Policy Journal of Social Science Review

Online ISSN 3006-4635

Print ISSN 3006-4627

Vol. 3 No. 10 (2025)

BREAKING THE VICIOUS CYCLE: GENDER EMPOWERMENT, POLITICAL STABILITY, AND ANTI-CORRUPTION AS CATALYSTS FOR NATIONAL STATISTICAL REFORMS

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Abstract

This study investigates the possibility of major governance dimensions, namely Control of Corruption (CC), Political Stability and Absence of Violence (PS), and Gender Empowerment (Women, Business and the Law Index, WBL) to be the drivers of the National Statistical Reforms, as a measure of Statistical Performance Indicators (SPI). The study employs Ordinary Least Squares (OLS) regression and 2019 cross-sectional statistics on 114 countries (World Development Indicators) to measure the combined effect of both. This model is of great importance (Adjusted R 2 = 0.589) and accounts for significant differences in the scores of SPI. Findings reveal that both Control of Corruption and WBL have high, positive and significant impacts as they are statistical integrity catalyst and gender responsive institutional development catalysts. Conversely, there is a negative yet unimportant relationship between Political Stability, which suggests that it acts as a threshold in fragile states. The results underline that the best-fit levers to improve statistical capacity are anti-corruption measures and gender-equal legal reforms, which will facilitate evidence-based policymaking and support Sustainable Development Goals.

Keywords: Women Empowerment, Legal Gender Equality, Women Business and the Law (WBL) Index, Statistical Performance Indicators (SPI), Control of Corruption, Political stability paradox, Sustainable Development Goal (SDG), Statistical integrity, Evidence-based policymaking

Article Details:

Received on 20 Sept 2025
Accepted on 10 Oct 2025
Published on 13 Oct 2025

Corresponding Authors*:

Policy Journal of Social Science Review

Online ISSN 3006-4635

Print ISSN 3006-4627

Vol. 3 No. 10 (2025)

INTRODUCTION

The quest to have strong National Statistical Systems (NSS) is one of the pillars of good governance, sound policy making, and sustainable development. Although or the Statistical Performance Indicators (SPI) offers an important diagnostic instrument towards measuring the NSS health in most parts of the world, there still exists extensive variation especially in situations that are characterized by poor governance, lack of stability and gender disparity. The existing literature, as discussed earlier determines the strong theoretical relationships and indicative correlations between the individual governance indicators, Control of Corruption (CC) and Political Stability and Absence of Violence (PS), and Gender Empowerment (GE), which are captured by the Women, Business and the Law Index (WBL) and statistical capacities. Nevertheless, there is also a significant gap in empirically researching the co-occurring and comparative impact of this particular three-fold governmental aspect on the outcome of SPI on a single, internationally comparative conceptual platform. This study seeks to address such a gap by relying on a distinctive cross-sectional data on 114 different countries based on a study of the year 2019. This paper will attempt to measure the specific and combined roles of CC, PS, and GE in promoting the rich ecosystem required to achieve National Statistical Reforms and, therefore, provide new empirical evidence with significant theoretical and practical implications.

ARTICULATING THE CRITICAL RESEARCH GAP

The hypothesis is that there is a synergistic connection between CC, PS, and GE and the formation of the institutional environment in the favour of robust NSS. However, in empirical studies, the effects are often examined individually or within a limited local context, failing to reflect their interdependence, which may conceal their broader influence on explaining between-region SPI variability. Studies by De Renzio et al. (2008) and Cárdenas et al. (2015) are successful at showing the negative role of political instability and low accountability in budgetary transparency and data production, respectively, but tend to confound corruption and instability, as well as to assume their statistical effects are confounded. Similarly, investigations into gender equality and governance, such as those by Dollar et al. (2001) and Swamy et al. (2001), highlight correlations with reduced corruption and improved institutional quality but rarely drill down to the specific mechanisms linking women's economic empowerment, as codified in law (WBL), to the technical and operational capabilities measured by the SPI. PARIS21 (2019) reports highlight the *need* for gender-responsive data but provide less systematic evidence on whether stronger legal frameworks for women's economic participation (WBL) actually *drive* improvements in overall statistical system performance. Furthermore, while World Bank (2021b) identifies governance as a key determinant of SPI performance, its analyses often rely on composite governance indicators or focus on pairwise relationships, leaving the specific, quantified contribution of CC, PS, and WBL within a single model underexplored. This study directly addresses this gap by modeling the simultaneous impact of these three specific, theoretically grounded governance variables on the multidimensional SPI. It moves beyond acknowledging their importance to rigorously testing their individual and collective statistical significance and effect sizes on a global scale, using precisely defined proxies available for a wide range of nations. As Goertz (2006) emphasizes, conceptualization and measurement are paramount; this study employs established, widely recognized indicators (WGI CC, WGI PS, WBL, SPI) to ensure comparability and credibility.

Policy Journal of Social Science Review

Online ISSN 3006-4635

Print ISSN 3006-4627

Vol. 3 No. 10 (2025)

EVIDENCE-BASED POLICYMAKING

The findings hold direct relevance for international organizations, donor agencies, and national governments aiming to strengthen statistical capacity. Quantifying the impact of CC, PS, and WBL on SPI provides concrete evidence to advocate for *integrated* reform programs. For instance, if H3 is supported, it strengthens the case for linking gender equality initiatives (legal reforms measured by WBL) directly to statistical capacity building projects, arguing that empowering women fosters demand for and strengthens the supply of better data. Understanding the relative importance of each factor (addressed in Research Question 2) helps prioritize interventions in resource-constrained settings. Conversely, strong evidence for H_1 reinforces the need to embed anti-corruption safeguards (e.g., independent statistical council oversight, transparent procurement) directly into statistical legislation and funding mechanisms (PARIS21, 2017).

RESOURCE ALLOCATION AND ADVOCACY

Demonstrating the statistical significance of these governance factors provides powerful advocacy tools for National Statistical Offices (NSOs) struggling for resources and autonomy. NSOs can leverage findings showing, for example, that a one-unit improvement in CC correlates with a Y-point SPI increase (based on model results) to argue for greater investment in integrity systems within the statistical production chain. Similarly, evidence linking WBL improvements to SPI gains can bolster arguments for gender-responsive budgeting within NSOs and the adoption of policies promoting female leadership in statistics (PARIS21, 2021).

BREAKING THE VICIOUS CYCLE

Ultimately, this research directly addresses the core premise of the "vicious cycle." By empirically demonstrating how weaknesses in CC, PS, and GE inhibit SPI progress, and conversely, how strengths in these areas catalyze it, the study provides the evidentiary foundation for breaking this cycle. It argues compellingly that sustainable statistical reforms cannot be achieved through technical assistance alone but require concurrent, dedicated efforts to combat corruption, foster stability, and empower women – creating the virtuous circle essential for producing the data needed to monitor and achieve sustainable development goals effectively (UN, 2014; World Bank, 2021b).

FOCUSING THE LENS ON CATALYSTS FOR REFORM

This research focus centers on empirically dissecting the complex interplay between three pivotal governance catalysts—Control of Corruption, Political Stability, and Gender Empowerment (via WBL)—and their collective impact on the health of National Statistical Systems, measured by the SPI. By addressing a clear gap in the literature regarding their simultaneous and relative influence, and by posing precise research questions and testable hypotheses grounded in robust theory, this study promises significant contributions. It moves beyond establishing correlation towards quantifying specific pathways, thereby offering actionable insights for policymakers and practitioners striving to break the vicious cycle of weak governance and poor statistics. The findings will illuminate whether, and to what extent, nurturing anti-corruption institutions, building stable political environments, and enacting laws empowering women economically are not just normative goals, but empirically verifiable prerequisites for fostering the high-quality national statistical reforms indispensable for informed decision-making and sustainable development in the 21st century.

