness indicator, however, reduces the overall sample to 477.

Regression Equation #3: $Economy\ Status\ Index\_it = \beta_0 + \beta 1\ Statistical\ Capacity + \beta_2\ Data\ Uptake + \beta_3\ Electoral\ Democracy + \beta_4\ Government\ Effectiveness + \beta_5\ Log\_GDP + \beta_6\ Log\_ODA + \beta_7\ Log\_population + \epsilon\_it$

Where: i = country | t = time | ϵ = error term.

Table 5: Regression Set Results #3

	OLS (1)	***Panel (2)***	***Panel, FE (3)***
Variables	**Economy Index**	**Economy Index**	**Economy Index**
Statistical Capacity	0.0130**	0.0111*	0.00936
	(0.00536)	(0.00600)	(0.00669)
Data Uptake	-0.428	1.082	
	(2.974)	(2.760)	
Electoral Democracy	1.257***	0.540	0.0262
	(0.377)	(0.379)	(0.404)
Government Effectiveness	1.082***	0.948***	0.686***
	(0.228)	(0.164)	(0.150)
Log of GDP Per Capita	0.313***	0.241**	0.346
	(0.104)	(0.102)	(0.246)
Log of Population	0.0417	-0.0211	-0.538*
	(0.0738)	(0.0797)	(0.296)
Log of Net ODA	0.00703	0.0368	0.0672
	(0.0837)	(0.0475)	(0.0545)
Constant	1.181	1.975	9.620**
	(2.838)	(2.275)	(4.377)
Observations	432	432	432
R-squared	0.699		0.183
Number of countries		60	60

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6: Regression 3 - Variable Significance and Direction

Independent Variables	Model 1	Model 2	Model 3
Statistical Capacity	*Significant at 10%, Positive*	*Significant at 10%, Positive*	*Not significant, positive*
Data Uptake	*Not significant, negative*	*Not significant, positive*	*N/A*
Electoral Democracy	*Significant at 1%, Positive*	*Not significant, Positive*	*Not significant, Positive*
Government Effectiveness	*Significant at 1%, Positive*	*Significant at 1%, Positive*	*Significant at 1%, Positive*
GDP	*Significant at 1%, Positive*	*Significant at 5%, Positive Coefficient*	*Not significant, Positive*
Aid	*Not significant, positive*	*Not significant, positive*	*Not significant, positive*
Population	*Not significant, positive*	*Not significant, negative*	*Significant at 10%, negative*

The results suggest that governance effectiveness consistently has a positive and significant impact on economic policy outcomes across all models. Statistical capacity while being positively and significantly associated in Model 1 and 2, loses this significance in Model 3. The log of GDP similarly remains significant in the first 2 models but loses significance in the fixed effects model. However, the role of electoral democracy is only significant in Model 1, data uptake on the other hand becomes positive moving from OLS to Panel data regression yet it remains insignificant. Net aid appears to be consistently non-significant to the outcome in all 3 models. Electoral democracy only remains significant in the OLS model. Furthermore, the negative and significant coefficient for log of population in the fixed effects model implies that after controlling for country-specific effects, an increase in population is associated with worse economic policy outcomes.

Regression Equation #4: $Governance\ Index\_it = \beta_0 + \beta 1\ Statistical\ Capacity + \beta_2\ Data\ Uptake + \beta_3\ Electoral\ Democracy + \beta_4\ Government\ Effectiveness + \beta_5\ Log\_GDP + \beta_6\ Log\_ODA + \beta_7\ Log\_population + \epsilon\_it$

Where: i = country | t = time | ϵ = error term.

Table 7: Regression equation #4 results

Variables	***OLS (1) Governance Index***	***Panel (2) Governance Index***	***Panel, FE (3) Governance Index***
Statistical Capacity	0.00447	0.0115**	0.0132*
	(0.00482)	(0.00511)	(0.00666)
Data Uptake	-3.872*	-4.599**	
	(1.964)	(1.195)	
Electoral Democracy	3.662***	2.566***	1.799***
	(0.419)	(0.435)	(0.561)
Government Effectiveness	1.106***	1.012***	0.896***
	(0.0161)	(0.170)	(0.219)
GDP Per Capita	-0.312***	-0.264***	-0.154
	(0.0942)	(0.101)	(0.255)
Population	-0.136*	-0.229***	-0.546
	(0.0795)	(0.0808)	(0.345)
Net Aid	0.168*	0.242***	0.255***
	(0.0554)	(0.0600)	(0.0673)
Constant	5.780***	5.643***	8.593
	(1.109)	(1.664)	(3.803)
Observations	432	432	432
R-squared	0.655		0.187
Number of countries		60	60

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The presented regression output showcases the outcomes of three models, each aimed at analysing the correlation between the independent variables and the dependent variable, namely the Governance Index.

