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THE ROLE OF INTERNATIONAL COMMITMENTS IN COMBATING THE ILLICIT DISTRIBUTION OF COCAINE

by

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Supervisor:

Rod Alence

A research report submitted in partial fulfilment of the requirements for the degree of MA in e-Science by Coursework and Research Report in the School of Social Science and the Faculty of Humanities

University of the Witwatersrand, Johannesburg,
South Africa, 2024

Author's Declaration

I, Raquel Baeta, declare that this thesis is my own, unaided work. It is being submitted for the degree of MA in e-Science by Coursework and Research Report at the University of the Witwatersrand, Johannesburg. It has not been submitted for any degree or examination at any other university.

Authors signature:



Abstract

Theoretical studies claim that states' adherence to international drug control treaties may impact the enforcement of cocaine seizure regulations. However, this study found no significant relationship between commitment to United Nations Conventions and cocaine seizures. The study employed two multi-level regression models to investigate the potential correlation between state adherence to drug control conventions and cocaine seizures between 1996 and 2019. The results suggest that other factors, such as Gross Domestic Product (GDP), trade openness, military expenditure, and governance indicators, may play a more important role in explaining the variation in cocaine seizures. Furthermore, the findings imply that practical outcomes may not meet expectations despite efforts to adhere to international agreements on drug control. Other factors such as national interests, domestic politics, and resource allocation might play a more crucial role in determining the effectiveness of drug control measures. Therefore, comprehensive strategies beyond governance indicators alone are necessary to address drug trafficking, requiring multifaceted approaches considering socio-economic dynamics, law enforcement capabilities, and international cooperation.

Acknowledgements

The support of the DSI-NICIS National e-Science Postgraduate Teaching and Training Platform (NEPTTP) in facilitating this research is acknowledged with gratitude.

Additionally, I would like to extend my appreciation and gratitude to my supervisor, Dr. Rod Alence, for providing support and guidance throughout this research journey. I would also like to acknowledge the University of the Witwatersrand for their support in making this research possible.

Lastly, I would like to express my heartfelt gratitude to Nicholas Rademeyer for his invaluable support during the preparation of this paper.