Policy Journal of Social Science Review

Online ISSN 3006-4635

Print ISSN 3006-4627

Vol. 3 No. 10 (2025)

LITERATURE REVIEW

THE IMPERATIVE OF ROBUST NATIONAL STATISTICAL SYSTEMS

National Statistical Systems (NSS) serve as the bedrock of evidence-based policymaking, democratic accountability, and sustainable development. The quality, timeliness, and accessibility of official statistics fundamentally shape a nation's ability to diagnose problems, allocate resources effectively, monitor progress towards national and international goals (like the SDGs), and foster public trust (Jerven, 2013; UN, 2014). Recognizing this critical role, the World Bank developed the Statistical Performance Indicators (SPI) to provide a comprehensive assessment of NSS health across five pillars: Data Use, Data Services, Data Products, Data Sources, and Data Infrastructure (World Bank, 2021a). SPI scores reveal stark global disparities, with low and middle-income countries, particularly those experiencing fragility or conflict, consistently lagging (World Bank, 2021a). Understanding the drivers of these disparities is paramount. This review synthesizes existing scholarship to argue that three interconnected governance and societal factors – Control of Corruption, Political Stability and Absence of Violence/Terrorism, and Gender Empowerment (proxied by the Women, Business and the Law Index - WBL) – act as critical, often underappreciated, catalysts or inhibitors for fostering robust national statistical reforms and enhancing SPI scores.

THE NEXUS OF GOVERNANCE AND STATISTICAL CAPACITY: THEORETICAL UNDERPINNINGS

The relationship between governance quality and institutional development, including statistical capacity, is deeply rooted in institutional economics and political science. North (1990) emphasized that effective institutions reduce transaction costs and uncertainty, fostering environments conducive to investment in public goods like statistical systems. Where governance is weak, characterized by high corruption and instability, incentives for building transparent, accountable institutions like NSS are diminished (Acemoglu & Robinson, 2012). Statistical systems, by their nature, produce information that can challenge vested interests, expose inefficiencies, and hold power to account. Consequently, their development and independence are intrinsically linked to the broader political and institutional environment (De Renzio et al., 2008). Robust statistical systems require consistent funding, technical autonomy, professional ethics, and freedom from political interference – all elements vulnerable to poor governance (PARIS21, 2017). The SPI framework implicitly reflects this, with elements like data integrity and openness directly tied to governance norms (World Bank, 2021a).

CONTROL OF CORRUPTION: A FOUNDATIONAL PILLAR FOR STATISTICAL INTEGRITY AND INVESTMENT

Corruption erodes the very foundations upon which credible statistical systems are built. Grand corruption diverts public funds away from essential investments in statistical infrastructure, staff training, and technology (Mauro, 1998). Petty corruption can infiltrate statistical processes, from data collection (e.g., bribery to manipulate survey responses or business registrations) to dissemination (e.g., suppressing unfavorable data) (De Maria, 2008). This directly undermines the reliability and integrity of data, a core SPI pillar. Rothstein (2011) argues that corruption fundamentally undermines impartiality, a principle essential for objective statistics. Countries with high levels of corruption, as measured by indices like the Worldwide Governance Indicators' (WGI) Control of Corruption estimate, exhibit significantly lower statistical capacity. For instance, a World Bank (2021b) analysis found that countries in the bottom quartile of Control of Corruption scores averaged SPI

Policy Journal of Social Science Review
Online ISSN 3006-4635
Print ISSN 3006-4627
Vol. 3 No. 10 (2025)

scores 25 points lower than those in the top quartile. Effective anti-corruption frameworks, including independent oversight bodies, freedom of information laws, and whistleblower protections, create an environment where statistical offices can operate with integrity, secure necessary resources without illicit demands, and release data transparently, even when politically inconvenient (Johnsøn et al., 2012). These fosters trust among data users, enhancing the *"Data Use"* dimension of SPI.

POLITICAL STABILITY AND ABSENCE OF VIOLENCE: ENABLING ENVIRONMENT FOR STATISTICAL DEVELOPMENT

Political instability, conflict, and violence pose existential threats to NSS development and maintenance. Violent conflict destroys physical infrastructure, displaces skilled personnel, and diverts state resources and attention away from statistical production towards immediate security needs (Bruck et al., 2016). Even short of open conflict, chronic political instability – characterized by frequent government turnover, coups, or severe political violence – creates uncertainty and short-termism in policymaking, undermining long-term investments in statistical capacity building (Cárdenas et al., 2015). Stable political environments, conversely, provide the predictability needed for multi-year statistical programs (PARIS21, 2020), technical training, and the establishment of institutional memory within National Statistical Offices (NSOs). The WGI Political Stability and Absence of Violence/Terrorism index is a strong predictor of SPI performance. States classified as "fragile" by the World Bank consistently demonstrate the weakest statistical systems; for example, fragile states are significantly less likely to have complete birth and death registration systems – a fundamental data source – with coverage rates often below 50% compared to near-universal coverage in stable high-income countries (World Bank, 2021a; UN DESA, 2020). Stability fosters an environment where statistical laws guaranteeing independence can be enacted and respected, supporting the "Data Infrastructure" and "Data Sources" pillars of the SPI (UN, 2014).

GENDER EMPOWERMENT: UNLOCKING POTENTIAL AND SHAPING STATISTICAL PRIORITIES

Gender equality and women's empowerment are increasingly recognized not only as fundamental human rights but also as critical enablers of broader societal progress and effective governance (Duflo, 2012; World Bank, 2012). The Women, Business and the Law Index (WBL) provides a specific proxy for aspects of economic gender empowerment, measuring laws and regulations affecting women's economic opportunities across areas like mobility, workplace, pay, marriage, parenthood, entrepreneurship, assets, and pensions (World Bank Group, 2023). Higher levels of gender empowerment, reflected in better WBL scores, can influence NSS performance through several pathways. Firstly, increased female labor force participation and economic agency expand the talent pool available to NSOs, bringing diverse perspectives and skills crucial for innovation and comprehensive data collection (Esteve-Volart, 2004). Secondly, societies prioritizing gender equality are often more attuned to issues of equity, inclusion, and evidence-based decision-making, creating greater political demand for high-quality, disaggregated statistics (Klasen, 2006). This demand can drive reforms and investments in NSS. Thirdly, gender-responsive policies require gender-disaggregated data. Countries with stronger legal frameworks for women's equality (higher WBL) are often more likely to prioritize and invest in collecting and analyzing sex-disaggregated data, enhancing the relevance and *"Data Products"* dimension of their SPI (PARIS21, 2019). Sen's (1999) capabilities approach underscores how empowering women expands societal capabilities, including the

Policy Journal of Social Science Review
Online ISSN 3006-4635
Print ISSN 3006-4627
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capability to produce and utilize knowledge effectively through robust statistics. Empirical studies suggest a correlation; countries scoring higher on gender equality indices tend to exhibit stronger governance and institutional quality, which includes statistical capacity (Dollar et al., 2001).

SYNTHESIS: INTERDEPENDENCE AND THE VICIOUS CYCLE/VIRTUOUS CIRCLE

Critically, these three factors – Control of Corruption (CC), Political Stability (PS), and Gender Empowerment (GE) – are not isolated. They exhibit significant interdependence, potentially creating either vicious cycles that trap nations in underdevelopment or virtuous circles that propel progress. High corruption fuels instability by undermining legitimacy and distributing resources unfairly (Acemoglu & Robinson, 2012). Instability, in turn, creates fertile ground for corruption and hampers efforts to promote gender equality, as women and girls are disproportionately affected by conflict and weak rule of law (Caprioli, 2005). Conversely, strong control of corruption fosters stability, and stable environments are more conducive to advancing women's rights and participation. Gender empowerment can itself be a powerful force for reducing corruption; evidence suggests greater female representation in governance is associated with lower perceived corruption (Dollar et al., 2001; Swamy et al., 2001). This interconnectedness implies that weaknesses in one area can undermine statistical reforms by weakening the others. A nation struggling with endemic corruption will find it difficult to maintain stability or empower women effectively, thereby stifling its statistical development. Conversely, simultaneous progress across CC, PS, and GE can create a synergistic effect, generating a powerful enabling environment for NSS reforms. The SPI, therefore, is not merely a technical scorecard but a reflection of these deeper governance and societal dynamics. Statistical reforms cannot succeed in isolation; they require concerted efforts to tackle corruption, build stability, and promote gender equality. As Granger (1969) might suggest in a broader socio-political context, these factors likely exhibit complex causal relationships over time, influencing SPI with potential feedback loops.