Table 8: Regression 4 - Variable Significance and Direction

Independent Variables	**Model 1**	**Model 2**	**Model 3**
Statistical Capacity	*Not significant, positive*	*Significant at 5%, positive*	*Significant at 5%, positive*
Data Uptake	*Significant at 10%, Negative*	*Significant at 5%, Negative*	*N/A*
Electoral Democracy	*Significant at 1%, Positive*	*Not significant, Positive*	*Not significant, Positive*
Government Effectiveness	*Significant at 1%, Positive*	*Significant at 1%, Positive*	*Significant at 1%, Positive*
GDP	*Significant at 1%, Negative*	*Significant at 1%, Negative*	*Not significant, Negative*
Aid	*Significant at 10%, Positive*	*Significant at 1%, Positive*	*Significant at 1%, Positive*
Population	*Significant at 10%, negative*	*Significant at 1%, negative*	*Not significant, negative*

The above demonstrate that higher levels of electoral democracy, better governance, and more aid are associated with a higher governance index. The statistical capacity is positively correlated with the governance index in the panel models but not in the OLS model. Data uptake is negatively correlated with the governance index in the OLS and panel without fixed effects models. The GDP per capita and population remain negatively correlated with the Governance Index, with GDP becoming insignificant in the fixed effects model.

What is fascinating here is to see the GDP per capita and Data uptake being negatively related to the Governance outcomes, there could be potential reasons for this which are discussed in the next section briefly.

Regressions Set 3 (Statistical Capacity & Data Uptake): The following set of regressions are run on the full dataset, which includes 477 observations. These are bivariate regressions that look at the robustness of the results for Statistical Capacity and Data Uptake variables, alongside the three control variables. These regressions are employing the Ordinary Least Squares method.

Regression Equation#5: $Economy\ Status\ Index = \beta_0 + \beta 1\ Statistical\ Capacity + \beta_2\ Log\_GDP + \beta_3\ Log\_ODA + \beta_4\ Log\_population + \epsilon$

Where: ϵ = error term.

Table 9: Regression 5 Results

Variables	*(1)* *Economy Index*	*(2)* *Economy Index*	*(3)* *Economy Index*	*(4)* *Economy Index*
Statistical Capacity	0.0552***	0.0410***	0.0407***	0.0409***
	(0.00701)	(0.00614)	(0.00612)	(0.00596)
GDP Per Capita		0.543***	0.565***	0.565***
		(0.118)	(0.124)	(0.122)
Net Aid			0.0746	0.107
			(0.0812)	(0.120)
Population				-0.0314
				(0.109)
Constant	1.075**	-1.830**	-3.500*	-3.656*
	(0.464)	(0.718)	(1.948)	(1.883)
Observations	446	433	432	432
R-squared	0.465	0.505	0.505	0.506

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The Statistical Capacity indicator remains positively and highly significant factor in all four models, indicating a strong relationship with Economy Index. However, the extent of this relationship decreases slightly with the introduction of more variables, suggesting the partial influence of other variables.

Table 10: Regression 5 - Variable Significance and Direction

INDEPENDENT VARIABLES	Model 1	Model 2	Model 3	Model 4
Statistical Capacity	*Significant at 1%, Positive*	*Significant at 1%, Positive*	*Significant at 1%, Positive*	*Significant at 1%, Positive*
GDP Per Capita		*Significant at 1%, Positive*	*Significant at 1%, Positive*	*Significant at 1%, Positive*
Aid			*Not significant, Positive*	*Not significant, Positive*
Population				*Not significant, Negative*

Regression Equation#6: $Economy\ Status\ Index\_ix = \beta_0 + \beta 1\ Data\ Uptake + \beta_2\ Log\_GDP + \beta_3\ Log\_ODA + \beta_4\ Log\_population + \epsilon$

Where: ϵ = error term.

Table 11: Regression 6 Results

Variables	*(1) Economy Index*	*(2) Economy Index*	*(3) Economy Index*	*(4) Economy Index*
Data Uptake	7.792**	2.837	3.832	4.287
	(3.828)	(3.597)	(3.536)	(4.033)
GDP Per Capita		0.731***	0.750***	0.744***
		(0.166)	(0.165)	(0.163)
Net Aid			0.136	0.0736
			(0.109)	(0.185)
Population				0.0648
				(0.161)
Constant	2.179*	-1.420	-4.646*	-4.527*
	(1.164)	(1.073)	(2.431)	(2.398)
Observations	448	435	434	434
R-squared	0.058	0.267	0.275	0.278

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Data uptake remains significantly related to the dependent variable only in the first model. However, the variable loses significance as the control variables are added in each of the

subsequent models. This suggests that the data uptake proxy is more complex and may overlap with other variables with the operationalization they may have.

Table 12: Regression 6 - Variable Significance and Direction

INDEPENDENT VARIABLES	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Data Uptake	*Significant at 5%, Positive*	*Not significant, Positive*	*Not significant, Positive*	*Not significant, Positive*
GDP Per Capita		*Significant at 1%, Positive*	*Significant at 1%, Positive*	*Significant at 1%, Positive*
Aid			*Not significant, Positive*	*Not significant, Positive*
Population				*Not significant, Positive*

Regression Equation#7: $Governance\ Index = \beta_0 + \beta 1\ Statistical\ Capacity + \beta_2\ Log\_GDP + \beta_3\ Log\_population + \beta_4\ Log\_GDP + \epsilon$

Where: ϵ = error term.