Table of Contents

Author's Declaration **ii**

Abstract **iii**

Acknowledgements **iv**

List of Figures **viii**

List of Tables **x**

1 Introduction **1**

2 Literature Review **3**

2.1 Background 3

2.2 International Treaties & Conventions 4

2.3 Drug Seizures 6

3 Research Question **9**

3.1 Hypothesis 10

3.2 Research Aims and Objectives 10

3.2.1 Research Aims 11

3.2.2 Objectives 11

3.3 Limitations 12

4 Research Methodology **13**

4.1 Research Design . . . 13

4.1.1 Geographical Variables . . . 13

4.1.2 International Drug Control Convention Variables . . . 15

4.1.3 Cocaine Seizures . . . 16

4.1.4 Economic Indicators . . . 17

4.1.5 Governance Indicators . . . 19

4.2 Methods . . . 20

4.3 Ethical Considerations . . . 21

5 Results **22**

5.1 State Commitment . . . 22

5.1.1 Commitment to United Nations Conventions . . . 23

5.1.2 Commitment to Cocaine Seizures . . . 25

5.1.3 Regional Overview on Commitment & Cocaine Seizures . . . 28

5.2 Economic Indicators . . . 45

5.2.1 Trade Ratio as Percentage of GDP . . . 46

5.2.2 Gross Domestic Product (GDP) . . . 50

5.2.3 Military Expenditure as a Percentage of GDP . . . 54

5.3 Governance Indicators . . . 58

5.3.1 Regional Overview on World Governance Indicators (WGI) . . . 61

6 Regression Analysis **64**

6.1 Logistic Regression Model with Random Effects . . . 65

6.2 Linear Mixed Effects Model (LMM) . . . 70

6.3 RQ1: Relationship Between State Commitment and Cocaine Seizure Outcomes . . . 74

6.4 RQ2: Impact of Commitment on Government Expenditure . . . 76

6.5 RQ3: Relationship Between Commitment and Governance Indicators . . . 78

7 Conclusion **80**

References **82**

APPENDICES **88**

A Regional Trends **89**

A.1 East Asia & the Pacific (EAP) 90

A.2 South Asia (SA) 94

A.3 Europe & Central Asia (ECA) 98

A.4 Latin America & the Caribbean (LAC) 102

A.5 North America (NA) 107

A.6 Middle East & North Africa (MENA) 111

A.7 Sub-Saharan Africa (SSA) 115

List of Figures

5.1 Map of Commitment to Drug Control Conventions Across the Globe . . . 24

5.2 Map of Annual Mean Cocaine Seizures in Kilograms (kgs) in East, South Asia & the Pacific . . . 30

5.3 Map of Annual Mean Cocaine Seizures in Kilograms (kgs) in Europe & Central Asia. . . . 35

5.4 Map of Annual Mean Cocaine Seizures in Kilograms (kgs) in Latin America, the Caribbean & North America. . . . 38

5.5 Map of Annual Cocaine Seizures in Kilograms (kgs) in the Middle East, North Africa, & Sub-Saharan Africa. . . . 42

5.6 Scatter Plot of The Relationship Between Trade Ratio and Log-Adjusted-GDP. . . . 48

5.7 Stacked Bar Graph of Mean Trade Ratio by Region and Commitment to United Nations Conventions. . . . 49

5.8 Line Graph of A Temporal Analysis of Log-Adjusted GDP. . . . 52

5.9 Bar Graph of A Regional Analysis of Log-Adjusted GDP Trends. . . . 53

5.10 Line Plot of Temporal Trends in Military Expenditure as a Percentage of GDP. . . . 56

5.11 Line Plot of Regional Analysis of Military Expenditure Percentage of GDP in USD. . . . 57

5.12 Area Plots of Regional Trends of World Governance Indicators . . . 62

6.1 Predicted Seizures from Logistic Model with Random Effects . . . 69

6.2 Predicted Seizures from Linear Mixed Effects Model (LMM) . . . 74

A.1 Line Plot: UN Commitment and WGI Trends in East Asia & the Pacific. . 93
A.2 Line Plot: UN Commitment and WGI Trends in South Asia. 98
A.3 Line Plot: UN Commitment and WGI Trends in Europe & Central Asia. . 102
A.4 Line Plot: UN Commitment and WGI Trends in Latin America & the Caribbean. 106
A.5 Line Plot: UN Commitment and WGI Trends in North America. 110
A.6 Line Plot: UN Commitment and WGI Trends in Middle East & North Africa. 114
A.7 Line Plot: UN Commitment and WGI Trends in Sub-Saharan Africa. . . . 119

List of Tables

5.1 Mean Commitment to the United Nations (UN 1961, UN 1971, and UN 1988) Across Different Regions. 25

5.2 Annual and Total Quantities of Seized Cocaine in Kilograms (kgs) by Region. 26

5.3 Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in East Asia & the Pacific. 29

5.4 Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in South Asia. 32

5.5 Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in Europe & Central Asia. 33

5.6 Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in Latin America & the Caribbean. 36

5.7 Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in North America. 39

5.8 Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in the Middle East and North Africa. 40

5.9 Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in Sub-Saharan Africa Countries. 42

5.10 Regional Statistics on UN Commitment, Annual Mean Cocaine Seizures in Kilograms (kgs), and Trade Ratio as a Percentage of GDP. 47

5.11 Regional Log-Adjusted GDP in billion USD, UN Commitment, and Mean Cocaine Seizures in Kilograms (kgs). 51

5.12 Regional Military Expenditure as a Percentage of GDP, Log-adjusted GDP in USD, UN commitment, and Cocaine Seizures in Kilograms (kgs). 54

5.13 World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) by Region. 59

6.1 Logistic Regression Model with Random Effects 67
6.2 Predicted Probabilities of Commitment to UN on Cocaine Seizures 68
6.3 Linear Mixed Effects Model 71
6.4 Predicted Probabilities of Commitment to UN on Log(Cocaine Seizures) in Kilograms (kgs). 73