GAPS AND THE PATH FORWARD

While the literature robustly establishes the individual links between governance, gender equality, and institutional development, empirical research specifically quantifying the *combined* effect of CC, PS (using WGI), and GE (proxied by WBL) on the multidimensional SPI remains relatively nascent. Most studies focus on pairwise relationships or use broader governance aggregates. Furthermore, the precise mechanisms through which gender empowerment, particularly as measured by legal frameworks (WBL), translates into tangible improvements in statistical capacity warrant deeper investigation. Does it primarily operate through increased demand for equitable data, enhanced human capital, or shifts in political priorities? Understanding these pathways is crucial for designing effective interventions. Additionally, the role of other potential mediators or moderators, such as levels of digital infrastructure or civil society engagement, needs further exploration within this specific triad-SPI relationship.

TOWARDS AN INTEGRATIVE UNDERSTANDING

The review points to the importance of the fact that the improvement of Statistical Performance Indicators cannot be achieved without shifting beyond a set of purely technical solutions. This fact is clearly shown by the evidence that the following factors are essential prerequisites of the successful development of effective National Statistical Systems: Control of Corruption, Political Stability and Absence of Violence, and Gender Empowerment (measured by Women, Business and the Law Index). Corruption, instability,

and gender inequality are the erosion of integrity, capacity, and prioritization, and the limitation of human capital and inclusivity of demand of inclusive data. The two are highly interlaced, meaning that statistical reforms should be internalized to some larger plans of good governance, peacebuilding, and gender equality. The multi-dimensional strategy required to break the vicious cycle of poor governance and weak statistics will entail empowering the anti-corruption institutions, enhancing political stability, and empowering women at the same time to be the virtuous circle that will establish the quality and reliable statistics that can create sustainable development and democratic resilience.

THEORETICAL BACKGROUND

THE IMPERATIVE OF THEORETICAL GROUNDING

Understanding the complex relationship between governance factors—Control of Corruption (CC), Political Stability and Absence of Violence (PS), and Gender Empowerment (GE)—and National Statistical System (NSS) performance, as measured by the Statistical Performance Indicators (SPI), demands a robust theoretical foundation. This section traces the evolution of key theoretical frameworks that illuminate why and how these specific governance dimensions act as fundamental catalysts or constraints for statistical reforms. Moving beyond mere correlation, we establish the theoretical pathways through which CC, PS, and GE (proxied by the Women, Business and the Law Index - WBL) shape the institutional environment necessary for SPI enhancement. This grounding integrates insights from institutional economics, political science, development theory, feminist institutionalism, and state capacity literature.

INSTITUTIONAL THEORY: THE BEDROCK OF CREDIBLE INSTITUTIONS

The foundational work of Douglass North (1990) on institutions and institutional change provides the cornerstone for understanding the governance-statistics nexus. North defined institutions as the *"rules of the game in a society,"* encompassing formal constraints (laws, constitutions) and informal constraints (norms, conventions). He argued that effective institutions reduce transaction costs and uncertainty, fostering environments conducive to productive investment and long-term planning. National Statistical Offices (NSOs) are quintessential knowledge-producing institutions. Their effectiveness hinges on institutional arrangements guaranteeing independence, impartiality, professional integrity, and adequate resourcing – all attributes highly sensitive to the broader institutional environment. Where institutions are weak, characterized by high levels of corruption (violating norms of impartiality) and instability (undermining rule continuity), the development of strong, autonomous NSOs is inherently stunted (Acemoglu & Robinson, 2012). The SPI framework implicitly embodies institutional ideals: pillars like *"Data Integrity"* and *"Data Openness"* directly reflect norms of transparency, accountability, and professionalism that flourish only within robust institutional settings (World Bank, 2021a). The absence of such settings creates perverse incentives, diverting resources and distorting information flows essential for credible statistics (Jerven, 2013).

THEORETICAL PERSPECTIVES ON CONTROL OF CORRUPTION AND INSTITUTIONAL INTEGRITY

Corruption's corrosive impact on institutions finds explanation in several interconnected theoretical strands. Principal-Agent theory highlights the dilemma when agents (e.g., public officials, statisticians) may act contrary to the interests of their principals (e.g., citizens, policymakers) due to information asymmetry and misaligned incentives (Rose-Ackerman, 1999). Corruption represents a fundamental betrayal of this fiduciary relationship, where agents exploit their position for private gain. Within NSOs, corruption

Policy Journal of Social Science Review
Online ISSN 3006-4635
Print ISSN 3006-4627
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can manifest as political interference to manipulate data, embezzlement of statistical budgets, or bribery during data collection, directly undermining SPI pillars related to data sources, methodology, and integrity (De Maria, 2008). Institutional economics further posits that corruption functions as a highly inefficient tax, distorting resource allocation and discouraging investment in public goods like statistical infrastructure and skilled personnel (Mauro, 1998). Bo Rothstein's (2011) theory of the *"Quality of Government"* (QoG) centers on the principle of impartiality in the exercise of public power. He argues that corruption is the antithesis of impartiality. Credible statistics *require* impartiality; data must be collected and disseminated without fear or favor. Rothstein contends that pervasive corruption destroys trust not only in specific institutions but in the very notion of an impartial state, making the establishment of trusted NSOs exceptionally difficult. Empirically, this is stark: countries in the bottom quartile of the World Bank's Worldwide Governance Indicators (WGI) Control of Corruption index average SPI scores 25 points lower than those in the top quartile, illustrating the profound institutional damage wrought by corruption (World Bank, 2021b).

STATE CAPACITY, FRAGILITY, AND THE FOUNDATIONS FOR STATISTICAL SYSTEMS

The theoretical literature on state capacity and fragility elucidates the critical role of Political Stability and Absence of Violence (PS). Charles Tilly's (1985) historical analysis linked state formation to war-making and capital accumulation, emphasizing the state's core function in establishing order and monopolizing legitimate violence. Modern state capacity theory builds on this, defining capacity as the state's ability to implement its policies and achieve its goals effectively across its territory (Besley & Persson, 2011). Political stability is a fundamental precondition for developing this capacity. Instability – whether from violent conflict, frequent regime changes, or widespread unrest – diverts state resources towards immediate security and survival, crippling long-term investments in institutional development, including NSS (Brück et al., 2016). Francis Fukuyama (2004) distinguishes between the scope of state functions and the strength of state capacity, arguing that many developing states suffer from a mismatch – attempting complex tasks without the necessary institutional strength. Building statistical capacity requires sustained investment in technical expertise, technological infrastructure, and institutional memory, all of which are severely disrupted or destroyed in unstable environments (Cárdenas et al., 2015). Fragile states, often scoring lowest on the WGI Political Stability index, demonstrate this acutely: less than 40% have operational birth registration systems covering 90% of the population, compared to near-universal coverage in stable states, highlighting the fragility of basic data sources underpinning SPI (World Bank, 2021a; UN DESA, 2020). Stability provides the *"authoritarian Leviathan"* (Acemoglu & Robinson, 2012) or the legitimate democratic state with the necessary peace and predictability to nurture institutions like NSOs.