Table 13: Regression 7 Results

Variables	*(1) Governance Index*	*(2) Governance Index*	*(3) Governance Index*	*(4) Governance Index*
Statistical Capacity	0.0433***	0.0369***	0.0367***	0.0386***
	(0.00826)	(0.00790)	(0.00788)	(0.00772)
GDP Per Capita		-0.0669	-0.0436	-0.0470
		(0.145)	(0.145)	(0.138)
Net Aid			0.0758	0.365**
			(0.112)	(0.175)
Population				-0.280
				(0.182)
Constant	1.788***	2.709***	1.006	-0.384
	(0.549)	(0.989)	(2.595)	(2.371)
Observations	446	433	432	432
R-squared	0.254	0.179	0.181	0.226

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In all four models above, Statistical Capacity remains positive and significant in relation to the the Governance Index, with statistical significance of 1%.

Table 14: Regression 7 - Variable Significance and Direction

INDEPENDENT VARIABLES	Model 1	Model 2	Model 3	Model 4
Statistical Capacity	*Significant at 1%, Positive*	*Significant at 1%, Positive*	*Significant at 1%, Positive*	*Significant at 1%, Positive*
GDP Per Capita		*Not Significant, negative*	*Not Significant, negative*	*Not Significant, negative*
Aid			*Not significant, Positive*	*Significant at 5%, Positive*
Population				*Not significant, Negative*

Regression Equation#8: $Governance\ Index = \beta_0 + \beta 1\ Data\ Uptake + \beta_2\ Log\_GDP + \beta_3\ Log\_population + \beta_4\ Log\_GDP + \epsilon$

Table 15: Regression 8 Results

Variables	*(1) Governance Index*	*(2) Governance Index*	*(3) Governance Index*	*(4) Governance Index*
Data Uptake	2.304	0.953	1.773	0.203
	(4.209)	(4.441)	(4.524)	(4.661)
GDP Per Capita		0.129	0.146	0.169
		(0.181)	(0.183)	(0.179)
Net Aid			0.113	0.329
			(0.131)	(0.207)
Population				-0.223
				(0.225)
Constant	3.795***	3.372**	0.681	0.271
	(1.262)	(1.509)	(3.198)	(2.922)
Observations	448	435	434	434
R-squared	0.004	0.008	0.015	0.042

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16: Regression 8 - Variable Significance and Direction

Independent Variables	Model 1	Model 2	Model 3	Model 4
Data Uptake	*Not Significant, Positive*	*Not Significant, Positive*	*Not Significant, Positive*	*Not Significant, Positive*
GDP per Capita		*Not Significant, Positive*	*Not Significant, Positive*	*Not Significant, Positive*
Aid			*Not significant, Positive*	*Significant at 5%, Positive*
Population				*Not significant, Negative*

Regression Set 4 – The First-Difference Model: These regressions look at the first year's difference (2008 – 2006) within the economy status index and governance index, and their relationship with the independent variables. These are also run on the full dataset which includes 477 observations in the model. These regressions are employing the Ordinary Least Squares method.

Regression Equation #9: $Economy\ Status\ Index\_ix = \beta_0 + \beta 1\ Statistical\ Capacity + \beta_2\ Data\ Uptake + \beta_3\ Electoral\ Democracy + \beta_4\ Government\ Effectiveness + \beta_5\ Log\_GDP + \beta_6\ Log\_ODA + \beta_7\ Log\_population + \epsilon\_ix$

Where: i = country | x = time: year 2008 – year 2006 | ϵ = error term.

Table 17: Regression 9 Results

Variables	*OLS* *Economy Status First-Difference*
Statistical Capacity	-0.00546
	(0.00562)
Data Uptake	2.726
	(1.853)
Electoral Democracy	0.440
	(0.395)
Government Effectiveness	-0.112
	(0.241)
GDP Per Capita	0.180*
	(0.0913)
Population	0.0294
	(0.0723)
Net Aid	-0.0308
	(0.0872)
Constant	-1.839
	(2.060)
Observations	50
R-squared	0.190

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

From the output, it can be noted that none of the variables of interest i.e., statistical capacity, data uptake and electoral democracy are statistically significant with the dependent variable. This indicates that in the shorter run, changes in the independent variable do not explain the

changes in the dependent variable. Statistical capacity here points us to the counter-intuitive understanding of the relationship between statistical capacity and impact on policy making.

The only significant variable in the short run is the log of GDP per capita, it is significant at the 10% level and is positively correlated. Suggesting that short-term improvements in economic growth could directly influence the effectiveness of the economic policies. The log of population and net aid however show insignificant relationship with the dependent variable.

Regression Equation #10: $Governance\ Index\_ix = \beta_0 + \beta 1\ Statistical\ Capacity + \beta_2\ Data\ Uptake + \beta_3\ Electoral\ Democracy + \beta_4\ Government\ Effectiveness + \beta_5\ Log\_GDP + \beta_6\ Log\_ODA + \beta_7\ Log\_population + \epsilon\_ix$

Where: i = country | x = time: year 2008 – year 2006 | ϵ = error term.