A.1 East Asia & the Pacific Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP. 90
A.2 Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Cocaine Seizures in Kilograms (kgs) in East Asia & the Pacific. 91
A.3 World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in East Asia & the Pacific. 93
A.4 South Asia Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP. 94
A.5 Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Cocaine Seizures in Kilograms (kgs) in South Asia. . . . 96
A.6 World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in South Asia. 97
A.7 Europe & Central Asia Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP. 99
A.8 Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Mean Cocaine Seizures in Kilograms (kgs) in Europe & Central Asia. 100
A.9 World Governance Indicator Estimates and Mean Cocaine Seizure in Kilograms (kgs) in Europe & Central Asia. 101
A.10 Latin America & the Caribbean Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as % of GDP. 103

A.11 Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Mean Cocaine Seizures in Kilograms (kgs) in Latin America & the Caribbean. 104

A.12 World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in Latin America & Caribbean. 105

A.13 North America Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as % of GDP. 107

A.14 Military Expenditure as a % of GDP, Log-Adjusted GDP, and Mean Cocaine Seizures in Kilograms (kgs) in North America. 108

A.15 World Governance Indicators Estimates and Mean Cocaine Seizures in Kilograms (kgs) in North America. 109

A.16 Middle East & North Africa Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP. 111

A.17 Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Mean Cocaine Seizures in Kilograms (kgs) in Middle East & North Africa. 112

A.18 World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in Middle East & North Africa. 113

A.19 Sub-Saharan Africa Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP. 115

A.20 Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Mean Cocaine Seizures in Kilograms (kgs) in Sub-Saharan Africa. 116

A.21 World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in Sub-Saharan Africa. 117

Chapter 1

Introduction

In his seminal contribution, Young (1979) discerned compliance as a nuanced reflection of a state's tangible behaviour, intricately aligning with the expectations ingrained in international standards. He astutely delineated instances where a nation's conduct deviates significantly from these prescribed norms, categorising such deviations as manifestations of non-compliance or outright violation.

Within the scholarly discourse, a persistent challenge grappled with by researchers revolves around the intricate differentiation between compliance and the mere implementation and ratification of treaties. The adoption of recommended regulations or policies by a state, while ostensibly signalling its commitment to a treaty, falls short of providing an unequivocal assurance of the state's genuine dedication. This arises from the possibility that a nation may falter in enforcing the regulations and policies it outwardly endorses (Simmons, 1998; Jacobson and Weiss, 1997).

Scholars such as Burnside and Dollar (2004) have advanced the notion that a nation's administrative capacity not only shapes its capabilities in drug seizures but also profoundly influences the level of security experienced by its citizenry. In scrutinising state commitment and the distribution of illicit drugs, the pivotal role of a state's capacity to enforce regulations and policies emerges as a central theme in effectively combating the illicit drug trade and ensuring individual security. Despite the primary objective of drug control treaties being the empowerment of nations to safeguard the health and well-being of their citizens, the illicit drug trade persists as a formidable threat to human security (Zibbell and DeFiore-Hyrmer, 2019; Burnside and Dollar, 2004; Davis, 2013).

The United Nations took a pioneering role in establishing three fundamental international drug control treaties aimed at assisting nations in addressing the pressing issue

of illicit drug distribution. In adherence to these international treaties, signatory states found themselves legally bound to enforce recommended regulations and policies, thereby ensuring the safety of their citizens. These seminal drug control treaties include the Single Convention on Narcotic Drugs of 1961 (amended by the 1972 Protocol), the Convention on Psychotropic Substances of 1971, and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988. The collective objective of these treaties was to augment the annual reporting of drug seizures to the United Nations by state governments. Furthermore, these treaties were crafted to establish frameworks and strategise plans that mandated nations to collaborate in addressing the distribution and trade of illicit drugs.

The overarching purpose of this paper lies in the examination of how a state's adherence to the United Nations drug control treaties might reverberate in its domestic efforts to combat drug trafficking. Employing a nation's signature on these treaties as a proxy for its adherence, without delving into the nuances of differentiation between signature and ratification, the paper draws on data from diverse sources, including the United Nations Office on Drugs and Crime (UNODC), the United Nations (UN), the World Bank (WB), and the European Union Statistics (Eurostat).