GENDER EMPOWERMENT: EXPANDING CAPABILITIES AND TRANSFORMING INSTITUTIONS

The theoretical underpinnings linking Gender Empowerment (GE), proxied by the Women, Business and the Law Index (WBL), to institutional performance, including statistics, are multifaceted. Amartya Sen's (1999) capabilities approach shifts the focus from mere resources or utilities to the substantive freedoms individuals have to achieve lives they value. Gender discrimination, as measured by legal restrictions in the WBL (e.g., limitations on property ownership, employment, mobility), directly constrains women's

Policy Journal of Social Science Review
Online ISSN 3006-4635
Print ISSN 3006-4627
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capabilities. Sen argues that expanding capabilities is both constitutive of development and instrumental in achieving other development goals. Instrumentally, empowering women enhances societal capabilities, including the collective capacity for rational deliberation, evidence-based decision-making, and effective institutional function – all crucial for demanding and utilizing quality statistics (Klasen, 2006). Feminist institutionalism provides a complementary lens, examining how gender norms and power relations are embedded within formal and informal institutions (Mackay et al., 2010). The WBL is a quantification of legal institutions that influence the economic involvement of women. According to feminist institutionalism, these formal rules can be reformed over time in order to challenge discriminative informal norms. Moreover, it emphasizes the fact that institutions with a strong culture of patriarchy can fail to adequately consider such problems as unpaid care work or gender-based violence, which results in insufficient statistical coverage and relevance (PARIS21, 2019). Increased gender equality, which is promoted through enlightened legal systems (increased WBL scores), increases the talent pool available to NSOs with different perspectives vital in the overall collection and analysis of data (Esteve-Volart, 2004). The idea of social capital introduced by Robert Putnam (1993) especially bridging capital, which unites different groups, is also quite familiar; the gender-inclusive societies can promote the rates of trust and cooperation which will be useful in collaborative data governance. Empirically, cross-national research indicates that there is a relationship between gender equality (including economic rights) and more general indicators of quality governance and institutional performance (Dollar et al., 2001).

SYNTHESIS: INTERDEPENDENCE AND THE DYNAMICS OF INSTITUTIONAL CHANGE

Critically, these theoretical strands do not operate in isolation but interact dynamically. The factors of CC, PS, and GE exhibit significant interdependence, potentially creating vicious cycles of institutional weakness or virtuous circles of reform. Institutional economics and political economy perspectives, particularly those of Acemoglu and Robinson (2012) on extractive vs. inclusive institutions, illuminate this. Extractive institutions, characterized by high corruption and instability, concentrate power and wealth in the hands of a narrow elite. These elites have little incentive to invest in impartial institutions like NSOs that could expose their privileges or enhance broad societal accountability. Such environments also systematically disempower women, maintaining traditional power structures (Caprioli, 2005). Conversely, progress towards inclusive institutions involves strengthening control of corruption, establishing political stability under the rule of law, and expanding rights and opportunities, including gender equality. This creates a synergistic enabling environment. The theoretical link between gender empowerment and reduced corruption is noteworthy. Dollar, Fisman, and Gatti (2001) and Swamy et al. (2001) provided early empirical evidence suggesting women in power may be less corruptible, theorized through socialization differences or a selection effect. More broadly, societies with higher GE, reflected in WBL scores, may cultivate norms of fairness and accountability that permeate institutions, including NSOs, fostering SPI advancement. Elinor Ostrom's (1990) work on governing common-pool resources emphasizes the importance of trust, reciprocity, and monitoring for successful collective action. These same principles underpin the effective functioning of an NSS: trust in data, reciprocity in data sharing, and monitoring of data quality. CC, PS, and GE collectively foster the social and institutional conditions where these principles can flourish. The SPI thus emerges

Policy Journal of Social Science Review
Online ISSN 3006-4635
Print ISSN 3006-4627
Vol. 3 No. 10 (2025)

theoretically not merely as a technical score but as a reflection of deeper institutional health and societal capabilities shaped by this triad.

AN INTEGRATED THEORETICAL FRAMEWORK FOR STATISTICAL REFORMS

This theoretical background establishes a compelling multi-dimensional framework for understanding the prerequisites for National Statistical Reforms, as proxied by SPI. Institutional theory explains the fundamental need for rules ensuring impartiality and reducing uncertainty. Theories of corruption highlight how its presence destroys the integrity and resources vital for statistics. State capacity and fragility theories demonstrate that political stability is the bedrock upon which long-term statistical institutions are built. The capabilities approach and feminist institutionalism elucidate how gender empowerment, particularly through legal economic rights (WBL), expands societal capabilities and transforms institutional priorities, fostering demand for and capacity to produce high-quality, inclusive data. Crucially, these theoretical perspectives are interdependent, revealing how weaknesses in one dimension can undermine the others and stifle statistical progress, while strengths can create virtuous cycles of reform. Breaking the vicious cycle thus requires a theoretically informed, holistic approach that simultaneously tackles corruption, builds stable governance, and empowers women, thereby creating the fertile institutional ground essential for robust National Statistical Systems to take root and flourish, ultimately enabling evidence-based development and democratic accountability.

DEFINING THE RESEARCH QUESTIONS

Guided by the identified gap and the theoretical framework established earlier, this research is structured around three core questions:

1. *Individual Effects:* To what extent, and with what magnitude, does each independent variable – Control of Corruption (CC), Political Stability and Absence of Violence (PS), and Women, Business and the Law Index (WBL) – individually exert a statistically significant influence on a country's Statistical Performance Indicator (SPI) score?
2. *Collective Influence & Relative Importance:* What is the combined explanatory power of the triad of governance variables (CC, PS, WBL) in accounting for global variation in SPI scores?
3. *Gender Empowerment Pathway:* Does the Women, Business and the Law Index (WBL), as a measure of legal frameworks for women's economic participation, exhibit a statistically significant and positive association with SPI scores independent of the levels of Control of Corruption and Political Stability, thereby providing empirical support for its theorized role as a distinct catalyst for statistical reforms?

FORMULATING TESTABLE HYPOTHESES

Based on the theoretical propositions and existing empirical evidence, the following directional hypotheses are advanced for testing:

H_1: Higher levels of Control of Corruption (CC) are positively and significantly associated with higher Statistical Performance Indicator (SPI) scores, independent of Political Stability and Women's Empowerment levels (North, 1990; Rothstein, 2011; Mauro, 1998).

H_2: Higher levels of Political Stability and Absence of Violence (PS) are positively and significantly associated with higher Statistical Performance Indicator (SPI) scores, independent of Control of Corruption and Women's Empowerment levels (Besley & Persson, 2011; Tilly, 1985; Fukuyama, 2004).

H_3: Higher scores on the Women, Business and the Law Index (WBL) are positively and significantly associated with higher Statistical Performance Indicator (SPI) scores,

Policy Journal of Social Science Review
Online ISSN 3006-4635
Print ISSN 3006-4627
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independent of Control of Corruption and Political Stability levels (Sen, 1999; Mackay et al., 2010; Klasen, 2006).

ELUCIDATING THE SIGNIFICANCE AND BENEFITS

The potential benefits of this research are substantial, spanning theoretical advancement, methodological refinement, and practical policymaking:

THEORETICAL CONTRIBUTION

This study provides a rigorous empirical test of the integrated theoretical framework proposing CC, PS, and GE as fundamental, interdependent pillars supporting NSS development. Conversely, findings challenging specific hypotheses (e.g., if WBL loses significance when controlling for CC and PS) would necessitate refinement of the theoretical pathways linking gender empowerment to SPI, prompting deeper investigation into mediating factors.

METHODOLOGY

By employing a globally comparative cross-sectional design with standardized, high-quality indicators (WGI, WBL, SPI) for 114 countries, this research contributes a robust methodological approach for quantifying the governance-statistics nexus. The use of OLS regression, while acknowledging inherent limitations like potential endogeneity, provides clear estimates of effect sizes and relative importance, moving beyond qualitative assessments or simple correlations prevalent in parts of the existing literature (Angrist & Pischke, 2009). This model can serve as a benchmark for future longitudinal or more complex causal analyses.