Table 18: Regression 10 Results

Variables	*OLS* *Governance Score First-Difference*
Statistical Capacity	-0.00908
	(0.00946)
Data Uptake	1.268
	(3.119)
Electoral Democracy	0.0243
	(0.666)
Government Effectiveness	0.169
	(0.405)
GDP Per Capita	-0.140
	(0.154)
Population	0.0182
	(0.122)
Net Aid	-0.0955
	(0.147)
Constant	3.073
	(3.467)
Observations	50
R-squared	0.055

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The above model measures the first difference in the governance index for countries. It can be noted that none of the variables of interest i.e., statistical capacity, data uptake and electoral democracy are statistically significant with the dependent variable. This indicates that in the shorter run, changes in the independent variable do not explain the changes in the dependent variable.

DISCUSSION AND POLICY IMPLICATIONS

The following discussion will compare the findings from the regression analysis with key takeaways that were derived from the literature.

Our first hypothesis thus, holds, which stressed the importance of statistical capacity in enabling evidence-based policy making, for which the economy and governance scores are used as a proxy. This agrees with numerous authors (Masaki et al., 2017; Hawkes et al., 2016; Serajuddin et al., 2015; Bédécarrats et al., 2020) who have emphasized on the critical role of statistical capacity of governments and ability of policy makers to utilize it in the decision-making process. The results from the regression which show that the statistical capacity indicator is significantly and positively correlated with dependent variable, reinforcing the literature's focus on the importance of having accurate, pertinent, and time-bound availability of data, as well as the importance of policymakers' ability to understand and utilize this data for informing policy decisions. However, what is important to note is that the statistical significance of statistical capacity indicator diminishes in the fixed effects model, indicating that more time-variant and country specific effects are important in considering the effects of this independent variable. This is true for all 4 regression equations, with and without the inclusion of additional variable of government effectiveness. Within regression equation 4, statistical capacity acts differently where it holds significance in the fixed effects model but not in the OLS model. We can consider this as a further evidence of the importance of statistical capacity, as laid out in the literature, since adding additional variables and including the fixed effects in equation 4, statistical capacity becomes significant in the fixed effects model as well. The hypothesis holding true implies that robust domestic statistical infrastructure, ability of policymakers to be able to understand and utilize evidence, and the linkage between research and policymaking are critical factors for enabling effective use of data in policy making process across many countries.

The above is further substantiated by regression equations 5 & 7 which utilize simple OLS bivariate regression to check the robustness of the results from regression equations 1 to 4. Statistical capacity remains statistically significant and positively correlated with the economy and governance scores from BTI, even after accounting for the control variables GDP per capita, population and total aid received. This further strengthens the argument that both the literature and the regression result present.

Another important finding when considered is regression equation 9 and 10 which looks at the first year's difference in the economy and governance status score, statistical capacity becomes insignificant as well as negatively correlated. This has an important implication when compared to a multi-year analysis. Immediate changes in statistical capacity may not have a significant correlation with improved EBP, and during the short term, other variables may dominate this relationship. This implies that long-term and sustained improvements in statistical capacity are important to ensure that evidence and policy making align to ensure better outcomes for countries. Immediate and short-term changes in statistical capacity may not translate into improved evidence-based policy making.

Further implications of these research are that it is critical to invest in the capacity of policymakers, so they possess the ability to understand and utilize data effectively. By improving these, countries can ensure that policymaking is more objective and informed via the use of evidence. It further implicates the importance of strengthening the research-policy nexus; effective communication and collaboration between researchers and policymakers is critical for enabling an environment that fosters EBP. Moreover, donors and governments should invest more resources to strengthen national statistical capacities, improving data collection, analysis, and dissemination.

Data uptake results from the regression equations (equation 1 & 3), which served as a proxy for policymakers' willingness to use data, interestingly invalidates our hypothesis that it is an important factor that impacts the use of evidence in economic policy. The results make our understanding more nuanced by disproving the logical correlation between increased data uptake leading to increase in the evidence utilization. This is also in contradiction to the research that puts great emphasis on data uptake for EBP (Masaki et al., 2017; Carter et al., 2018; Hjort et al., 2019). This inconsistency can be explained through the varying nature of data across countries, as well as the varying extent of effectiveness in turning data into policy, which may not be clearly captured through this one variable. Furthermore, it is in line with Liverani et al.'s (2013) argument that appropriate institutional structures are a critical factor in optimizing the utility of data in policymaking.

Furthermore, the lack of significant correlation between data uptake and BTI indices in our results may hint to the need for re-evaluating the existing structure of incentives and accountability that are linked to the usage of data provided by donors. Strydom et al. (2010) in our review have suggested the requirement of improved incentives and accountability to enhance the usage of data by policymakers.

A critical finding, however, is that because this variable specifically captures the data uptake from external donors, it points to the fact that domestically produced data is relied upon more by policymakers, as statistical capacity indicator remains robust through all models. This has been made evident by the study from Masaki et al. (2017), and henceforth, further strengthening the first hypothesis, that robust statistical infrastructure and capacity is a crucial factor in the uptake of data in evidence-based policymaking. This further elucidates that the availability of evidence from international donors may not necessarily lead to an increased uptake of data by policymakers.

These results do not necessarily weaken the criticality of data uptake in evidence-based policy but rather makes it more granular. The complexity that the landscape of data presents, and the multifaceted context policymakers must consider are highlighted through these results. Furthermore, the IAD framework can be utilized to explain the insignificant relationship between data uptake and utilization of evidence in the study. The IAD framework emphasizes the broader political environment, interactions between agents and institutions as well as exogenous factors that may help further elaborate this relationship (Polski and Ostrom 1999).