Methodologically, this report applies two multi-level effects regression models to meticulously investigate the potential association between a state's adherence to international drug control treaties and the volume of cocaine seized by its authorities. This report, anchored in a hypothesis positing that a nation's adherence to these treaties signifies its domestic commitment and efficacy in reducing cocaine trafficking, unfolds its narrative against the backdrop of the years spanning from 1996 to 2018 Jacobson and Weiss (1997).

The period from 1996 to 2019 witnessed substantial shifts in the dynamics of drug trafficking. Factors such as globalisation, changes in trafficking routes, advancements in law enforcement techniques, and variations in international cooperation levels played crucial roles in shaping the landscape of illicit drug distribution. By focusing on 1996 to 2019, the study captures these evolving dynamics, providing a comprehensive view of how different states responded to the challenges posed by cocaine trafficking over time.

Chapter 2

Literature Review

2.1 Background

In the realm of international politics, the influence of international institutions and laws is paramount, actively shaping the behaviour of participating states. As nations willingly accede to treaties established by these institutions, a portion of their sovereignty is relinquished, marking a nuanced intersection of global cooperation and national autonomy (Simmons, 1998). The ongoing debate surrounding potential discord between state sovereignty and commitment to international institutions remains a contentious issue. Scholars such as Keohane (1984) stress the imperative of agreements in light of heightened interdependence among states, emphasising the necessity for diplomatic pacts to foster stability and coherence in mutual relations, a sentiment shared by Brierly (1963).

In delving into the intricate dynamics of compliance, Simmons (1979), building upon Young's (1998) conceptualisation, distinguishes between compliance and effectiveness, contending that a poorly designed agreement might secure high compliance without substantially addressing the underlying issue. The theory of rational functionalism posits states as rational agents strategically enter into international agreements based on their needs (Brierly, 1963). This perspective underscores the advantages states accrue from adhering to a set of rules that govern their behaviour, as argued by Simmons (1998) and Keohane (1979). These scholars posit that international agreements elevate the costs of non-compliance, playing a pivotal role in enhancing transparency and refining the conduct of nations. Recognising the myriad socio-political challenges faced domestically, international agreements serve as constraining frameworks, guiding policy-making within states.

Taking a functionalist lens to analyse compliance, Jacobson and Weiss (1997) con-

ducted a study examining the compliance performance of nine states across five international environmental agreements over a decade. Their findings illuminate the influential role of administrative capacity in a nation's ability to adhere to international treaties. States appearing disinclined to comply often struggled to act effectively in alignment with international drug control agreements, emphasising the intricate interplay between administrative capability and the successful execution of international commitments (Jacobson and Weiss, 1997). This nuanced perspective underscores the relative nature of state commitment and the imperative for addressing domestic issues for the effective fulfilment of obligations under drug control treaties.

In essence, the multifaceted landscape of international relations is intricately woven with the threads of compliance, effectiveness, and the delicate balance between state sovereignty and global cooperation. Moreover, scholars such as Nadelmann (1992) argue that thinking seriously about alternatives to drug prohibition requires considering the socio-political context within which these policies are implemented. The literature suggests that a state's commitment significantly determines the success of drug seizures within its borders, highlighting the importance of robust institutions and governance in the effective enforcement of international agreements.

2.2 International Treaties & Conventions

In the intricate realm of international drug control, nations exhibit varied levels of commitment to treaties, such as the Single Convention on Narcotic Drugs of 1961, the Convention on Psychotropic Substances of 1971, and the United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988.

The International Narcotics Control Board (INCB) (2021) articulates that the primary objective of the international drug control system revolves around safeguarding the health and well-being of individuals through the implementation of regulations and policies. Nations contribute to this overarching goal by overseeing substances utilised for scientific and medical purposes at the international level and by curbing the flow of controlled substances into the illicit market (INCB, 2021).

Amidst the diverse interpretations of commitment among nations, the adherence levels to international treaties exhibit notable variations, posing potential challenges in the collective efforts to combat illicit drug trafficking (UNODC, 2023c). One primary obstacle is the balance between state sovereignty and international obligations. Nations must navigate domestic political landscapes, where commitment to international norms may conflict with national interests or face opposition from powerful internal actors.