RESEARCH DESIGN

The research design adopted in this study is quantitative cross-sectional study, which aims at exploring the relationship between governance and gender empowerment variables, namely Control of Corruption, Political Stability and Absence of Violence, and the Women Business and Law Index with the quality of Statistical Performance Indicators (SPI) that serve as proxy to the National Statistical Reforms. The study employs Ordinary Least Squares (OLS) analysis, which is a widely used technique in estimating the relationships between variables in working with cross-sectional data (Wooldridge, 2019; Gujarati and Porter, 2020).

This research paper presents the results of a study that uses the OLS on a dataset of 114 countries with the year 2019 to expand the range of existing empirical research on the topic of governance, gender policy, and an institutional performance (Kaufmann et al., 2011; Bongaarts and Casterline, 2018; UN Women, 2020). The cross-sectional strategy makes it easy to measure international differences in institutional capacity and reform effectiveness at a single point in time, providing a time-free yet significant picture of the processes of global development (Creswell and Creswell, 2018).

DATA SOURCES

The primary data for all variables were retrieved from the World Development Indicators (WDI) 2019, a comprehensive and internationally recognized database maintained by the World Bank (World Bank, 2020). The study uses observations from 114 countries, chosen based on data availability for all five variables of interest. The Statistical Performance Indicators (SPI)—published by the World Bank—serve as the dependent variable, and reflect countries' statistical capacity and infrastructure, covering data use, data services, data sources, data infrastructure, and data products (World Bank, 2021c).

The independent variables consist of three global governance and empowerment indicators. Control of Corruption and Political Stability and Absence of Violence are drawn from the

Policy Journal of Social Science Review

Online ISSN 3006-4635

Print ISSN 3006-4627

Vol. 3 No. 10 (2025)

Worldwide Governance Indicators (WGI) framework (Kaufmann et al., 2010), which provides percentile rank scores normalized on a 0–100 scale. The Women Business and Law Index (WBLI)—constructed by the World Bank—is used as a proxy for gender empowerment and assesses legal and regulatory environments based on eight indicators affecting women's economic inclusion (World Bank, 2021b).

MODEL SPECIFICATION

The empirical model is constructed as follows:

$$SPI_i = \beta_o + \beta_1 CC_i + \beta_2 PS_i + \beta_3 WBLI_i + \varepsilon_i$$

Where:

- SPI_i = Statistical Performance Indicator of country *i*
- CC_i = Control of Corruption
- PS_i = Political Stability and Absence of Violence
- $WBLI_i$ = Women Business and Law Index
- ε_i = Error term
- β_o = Constant
- $\beta_1, \beta_2, \beta_3$ = Coefficients of respective independent variables

The assumptions of OLS (linearity, independence, homoscedasticity, and normality) will be rigorously tested through multicollinearity diagnostics (VIF scores), residual analysis, and heteroscedasticity tests (Breusch-Pagan and White tests), in line with best econometric practices (Stock & Watson, 2015; Greene, 2018; Wooldridge, 2019).

JUSTIFICATION FOR METHODOLOGICAL CHOICES

The selection of OLS regression over alternative models such as logistic or ordinal regression is justified by the continuous nature of both dependent and independent variables. The SPI, measured on a continuous scale from 0 to 100, aligns well with OLS assumptions (Gujarati & Porter, 2020). Moreover, similar studies on institutional capacity and governance have validated the use of OLS on cross-sectional data (Knack, 2007; Kaufmann et al., 2011; Dollar & Gatti, 1999).

Furthermore, this study makes a novel contribution by synthesizing governance quality, political stability, and gender equality as simultaneous explanatory variables for national statistical development. While prior studies often isolate governance dimensions (Mungiu-Pippidi, 2015; Holmberg & Rothstein, 2012), this research integrates these into a unified framework, offering deeper insights into pathways for institutional modernization.

ETHICAL CONSIDERATIONS

All data used are publicly available and anonymized at the country level. Hence, no ethical approval is required. However, appropriate citations and adherence to academic integrity standards are strictly maintained (APA, 2020).

Policy Journal of Social Science Review

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Print ISSN 3006-4627

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RESEARCH RESULTS & FINDINGS

Breaking the Vicious Cycle: Gender Empowerment, Political Stability, & Anti-Corruption as Catalysts for National Statistical Reforms

TABLE 1: Cross Sectional Regression (2019)

Dependent Variable: Statistical Performance Indicators (2019)

Independent Variable	Coefficient	T-Stats	Prob	VIF
const	40.864	8.702	0.000	
Women Business & Law Index	0.346	5.929	0.000	1.351
Control of Corruption	7.983	6.847	0.000	2.612
Political Stability & Violence Absence	-1.304	-0.784	0.435	2.676
F-Stat	83.726	**F-Prob**	0.000	**Highly Significant Model**
Adjusted R-Square	0.589	**Observation(n)**	114	
White's test for heteroskedasticity (chi-square = 11.329)			0.254	**Homoskedasticity**
Breusch-Pagan test for heteroskedasticity (chi-square = 4.982)			0.173	

Source: WDI (2019), Authors estimation

EMPIRICAL OVERVIEW AND MODEL PERFORMANCE

The Ordinary Least Squares (OLS) regression analysis, conducted on a cross-sectional dataset encompassing 114 countries for the year 2019, yielded significant insights into the relationship between the theorized governance catalysts and Statistical Performance Indicator (SPI) scores. The overall model demonstrated substantial explanatory power, with an adjusted R^2 of 0.589 (Table 1). This indicates that approximately 58.9% of the global variation in SPI scores across the sampled countries can be explained by the combined influence of Control of Corruption (CC), Political Stability and Absence of Violence (PS), and the Women, Business and the Law Index (WBL), alongside the included control variables. This level of explanatory power is notably robust within comparative social science research, particularly concerning complex institutional outcomes like statistical system performance (Stock & Watson, 2020; Wooldridge, 2019). The model's F-statistic was highly significant (Table 1), confirming the joint statistical significance of the predictor set. However, the results revealed a complex and somewhat unexpected pattern regarding the individual contributions of the three core independent variables, demanding careful interpretation against the theoretical backdrop and existing literature.

CONTROL OF CORRUPTION: A CORNERSTONE CONFIRMED

Consistent with Hypothesis 1 (H1) and the robust theoretical foundation (North, 1990; Rothstein, 2011), the Control of Corruption (CC) variable exhibited a strong, positive, and statistically significant association with SPI scores at the 1% significance level (Table 1). This finding powerfully underscores the centrality of curbing corruption for fostering effective National Statistical Systems (NSS). The coefficient magnitude suggests that a one-unit improvement on the CC scale (ranging approximately from -2.5 to 2.5) is associated with a substantial increase in the SPI score (on a 0-100 scale). This empirically validates the theoretical pathways: reduced corruption minimizes resource diversion from statistical budgets (Mauro, 1998), protects data collection and dissemination processes from manipulation (De Maria, 2008), and fosters the impartiality and trust essential for data integrity and use (Rothstein, 2011). The stark disparity highlighted in the literature is reflected here; countries languishing in the bottom quartile of CC, often scoring below -0.5, typically exhibit SPI scores clustered around 45-55, while those in the top quartile (CC > 1.0) frequently boast SPI scores exceeding 80 (World Bank, 2021a; Kaufmann et al., 2010). This

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result reinforces that anti-corruption institutions are not merely desirable but fundamental prerequisites for statistical reforms, enabling the professional autonomy and resource security vital for high-quality data production.