The above analysis points us to policy implications like improvement in policymakers' ability to navigate complex data landscape and create ability to discern relevant and credible information. An enabling environment that fosters the utilization of data in policymaking should be considered further with the incentives and accountability underpinnings.

Investigation of the third variable, electoral democracy, a proxy for open and democratic political institutions, shows us a complex and dynamic correlation with economic and governance indicators. The effect is significant and positive in our OLS and Panel (without fixed effects) model but becomes negative and insignificant in the fixed effects model. This can be attributed to the unobserved and time-invariant factors that may be present. With the inclusion of government effectiveness in our model, the electoral democracy variable becomes only significant in the OLS model with respect to economy status score (BTI). However, it is important to note that electoral democracy variable is consistently positive and significant in relation to the governance index as dependent variable. This points us to the insight that political set up in countries may be more relevant to governance outcomes, which the governance score encapsulates. This consistent relationship between electoral democracy and governance outcomes validates our hypothesis, showing us that democratic institutional set up may in fact, have a positive impact on evidence-based policymaking in governance.

Corduneanu-Huci et al. (2021), Liverani et al. (2013), and Bédécarrats et al. (2020) in the literature emphasize the importance of open, democratic, and accountable institutions in fostering evidence-based policy making. Considering our results, it is important to acknowledge that this relationship is complex and has many intricacies involved. Institutional factors' effectiveness in facilitating EBP may be mediated by country-specific factors such as culture, historical legacies, pre-existing socioeconomic conditions, and the nature of the government set up. It shows us that the institutions operate in the broader contextual ecosystem of the government, and do not operate in silos (Ogden, 2017; Oliver et al., 2014). Furthermore, the concept of "openness" may include a multitude of other factors that may not be accurately captured by the proxy being used, electoral democracy score. Therefore, it is critical to unpack and understand the nuances that underpin this relationship and influence the utilization of evidence.

Additionally, our findings align with Liverani et al.'s (2013) assertion that highlights the significant interaction between political systems and the utilization of evidence. While one might assume that democratic systems are more receptive to evidence-based policymaking, the effectiveness of evidence into the policymaking process is heavily influenced by the distinct characteristics of these systems. Factors such as the degree of institutional openness, the existence of enabling bureaucratic structures, and the transparency levels within democratic institutions are critical in shaping evidence utilization.

As the results suggest, the impact of governance outcomes is significantly related to the nature of political institutions. This also aligns with the focus of the IAD framework that emphasizes the role of rules and procedures of political institutions, and not simply the existence of democratic set up (Polski and Ostrom 1999). The heterogeneity in democratic institutions

across different regions and countries, therefore, can explain the varying nature of relationship between institutions and the economy index.

The negative and significant relationship between governance outcomes and GDP per capita can be explained via the concept of Resource Curse. Countries that have significant natural resources, such as Oil in the Saudi Arabia, can cause issues of corruption and rent seeking, perpetuating the cycle of poor governance. Similarly, countries that have high GDP per capita may also have autocratic regimes in place that do not prioritize good governance. These factors can bias our results as well.

Furthermore, the negative relationship between governance index and data uptake can be attributed to the quality of data – which the statistical capacity indicator does not cater for. It can also point to selective and politically motivated use of evidence, which may result in worse governance outcomes.

Future Research Avenues

The above research compels us towards a holistic understanding of the interplay between political institutions and evidence-based policy, as there is room for further exploration. An important area to explore is the time-bound effect of statistical capacity indicator, it would be of great interest to investigate when does the statistical capacity improvements trigger improvements in the policy making process via inclusion of evidence. This will enhance and further nuance our understanding of the various factors that may affect this relationship. A similar dynamic emerges for the electoral democracy variable. This warrants a deep dive into the mechanics at play, and furthering understanding of the time-range in which democratic institutions may improve the evidence-based policy making in governance related contexts. This would necessitate scrutinizing and analysing additional institutional factors, considering

the complexities of country-specific contexts, and conducting explorations into the specific mechanisms through which political institutions impact evidence utilization. Additionally, the relationship that exists between data uptake and evidence utilization is deserving of additional investigation, with a focus on the nuanced dynamics and incentives that surround the utilization of data by policymakers. One possible way to do this is by incorporating the donor influence variable from the LTL dataset, however, it is important to remain mindful that the LTL scores are only published at a regional level.

LIMITATIONS

Within this study the limitations of the specific indicators should be highlighted. The variables may not accurately and exhaustively encapsulate the nuances of statistical capacity, data uptake and democratic institutions. As already mentioned, a more country level and granular quantitative variable for data up take can enhance the results of this study further.

Furthermore, the study contains the risk of endogeneity and omitted variable bias. For starters, there is a strong correlation between Statistical Capacity and Government effectiveness, suggesting that a higher statistical capacity results in higher government effectiveness, or the opposite might also hold true. Therefore, this relationship may be subject to simultaneous causality. The positive correlation between log of Aid and Population is possibly due to countries with larger populations receiving more aid, as they are typically developing countries. However, receiving aid might also increase population due to increased socio-economic conditions. Therefore, there's a risk of reverse causality. Finally, there's a positive correlation between the log of GDP per capita and Data Uptake variable. We assume that higher data uptake leads to higher economic growth, and not the other way around. This correlation may occur because of omitted variable bias such as the education levels, cultural factors, technological influences, and other factors that may impact both variables simultaneously. Education levels, for example, can determine both uptake of data and the economic growth of a country. Please refer to Appendix A for further detail on the correlation between independent variables.