Administrative capacity plays a crucial role in the effective implementation of treaties. As Jacobson and Weiss (1997) highlighted, nations with limited administrative resources often struggle to comply with international agreements, not due to a lack of will but due to a lack of capacity (Jacobson and Weiss, 1997).

Resource constraints are not only limited to the states under study but also affect agencies such as the United Nations Office on Drugs and Crime (UNODC). The UNODC is predominantly funded by voluntary contributions and suffers from chronic funding shortages and under-staffing, which continue to limit its effectiveness (Bewley-Taylor, 2006). This is particularly evident in the realm of drug control, where effective enforcement requires significant resources, coordination, and infrastructure, which some nations or organisations may lack.

Drawing parallels with global issues such as climate change further illustrates these challenges. Both drug control and climate change treaties necessitate extensive international cooperation and substantial national efforts. The Paris Agreement (2015), for instance, requires nations to set and meet ambitious targets for reducing greenhouse gas emissions. However, implementation is hindered by varying national capabilities, economic priorities, and political will. Similarly, drug control treaties demand rigorous enforcement measures that some states are better equipped to implement than others. Both scenarios underscore the need for tailored approaches that consider the unique socio-economic and political contexts of each state.

In addition, compliance and effectiveness are distinct yet interconnected concepts. Simmons (1998) pointed out that a state might comply with the letter of a treaty but fail to achieve its substantive goals due to poor treaty design or implementation gaps. This distinction is critical in understanding the real-world impact of international treaties on issues like drug trafficking and climate change.

Moreover, there is yet to be an agreement on an operational definition of transnational crime, which could also impact the effectiveness of norms for law enforcement and judicial cooperation on drug trafficking. The lack of a standardised definition complicates efforts to uniformly address transnational crime, as varying interpretations can lead to inconsistent enforcement and judicial practices across different jurisdictions (Albanese, 2011).

However, in the pursuit of upholding the principles embedded in international drug control treaties, certain states have opted for stringent and, at times, excessive measures. Regrettably, these measures have led to heightened levels of violence and mortality, often transgressing the boundaries of due process and the rule of law. Such instances of violence not only compromise the ethical fabric of a nation but also undermine its overall security situation (INCB, 2021).

Recognising the intricate interplay between drugs, violence, organised crime, terrorism, and corruption, the United Nations Office on Drugs and Crime (UNODC) strives to address these interrelated challenges through a lens that prioritises gender and human rights considerations. The UNODC's program budget for 2020-2021 aligns with the United Nations' 2030 Agenda for Sustainable Development, embodying a people-centred approach that integrates peace and security, development, and human rights dimensions.

The proposed program sets forth ambitious objectives aimed at enhancing the UNODC's effectiveness and efficiency in fulfilling its mandates (UN, 2020). This multifaceted approach underscores the commitment to a holistic strategy that transcends traditional paradigms, seeking sustainable solutions in the complex nexus of drug control, human rights, and global development.

2.3 Drug Seizures

The global landscape of illicit drug trafficking presents a formidable challenge to public health and safety. To unravel the intricacies of this complex issue, numerous studies have scrutinised the interplay between international drug control endeavours and the intricate patterns of drug distribution and consumption. One such in-depth exploration, spearheaded by Zibbel and DeFiore-Hyrmer (2019), delved into the state of Ohio. Analysing data spanning from 2013 to 2017, encompassing drug seizures by law enforcement and overdose deaths, their findings uncovered a compelling correlation: a notable increase in drug confiscations coincided with a parallel surge in fatal overdoses, underscoring the intricate dynamics at play (Zibbell and DeFiore-Hyrmer, 2019).

Contributing to the dialogue, Davis (2013) embarked on a research expedition probing the influence of U.S. foreign aid on conventional approaches to diminishing drug supply. Davis hypothesised that foreign aid would wield no significant impact on the number of drugs seized by law enforcement agencies, drawing insights from Burnside and Dollar (2004), who asserted that foreign aid's efficacy hinged on recipient countries boasting robust institutions. This notion resonates with Jacobson and Weiss's (1997) assertion that a state's commitment significantly determines the success of drug seizures within its borders. Davis's work also aligned with Thoumi's (2010) argument that nations grappling with weak institutions and high corruption levels served as major hubs for illicit drug production and trade. This nuanced perspective underscores the relative nature of state commitment and the imperative for addressing domestic issues for the effective fulfilment of obligations under drug control treaties (Davis, 2013; Thoumi, 2010; Simmons, 1998).