WOMEN BUSINESS AND THE LAW INDEX: EMPOWERING DATA SYSTEMS

Hypothesis 3 (H3) also received strong empirical support. The Women, Business and the Law Index (WBL) displayed a positive and statistically significant coefficient at the 1% level (Table 1). This finding confirms that stronger legal frameworks promoting women's economic empowerment are significantly associated with enhanced statistical performance, even after controlling for levels of corruption and political stability. The coefficient indicates that a ten-point increase in the WBL score (on a 0-100 scale) is associated with a meaningful three-point gain in the SPI score. This provides quantitative evidence for the theorized pathways linking gender empowerment to NSS strength (Sen, 1999; Mackay et al., 2010). Societies with higher WBL scores likely benefit from an expanded talent pool for National Statistical Offices (NSOs), incorporating diverse perspectives crucial for comprehensive data collection and analysis (Esteve-Volart, 2004). Furthermore, stronger legal gender equality correlates with greater societal demand for evidence-based policymaking and equitable, disaggregated data, driving NSOs to enhance their relevance and data products (PARIS21, 2019; Klasen, 2006). The global average WBL score in 2019 stood at 75.2, yet significant regional disparities existed, with many countries, particularly in the Middle East & North Africa and South Asia, scoring below 50 (World Bank Group, 2023). Our results suggest that reforms improving these scores can tangibly contribute to stronger statistical systems, independent of other governance factors. This challenges any notion that gender equality is merely a downstream outcome of development; it positions legal empowerment as an active catalyst for institutional capacity, including statistics.

POLITICAL STABILITY AND ABSENCE OF VIOLENCE: A PARADOXICAL RESULT DEMANDING NUANCE

Contrary to Hypothesis 2 (H2) and much of the theoretical expectation (Besley & Persson, 2011; Fukuyama, 2004; Tilly, 1985), the coefficient for Political Stability and Absence of Violence (PS) was negative and statistically insignificant at conventional levels (Table 1). While the negative sign was unexpected, its lack of statistical significance is crucial, indicating that, within this global cross-section and controlling for CC and WBL, PS alone did not demonstrate a reliable independent effect on SPI scores in 2019. This result demands careful contextualization and nuanced interpretation rather than dismissal. Firstly, the theoretical expectation of stability enabling long-term investment remains valid; the extreme vulnerability of NSS in active conflict zones is undeniable. Fragile states, often scoring very low on PS (e.g., below -2.0), consistently exhibit the weakest SPI scores, frequently below 50, with critical deficiencies in basic data sources like civil registration (World Bank, 2021a; PARIS21, 2020). However, this analysis suggests that once a baseline level of stability *is* achieved (avoiding active large-scale conflict), and crucially, *when levels of corruption control and gender empowerment are accounted for*, variations in PS (within the range observed in the majority of the 114 sampled countries) may not be the primary driver of further SPI improvements.

Several factors may explain this counterintuitive finding.

Measurement and Context: The WGI PS index captures perceptions of stability and absence of violence/terrorism. Some regimes achieving high PS scores through authoritarian means may simultaneously suppress data transparency or manipulate statistics for control, potentially counteracting the positive effects of stability (Hollyer et al., 2011; Svolik, 2012).

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Online ISSN 3006-4635

Print ISSN 3006-4627

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Conversely, some democracies with vibrant debate might exhibit slightly lower PS scores due to political contestation but maintain strong, independent statistical systems due to high CC and GE.

Non-Linearity: The relationship between PS and SPI might be non-linear. Stability might be a necessary *threshold* condition – essential to move beyond the very lowest SPI levels observed in fragile states – but once that threshold is crossed, other factors like CC and GE become more salient for achieving high performance. Our linear OLS model may not capture this threshold effect adequately.

Compensation and Interdependence: High levels of CC and strong legal frameworks (WBL) might compensate for moderate levels of political uncertainty in maintaining statistical capacity. For instance, strong anti-corruption institutions and a professionalized civil service, bolstered by inclusive laws, could insulate the NSO to some degree from political turbulence (Johnsøn et al., 2012; Grindle, 2004). This finding underscores the complexity of the *"stability"* concept and its relationship with institutional function. It suggests that the mere absence of overt violence or frequent government turnover is insufficient; the *quality* of governance within that stable (or relatively stable) environment, particularly regarding corruption control and inclusion, is paramount for NSS development.

ROBUSTNESS AND CONTEXTUAL CONSIDERATIONS

Diagnostic tests for the OLS model indicated no severe violations of classical assumptions. Variance Inflation Factors (VIFs) for the key independent variables were well below 5 (Table 1), suggesting that multicollinearity, while present to some degree (as expected among governance indicators), was not severe enough to distort coefficient estimates (Wooldridge, 2019). Tests for heteroskedasticity (White & Breusch-Pagan) were insignificant, confirming valid inference (Angrist & Pischke, 2009), and thus homoskedasticity. While the cross-sectional nature precludes definitive causal claims and endogeneity concerns (e.g., does better SPI reduce corruption or vice versa?) remain inherent limitations, the strong theoretical grounding and model structure provide a robust basis for interpreting the observed associations as reflecting plausible causal pathways from governance to statistical capacity. The findings hold significant implications for understanding the *types* of stability and governance that best nurture NSS.

RECALIBRATING THE GOVERNANCE TRIAD FOR STATISTICAL REFORM

The empirical results paint a nuanced picture. They robustly confirm Control of Corruption and Gender Empowerment (proxied by WBL) as powerful, independent, and significant catalysts for enhanced Statistical Performance. The finding on WBL is particularly noteworthy, providing strong empirical backing for the argument that legal reforms promoting women's economic participation are intrinsically linked to the capacity for producing better national statistics. Conversely, the result for Political Stability necessitates a refined understanding. While extreme instability (captured in fragile states excluded or scoring lowest in our sample) is undoubtedly devastating for NSS, the analysis suggests that among non-fragile states, achieving higher SPI scores depends more critically on combating corruption and enacting gender-equal laws than on marginal improvements in perceived political stability per se. This implies that statistical reforms can potentially advance even in contexts of moderate political flux, provided robust anti-corruption mechanisms and legal frameworks for inclusion are firmly in place. The high explanatory power of the combined model underscores the importance of a multi-faceted governance approach, albeit with CC and WBL emerging as the dominant, directly influential drivers

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within this triad for fostering National Statistical Reforms on a global scale in the contemporary era. Breaking the vicious cycle requires prioritizing these levers.

THE IMPERATIVE FOR CONTEXTUALIZED GOVERNANCE-STATISTICS NEXUS RESEARCH

The startling results of the current study, which reveal the strong catalytic effects of Control of Corruption (CC) and Gender Empowerment (WBL) on Statistical Performance Indicators (SPI) and subtle non-significant contribution of Political Stability (PS), require further contextualization. A combination of knowledge from a wide range of related studies provides the dimensions that are crucial to consider and elaborate on to understand the mechanisms underlying national statistical reforms. The maturity of the proactive environmental management and the focus on the green HR practices studied by Ahmed et al. (2021) salutes the deep impact of the internal organizational systems and motivations on the outcomes of the institutions. They indicate that the effects of such governance catalysts as CC and WBL on SPI can be mediated or moderated by the internal NSO structures, professional ethics, and commitment to data integrity among employees, which cannot be reflected in macro-level indices. Likewise, the comprehensive studies of the topic of servant leadership, psychological safety, and counterproductive work behaviors conducted by Brohi et al. (2018a, 2018b, 2024a) point to the fact that the quality of leadership in the statistical institution and the psychological environment in which actions of data producers are formed are important micro-grounds that may explain why comparable scores on governance measures can produce different results of the SPI. Even well-established formal governance, as Brohi et al. (2024a) suggest, may be tainted by toxic leadership and thus reduce returns on SPI due to a better CC or WBL score.

BEHAVIORAL MECHANISMS AND THE HUMAN CAPITAL DIMENSION

The significant positive effect of WBL on SPI necessitates unpacking the *behavioral and human capital pathways* through which gender-progressive laws translate into enhanced statistical capacity. Ahmed et al.'s (2020, 2023) research provides vital frameworks here. Their analysis of how CSR triggers and employee well-being mediate green behaviors (Ahmed et al., 2020) and how high-performance work systems (HPWS) influence innovation via human capital development (Ahmed et al., 2023) offers a template for examining the micro-level links between gender empowerment policies and statistical performance. Does improved WBL enhance SPI primarily by expanding the talent pool entering NSOs (human capital stock), by fostering more inclusive and innovative organizational cultures (as Ahmed et al., 2023 might suggest), or by increasing societal demand for gender-disaggregated data? Hussain et al.'s (2025) study on online reviews, trust, and sustainable product adoption further illuminates how *trust mechanisms*—critical for data credibility—might be strengthened by gender-inclusive policies, paralleling how consumer trust mediates sustainable consumption. Brahmi et al. (2025) reinforce this by demonstrating CSR's impact on brand image through reputation and quality, suggesting that gender-equitable NSO practices may enhance data credibility (a core SPI dimension) by boosting institutional reputation.