Future research should incorporate instrumental variable regressions, as well as randomization in its analysis for further deep-dive.

CONCLUSION

The study above has explored the three main independent variables identified from the literature and used in our hypotheses i.e., statistical capacity, data uptake and electoral democracy. The regression analysis was done to quantitatively identify the relationship between these variables across 117 countries, spanning over 16 years. The findings have validated, as well as challenged some of the existing understanding of dynamics.

Our first hypothesis was validated through the investigation of Statistical capacity indicator. It was found to be significantly and positively correlated with EBP, aligning with the arguments in the literature. This underscores the importance of having a robust domestic statistical infrastructure, as confirmed by the analysis of data uptake. This further emphasizes the need for policymakers to have the skills and capacity to understand and use data effectively in their decision-making processes.

On the other hand, our second hypothesis was invalidated through the investigation of the data uptake variable. This suggests that a more nuanced understanding of the dynamics at play, which impact data uptake, its quality, relevance, and the policy environment's interplay, is required. This facet of the research could benefit from a more granular indicator for policymaker's willingness to utilize data.

For our third hypothesis, democratic institutions were found to be a facilitator of EBP. The investigation points us towards a positive yet multifaceted relationship between institutions and EBP. Particularly when the governance policy and outcomes are considered, political institutions tend to play a critical role in the way evidence-based policy is shaped.

Our findings have significant policy implications, underscoring the need to invest in strengthening statistical capacity, fostering democratic institutions, and promoting a nuanced

understanding of data utilization by policymakers. These factors can create an enabling environment for EBP, thereby promoting better governance and economic outcomes.

Future research should concentrate on unpacking the intricacies that explain these associations. Further exploration into the mechanisms of how evidence is utilized by policymakers, the impact of evidence quality and source, and the function of incentives and accountability mechanisms could offer invaluable insights.

To further advance our knowledge of the dynamics that underpin evidence-based policymaking and its interaction with political institutions, thorough research will be required. Additionally, a deeper study of the time threshold when statistical capacity kicks in to effect economic outcomes is warranted. It will support the effectiveness of investments in domestic statistical capacity, both in the short and long term.

While the research above provides a valuable step towards unpacking the determinants of EBP, it also raises significant queries and avenues for future research. The understanding of the dynamics that drive governance economic outcomes across the globe, will be critical in pursuit of a better world.

APPENDICES

Appendix A: Correlation Matrix for Independent Variables:

Variables	Statistical Capacity	Data Uptake	Electoral Democracy	Government Effectiveness	GDP per capita (Log)	Population (Log)	Net ODA (Log)
Statistical Capacity	1.00						
p-value							
Data Uptake	0.32	1.00					
p-value	0.00						
Electoral Democracy	0.35	0.14	1.00				
p-value	0.00	0.00					
Government Effectiveness	0.70	0.26	0.41	1.00			
p-value	0.00	0.00	0.00				
GDP per capita (Log)	0.29	0.31	0.14	0.45	1.00		
p-value	0.00	0.00	0.00	0.00			
Population (Log)	0.14	-0.34	-0.14	0.03	-0.15	1.00	
p-value	0.00	0.00	0.00	0.50	0.00		
Net ODA (Log)	0.08	-0.26	-0.01	0.00	-0.21	0.75	1.00
p-value	0.0870	0.0000	0.8503	0.9470	0.0000	0.0000	

Table 19: Correlation Matrix

1 – Statistical capacity and Government effectiveness have a strong and significant correlation. This suggests that countries that have higher statistical capacity, have more effective governments, or vice versa.

2 – Data uptake and Log of population variables are moderately, negatively, and significantly correlated. This may suggest that countries with higher populations may make governance and decision making more complex.

3 – Log of aid and population have a strong positive correlation which is statistically significant. This is intuitively right as larger populations also exist in developing countries which are aid recipients.

4 – Log of GDP per capita and Data uptake variable are positively and significantly correlated. Suggesting that countries that have higher economic development have more willingness to uptake data by policy makers.

Appendix B: Charts and Graphs

Figure 1: Statistical Capacity (Regional Averages)

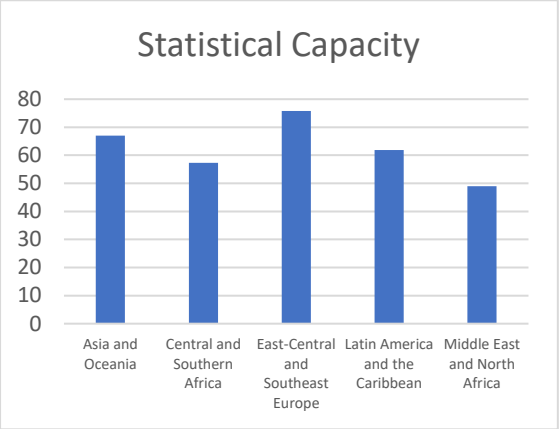


Figure 2: Control Variables (Regional Averages)