In a bid to establish a causal link between heroin seizures and law enforcement activity,

a seminal Australian study in 1997 challenged prevailing assumptions in existing literature (Weatherburn and Bronwyn, 1997). While conventional wisdom posited that large-scale confiscations of heroin would curtail its availability and, consequently, its distribution and trade, Weatherburn and Lind proposed an alternative hypothesis suggesting the negligible impact of heroin seizures on the illicit drug market. Their empirical analysis lent credence to this hypothesis, challenging long-standing policies aimed at reducing illicit drug distribution. This study provided a significant counterargument to the prevailing discourse on state commitment to drug control policies, emphasising the need for nuanced evaluations of effectiveness based on the evidence from the literature on drug seizures (Weatherburn and Bronwyn, 1997).

An alternative perspective on drug trafficking advocates for a paradigm shift from a predominantly supply-side approach to a public health model focused on demand reduction. Proponents of this view, such as Johnson (2022), argue that international action should prioritise prevention and treatment strategies in addition to traditional enforcement measures. This public health approach aims to address the root causes of drug addiction, reduce the demand for illicit substances, and provide comprehensive treatment and rehabilitation services to those affected. By focusing on prevention and treatment, this model seeks to mitigate the adverse health and social consequences associated with drug abuse, ultimately reducing the overall demand for illicit drugs and alleviating the burden on law enforcement agencies (Johnson, 2022).

This perspective aligns with the broader understanding that addressing drug trafficking requires a multifaceted strategy encompassing both supply-side and demand-side measures. While enforcement remains crucial for disrupting drug supply chains and deterring traffickers, integrating public health approaches can enhance the overall effectiveness of international drug control efforts. By shifting towards a more holistic approach that includes prevention, treatment, and harm reduction, policymakers can better address the complexities of drug trafficking and its impact on public health and safety.

International drug control policies, designed to stem the illicit distribution of drugs through state compliance with global treaties (INCB, 2021), operate within the rational functionalist logic. This logic presupposes a shared interest among nations in preventing and controlling the illegal drug trade (Brierly, 1963). However, the efficacy of this logic may waver if agreements are poorly crafted or if states' preferences diverge over time. Simmons (1998) posited that the effectiveness of state commitment depends on the quality of agreements and the degree of concern regarding illicit drug distribution. Recent evidence gleaned from drug seizure data indicates a decline in the level of state concern over the past decade, as more nations report increased drug seizures (Guterres, 2021). This suggests a potential gap between policy objectives and actual outcomes, prompting a critical

reassessment of the dynamics at play.

The surge in reported cocaine seizures by governments could be construed as indicative of states' adherence to international drug treaties, underlining the legitimacy and influence of international institutions and law in the global system. Keohane (1984) posits that nations are expected to comply with these treaties to establish predictability, consistency, and foster interdependence. Failure to report to international institutions may jeopardise a nation's credibility and reputation, as well as forego potential opportunities (Young, 1979; Simmons, 1998). This evolving landscape prompts contemplation on the evolving dynamics between state commitments, international institutions, and the ever-shifting contours of global drug control policies.

Chapter 3

Research Question

The study aims to investigate whether there is a potential correlation between the fidelity of member-states to United Nations (UN) drug control policies and the annual occurrences of cocaine seizures reported by these nations. In pursuit of this overarching objective, the research navigates interrelated factors encompassed by nine variables. These variables encompass a spectrum ranging from state agreements and annual cocaine seizures to broader economic indicators such as Gross Domestic Product (GDP), trade ratio, and military expenditure.

To contextualise state behaviour, the analysis extends to encompass the nuances of governance as encapsulated by the Worldwide Governance Indicators (WGI). The temporal scope of this investigation spans a substantial duration from 1996 to 2019. To address the primary research question, the study further delves into sub-questions:

1. To determine if there is a potential relationship between state commitment to drug control treaties and cocaine seizure outcomes at a state-level in selected states between the years 1996 and 2019.