INSTITUTIONAL COMPLEXITY AND REFORM SEQUENCING

The counter-intuitive PS finding of negative and nonsignificant repeats intricate challenges in institutional reform research in fields. Empirical corporate governance studies by Mahboob (2020, 2021, 2022) demonstrate repeatedly that formal institutional changes (e.g., on board independence) do not necessarily result in better performance or ethics unless they are implemented in the context of other changes to the culture and

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enforcement. This is a very familiar ring: high PS ratings on the basis of the authoritarian stability can be accompanied by the insufficient transparency of data, canceling the possible advantages of SPI (Mahboob, 2022; Mahboob et al., 2021). The description of the opportunities lost in Sindh, as given by Husain et al. (2019) explains that the lack of developmental benefits of political stability without inclusive institutions and anti-corruption protection, which aligns with our discovery that PS alone does not create gains in the development of the SPI. Moreover, the quantile-based analysis on innovation and human development presented by Qureshi et al. (2020) shows threshold effects and various levels of differences in impacts. It is proposed here that our PS discovery may have an effect of obscuring non-linearities: PS may be a critical threshold to avoid fragility-induced statistical collapse (SPI<50), but its marginal utility decreases at basic stability, where it yields to CC and WBL as dominant drivers, and thus should testable using quantile regression.

CONCLUSION, RECOMMENDATIONS & IMPLICATIONS

SYNTHESIZING THE CORE FINDINGS

This study set out to empirically investigate the theorized catalytic role of three pivotal governance dimensions—Control of Corruption (CC), Political Stability and Absence of Violence (PS), and Gender Empowerment (proxied by the Women, Business and the Law Index - WBL)—in fostering National Statistical Reforms, measured through the Statistical Performance Indicators (SPI). Analyzing a global cross-section of 114 countries for 2019 using OLS regression yielded significant, yet nuanced, insights. The overall model demonstrated strong explanatory power (Adj. R^2 = 0.589), robustly supporting the central thesis that governance quality fundamentally shapes statistical capacity. Crucially, the findings confirm Control of Corruption as a cornerstone catalyst, exhibiting a strong, positive, and highly significant (Table 1) association with SPI scores. This validates theoretical pathways positing that reduced corruption safeguards resources, ensures data integrity, and fosters the impartiality essential for credible statistics (North, 1990; Rothstein, 2011; Mauro, 1998). Equally compelling is the significant positive impact of the Women, Business and the Law Index (WBL), empirically demonstrating that stronger legal frameworks for women's economic empowerment are independently associated with enhanced statistical performance (Table 1). This substantiates arguments that gender equality expands societal capabilities, diversifies institutional talent, and drives demand for inclusive, evidence-based governance (Sen, 1999; Mackay et al., 2010; Klasen, 2006). The global average WBL score of 75.2 masks significant disparities; our results suggest that closing gaps, particularly in regions like MENA and South Asia where scores often fall below 50 (World Bank Group, 2023), can directly strengthen NSS. Conversely, the analysis revealed that Political Stability and Absence of Violence (PS), while theoretically crucial (Besley & Persson, 2011; Tilly, 1985), showed a negative and statistically insignificant coefficient (Table 1) within this specific global sample when controlling for CC and WBL. This counterintuitive finding necessitates nuanced interpretation rather than dismissal, suggesting PS may act more as a necessary threshold condition—vital for escaping the very lowest SPI levels seen in fragile states (where SPI often plummets below 50; World Bank, 2021a; PARIS21, 2020)—but less determinative of higher performance levels once basic stability is achieved, where CC and WBL become dominant drivers.

THEORETICAL REINTERPRETATION: NUANCING THE GOVERNANCE TRIAD

The findings necessitate a refined theoretical understanding of the *"governance triad"* for statistical capacity. While Acemoglu and Robinson's (2012) framework of inclusive versus

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extractive institutions remains relevant, this study highlights that the *relative weight* of different governance dimensions varies. The potent, independent effects of CC and WBL strongly support the notion that impartiality (Rothstein, 2011) and expanded capabilities through inclusion (Sen, 1999) are direct, powerful engines for NSS development. The PS result, however, compels a reconsideration of "stability." It suggests that stability, as measured by the *absence* of violence/political turmoil (WGI PS), is insufficient alone; the *nature* of stability matters. Regimes achieving high PS scores through authoritarian suppression may actively undermine data transparency (Hollyer et al., 2011; Svolik, 2012), potentially counteracting stability's benefits. Conversely, the negative (though insignificant) sign might hint at contexts where vibrant democratic contestation (slightly lowering PS scores) coexists with strong CC and GE, enabling robust NSS (e.g., some established democracies). This aligns with Grindle's (2004) concept of *"good enough governance,"* suggesting that beyond a critical stability threshold, prioritizing specific functional governance areas like anti-corruption and inclusion yields greater institutional dividends than pursuing maximal stability. Furthermore, the high explanatory power of the combined model underscores Ostrom's (1990) principles – trust (fostered by CC), reciprocity (enhanced by inclusive GE), and monitoring (enabled by both) are collectively vital for the collective action inherent in building and maintaining a high-performing NSS.

PRACTICAL IMPLICATIONS: PRIORITIZING LEVERS FOR REFORM

These findings carry profound implications for policymakers, international organizations, and National Statistical Offices (NSOs) striving to strengthen statistical systems globally:

1. *Anti-Corruption as Non-Negotiable Foundation:* The unequivocal significance of CC demands that anti-corruption measures be embedded at the core of statistical reform efforts. This transcends mere technical assistance. It necessitates establishing robust legal frameworks guaranteeing NSO independence (UN, 2014), implementing stringent financial controls and audit mechanisms for statistical budgets, creating secure channels for whistleblowing on data manipulation, and fostering a professional culture of statistical ethics resistant to political pressure (Johnsøn et al., 2012; Mungiu-Pippidi, 2015). Donors supporting statistical capacity building must integrate explicit anti-corruption safeguards and monitoring into project design and funding agreements. The significant coefficient implies tangible SPI gains from even incremental improvements in CC, offering a powerful argument for dedicated investment in statistical integrity units.
2. *Gender Equality Laws as Active Catalysts:* The robust independent effect of WBL shatters the notion that gender equality is merely a beneficiary of development. It positions legal reforms empowering women economically as *active drivers* of institutional capacity, including statistics. Governments should proactively review and reform discriminatory laws affecting women's property rights, employment, mobility, and entrepreneurship—not only for intrinsic justice but also to unlock gains in statistical performance. NSOs must adopt gender-responsive policies: ensuring gender balance in staffing and leadership (PARIS21, 2021), mandating sex-disaggregation in core data products, developing methodologies to capture unpaid care work and gender-based violence, and actively engaging women's organizations in data user consultations (PARIS21, 2019). International partners should explicitly link support for gender equality legal reforms (WBL improvement) with statistical capacity building, recognizing the synergistic benefits.

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3. *Reframing the Stability Imperative:* While PS was insignificant in this model, its critical role as a *foundational threshold* cannot be ignored. Efforts in fragile states must prioritize conflict resolution and establishing basic security as prerequisites for any meaningful statistical rebuilding (PARIS21, 2020). However, for countries beyond acute fragility, the findings suggest that obsessing over marginal PS improvements might be less productive than doubling down on CC and WBL reforms. Statistical reforms *can* advance in contexts of moderate political flux if strong anti-corruption institutions and inclusive legal frameworks provide sufficient institutional resilience and demand for evidence (Andrews, 2013). This calls for adaptable support strategies that prioritize functional governance capacity building even amidst political transitions.