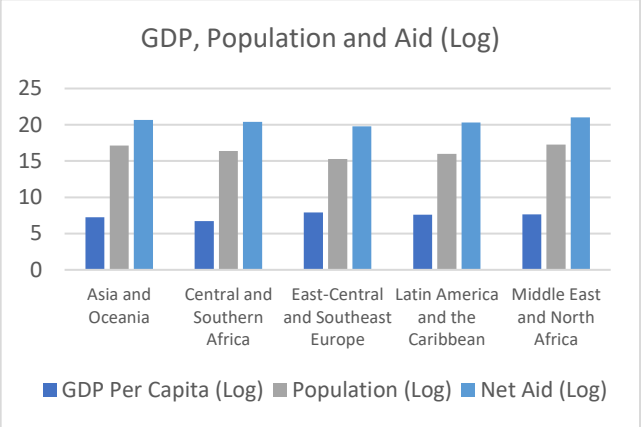


Figure 3: Data Uptake, Electoral Democracy and Government Effectiveness (Regional Averages)

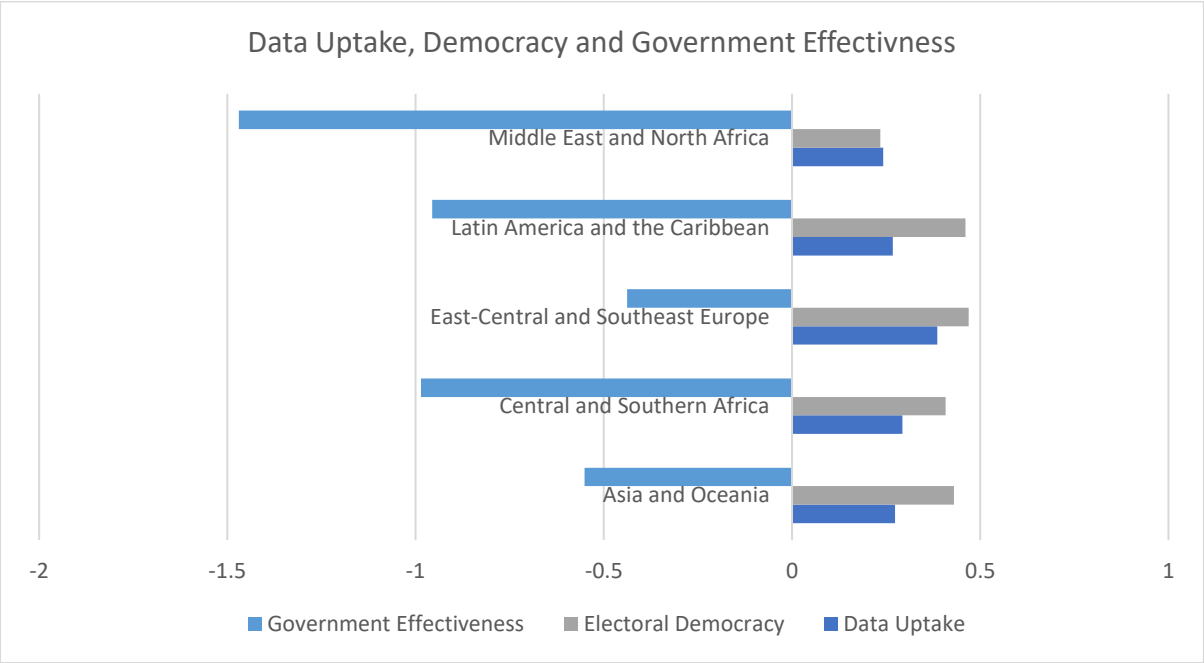


Figure 4: Scatter Plot of Statistical Capacity (Y Axis) and Economy Index (X Axis)

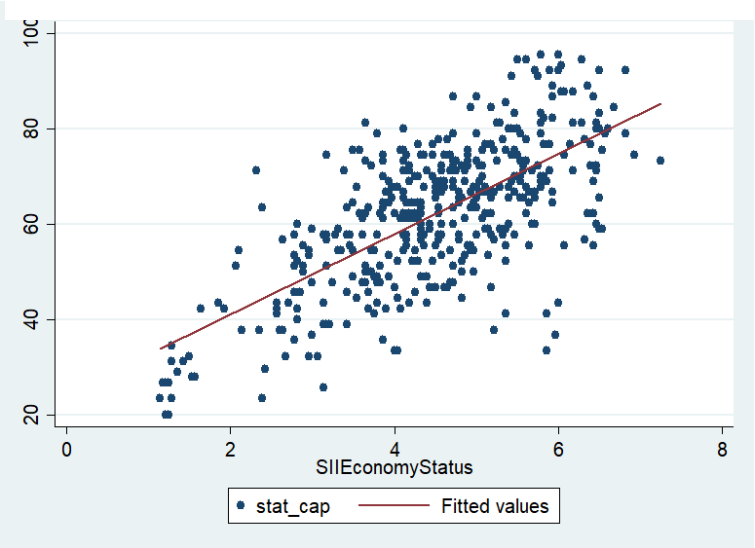


Figure 5: Scatter Plot: Economy Score (Y axis), Electoral Democracy Score(X-Axies)