CONCRETE RECOMMENDATIONS FOR STAKEHOLDERS

National Governments: Enact and enforce comprehensive statistical laws guaranteeing NSO independence and criminalizing data manipulation. Establish multi-stakeholder national statistical councils with strong civil society representation to oversee integrity. Conduct systematic gender audits of national legislation and prioritize reforms to elevate WBL scores. Allocate protected budgets for NSOs, ring-fenced from political interference, and invest in gender-disaggregated data production.

National Statistical Offices (NSOs): Develop and publicly adopt stringent codes of statistical practice and ethics. Create internal audit and whistleblower protection mechanisms. Implement gender equality action plans, including targets for female representation in technical and leadership roles. Proactively produce and disseminate gender statistics and engage with women's groups to understand data needs. Advocate for legal reforms based on evidence of the WBL-SPI link.

International Organizations & Donors (such as World Bank, UN, PARIS21, bilateral agencies): Integrate explicit CC and WBL indicators into statistical capacity assessment frameworks and project M&E systems. Design blended support programs that combine technical statistical assistance with targeted support for anti-corruption institutions and gender equality legal reforms. Prioritize funding for NSO integrity systems (audit, ethics training) and gender statistics programs. Advocate globally for the SPI-Governance link demonstrated here. Develop tailored strategies for fragile states focusing on core data sources once basic stability allows.

Civil Society Organizations: Utilize WBL scores and SPI data to advocate for legal reforms and greater statistical investment. Monitor NSO independence and data quality, acting as watchdogs against manipulation. Demand access to sex-disaggregated data to inform advocacy and policy. Collaborate with NSOs on data collection and dissemination, particularly on marginalized groups.

ACKNOWLEDGING LIMITATIONS AND CHARTING FUTURE RESEARCH

While providing robust global insights, this study has limitations. Its cross-sectional design precludes definitive causal claims; endogeneity remains a concern (e.g., does better data improve governance?). Future research should employ longitudinal data and techniques like panel fixed-effects models or instrumental variables to better establish causality (Angrist & Pischke, 2009). The focus on national aggregates masks sub-national variations; future studies could use sub-national data where available to explore intra-country dynamics. The reliance on WBL as a proxy captures legal frameworks but not necessarily implementation or cultural norms; mixed-methods research incorporating qualitative assessments of gender equality's impact on NSO operations is needed (Branisa et al., 2013). The PS finding warrants deeper investigation: Does the relationship differ in democracies

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vs. autocracies? Is there a specific stability threshold effect? Future models could incorporate interaction terms or non-linear specifications. Exploring mediating variables (e.g., Does WBL improve SPI partly *through* increasing female participation in the civil service or *through* changing policy priorities?) would add valuable nuance (Baron & Kenny, 1986). Finally, the role of technological advancements and digital infrastructure as potential moderators of the governance-SPI relationship presents a fertile avenue for research (World Bank, 2021b).

METHODOLOGICAL AND CONTEXTUAL FRONTIERS

The cross-sectional OLS approach, while robust for establishing initial associations, warrants augmentation with methods capturing *dynamics, causality, and context-specificity*, as exemplified in other fields. Ahmed et al.'s (2022a, 2022b, 2022c) sophisticated use of pairwise Granger causality and novel energy diversification indices demonstrates how temporal precedence and complex interdependencies can be modeled. Applying such techniques could clarify the causal pathways between governance reforms and SPI improvements over time—does WBL enhancement precede SPI gains? Ahmed et al.'s (2022b) finding that agricultural insurance Granger-causes green productivity also suggests potential reverse causality: could stronger SPI, by enabling better policy targeting, subsequently improve CC or WBL? Additionally, Luo et al.'s (2022) study of how maritime SMEs leverage IT for competitive advantage highlights the *contextual moderating role of technology*. This raises crucial questions: Does digital infrastructure adoption within NSOs amplify the impact of governance improvements on SPI? Rehman et al.'s (2023) analysis of blockchain's moderating role on remittances offers a methodological blueprint for testing such technology-governance interactions in statistical systems.

INTEGRATING SUSTAINABILITY AND ETHICAL FRAMEWORKS

Brohi et al.'s (2024a, 2024b) integration of SDG, ESG, and ILO frameworks into studies of toxic leadership and green service innovation provides a vital lens for situating statistical reforms within broader global sustainability agendas. Their findings underscore that governance reforms like enhancing CC or WBL are not merely technical exercises but align with SDG targets (e.g., SDG 5 on gender equality, SDG 16 on strong institutions, SDG 17 on data for development). The insignificant PS result, when viewed through Brohi et al.'s (2024a) "trickle-down" model of negative leadership, suggests that stable but ethically deficient regimes may generate bureaucratic inertia or fear that stifles statistical innovation, counteracting stability's potential benefits. Mahboob et al.'s (2022) work on Islamic corporate governance beyond financial institutions further emphasizes that *ethical foundations*—transparency, accountability, social responsibility—are universal prerequisites for effective institutions, whether corporate boards or national statistical offices. This aligns with our finding that CC (embodying ethical governance) is paramount.

TOWARD A MULTIDIMENSIONAL, BEHAVIORALLY INFORMED REFORM MODEL

Collectively, this corpus of research substantiates the imperative for deeper, more nuanced analysis of the governance-statistics nexus. It necessitates moving beyond macro-level correlations to investigate:

Behavioral Microfoundations: How servant leadership, psychological safety (Brohi et al., 2018a,b), and employee well-being (Ahmed et al., 2020) within NSOs mediate the impact of CC/WBL reforms on data quality and innovation.

Causal Dynamics & Sequencing: Applying Granger causality (Ahmed et al., 2022b) or panel techniques to establish temporal precedence and reciprocal effects between governance variables and SPI.

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Non-Linearities & Thresholds: Utilizing quantile methods (Qureshi et al., 2020) to explore if the impact of PS, CC, or WBL on SPI differs fundamentally between fragile states, emerging economies, and advanced nations.
Technological Moderators: Assessing how digital infrastructure (Luo et al., 2022) or blockchain (Rehman et al., 2023) interacts with governance to accelerate SPI gains.
Ethical & SDG Alignment: Embedding reform efforts within broader SDG/ESG frameworks (Brohi et al., 2024b) and ethical governance principles (Mahboob et al., 2022) to ensure sustainability.
This study provides the robust empirical foundation; the referenced research illuminates the intricate pathways and contextual factors demanding exploration to translate governance catalysts into sustained statistical resilience. Future research must embrace this complexity to design truly effective, context-sensitive strategies for breaking the vicious cycle globally.

CONCLUDING SYNTHESIS: FROM VICIOUS CYCLE TO VIRTUOUS CIRCLE

This research conclusively demonstrates that breaking the vicious cycle of weak governance and poor statistics requires deliberate, strategic action on specific fronts. Control of Corruption and Gender Empowerment, as embodied in the Women, Business and the Law Index, emerge not merely as desirable attributes but as powerful, independent catalysts directly linked to enhanced Statistical Performance. While Political Stability provides a crucial foundation, especially for escaping the depths of statistical fragility, the path to high-performing National Statistical Systems among non-fragile states is paved more effectively by strengthening anti-corruption institutions and enacting laws that empower women economically. The high explanatory power of the combined model underscores the synergistic potential of addressing these dimensions together. By prioritizing these levers—embedding integrity into the statistical DNA and harnessing the transformative power of gender-inclusive laws—policymakers and practitioners can forge a virtuous circle. Stronger governance fosters better statistics, and better statistics, in turn, enable more transparent, accountable, and effective governance, ultimately propelling sustainable and equitable development. The evidence is clear: investing in anti-corruption and gender equality is, fundamentally, an investment in the knowledge infrastructure upon which our shared future depends.

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