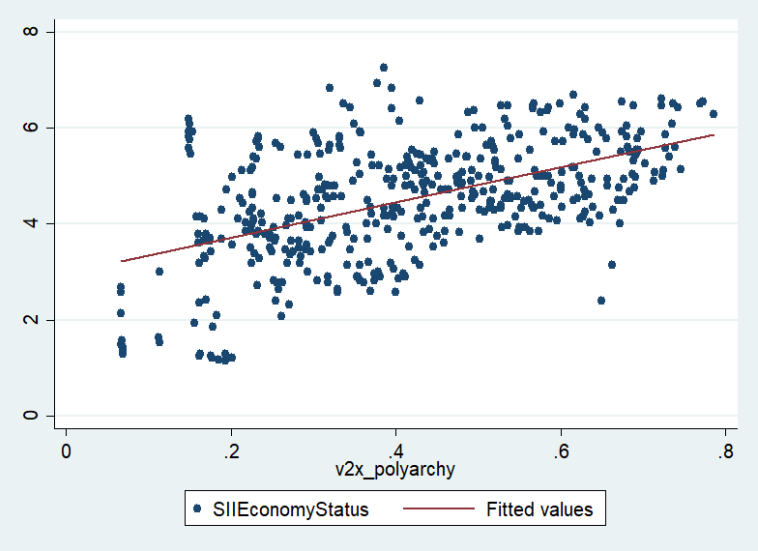
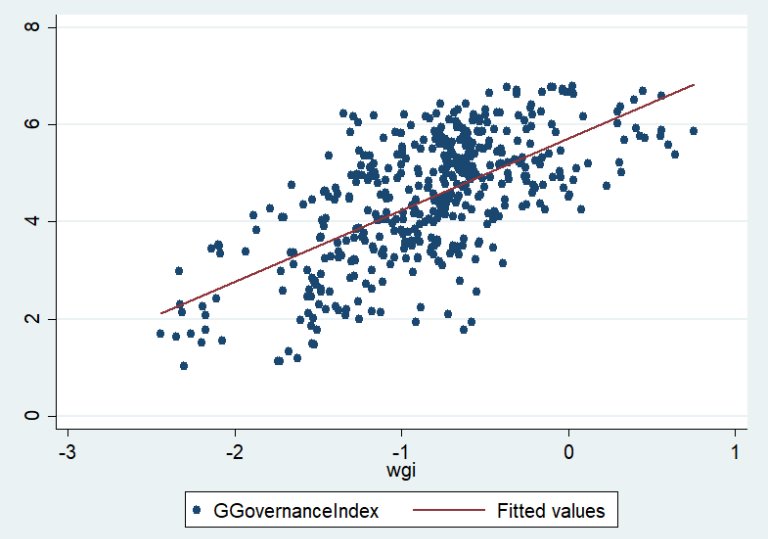


Figure 6: Scatter Plot: Governance Score (Y axis), Governance effectiveness (X axis)



Appendix C: Data Cleaning and Merge

In this study, a systematic approach was employed to clean and merge multiple datasets using Stata version 16. The dataset cleaning and merging process encompassed several steps, which are summarized below:

Initially, data for the BTI scores was imported and specific variables "SIIEconomyStatus," "GGovernanceIndex," "Region," and "Year," were selected. The SIIEconomyStatus and GGovernanceIndex variables were converted to numeric format, a label was defined for the Region variable and applied to the dataset.

Next, the Statistical Capacity Dataset was used; the "SeriesName" variable was encoded, and a new variable named series was generated. After examining the frequency distribution of series, only the observations related to the average series were retained. The data was reshaped with year and country name as identifier variables.

Subsequently, the BTI dataset was merged with the Statistical Capacity Indicator dataset. The resulting merge gave 936 observations that matched in both datasets.

The "wbg_region" variable was encoded, and a new variable named "wbg_region_new" was generated. The values of wbg_region_new were recoded to match the desired region codes. After reporting and addressing any duplicate observations based on org_name and Region, the data were collapsed to calculate the average values of various variables for each region. This was done to ensure that the regions were standardized across all datasets, and the regional score was assigned to each country accurately. As a result, all observations in the LTL dataset were matched with the BTI and Statistical Capacity Indicator dataset, resulting in 936 matched observations.

In the next steps, the datasets V-Dem, WDI, and the WGI Dataset (Worldwide Governance Indicators), were further cleaned and merged. When merging WDI and BTI/Statistical_Capacity_Indicator/V-Dem, out of the total observations, 893 observations were matched. Merging the WGI dataset with all the above resulted in a total of 477 matched observations.

Appendix D: Author's Declaration

I, the undersigned, *Muhammad Usman Zahid*, candidate for *MA in Public Policy*, declare herewith that thepresent thesis is exclusively my own work, based on my research.

All sources have been properly credited in the text, notes, and the bibliography. I declare that no unidentified and illegitimate use was made of the work of others, and no part of the thesis infringes onany person's or institution's copyright. Furthermore, I declare that no part of this thesis has been generated using artificial intelligence (ChatGPT).

I also declare that no part of the thesis has been submitted in this form as coursework for credits or toanother institution of higher education for an academic degree.

Date: 11/06/2023

Name: Muhammad Usman Zahid

Signature: 

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