2. To determine if state commitment to signing an international agreement may lead to an increase in government expenditure between the years 1996 and 2019.

3. To determine the potential relationship between state commitment to United Nations drug control treaties and governance indicators between the years 1996 and 2019.

3.1 Hypothesis

The hypothesis is indicated as the following:

H0: States' commitment to United Nations drug control treaties is not expected to have a significant effect on the volume of cocaine seizures per year when compared to non-compliant states.

H1: States' commitment to United Nations drug control treaties is expected to have a significant effect on the volume of cocaine seizures per year when compared to non-compliant states.

From a pedagogical perspective, the initial hypothesis posited a potential association between states that had ratified international drug control treaties and the yearly quantity of illicit cocaine confiscated within their jurisdictions. In 2009, the United Nations Office on Drugs and Crime (UNODC) disseminated a report, revealing that the global illicit drug trade constituted approximately 0.9% of the worldwide Gross Domestic Product (GDP), amounting to an estimated $32 billion. Progressing to 2021, a subsequent UNODC report unveiled a disconcerting trend—a 22% increase in the demand for illicit drugs (UNODC, 2023c).

The hypothesis suggested that states prioritising their commitment to international drug control treaties would actively implement the recommendations and policies stipulated by these treaties, emphasising human security and good governance. The measure of a nation's dedication to human security and good governance was envisioned to be discernible through an examination of its engagements with international drug control treaties and the annual volume of seized cocaine. These variables were expected to demonstrate a correlation with a state's level of commitment to international drug control treaties.

3.2 Research Aims and Objectives

This research aims to address a discernible empirical void within the existing literature, seeking to scrutinise potential empirical manifestations of the intricate relationship between state commitment to international drug control policies and the yearly occurrences of cocaine seizures. While theoretical underpinnings have posited the existence of such a relationship, the dearth of empirical evidence of state commitment to international control policies underscores the need for an examination. This study aspires to make a substantive

contribution to the scholarly discourse by delving into the nuances of domestic drug control efforts and systematically assessing states' commitments to annual cocaine seizures.

Through an empirical analysis elucidating the interplay between cocaine seizures and states' commitments to international drug control treaties, this research aims to elevate our comprehension of international collaboration in combating the distribution and trade of cocaine. It seeks not only to fill a gap in the literature but also to enrich the discourse on state commitment to drug control policies, with a specific focus on the pivotal indicators of cocaine seizures and state commitment. The ultimate aspiration is to craft a comprehensive model, poised to serve as an invaluable tool for subsequent studies delving into the intricate connections between drug seizures and states' commitments to international drug control policies. This research, therefore, positions itself as a pivotal contribution to the ongoing scholarly dialogue, fostering a nuanced understanding of the dynamics at the intersection of drug control policies and state commitments.

3.2.1 Research Aims

In pursuit of unravelling the potential correlation between a state's commitment to drug control treaties and the outcomes manifested in drug seizures, this study embarked on an examination delving into the intricate relationship between two pivotal variables: the annual tally of drug seizures and state commitment to drug control treaties. The dependent variable under scrutiny is the annual count of drug seizures, while the independent variable encapsulates the nuanced extent of a state's commitment to international drug control treaties.

This study aims to undertake an exploration of the multifaceted repercussions stemming from a state's commitment to international drug control treaties, particularly within distinct 3-year intervals. It seeks to elucidate how this commitment may exert a discernible influence on a nation's capacity to effectively regulate the distribution and trade of illicit narcotics within its jurisdiction. Beyond the immediate focus on statistical relationships, the study aims to contribute to our broader understanding of this complex interplay, offering insights that have the potential to guide future policy decisions at the state level. The ultimate objective is to enhance the efficacy of measures implemented in addressing the pervasive issue of illicit drug trafficking, thereby fostering a more informed and adept approach to mitigating this global challenge.

3.2.2 Objectives

The objective of this study is as follows:

1. To determine if there is a potential relationship between state commitment to drug control treaties and cocaine seizure outcomes at a state-level in selected states between the years 1996 and 2019.

2. To determine if there is a potential relationship between state commitment to United Nations drug control treaties and governance indicators between the years 1996 and 2019.

3.3 Limitations

This study acknowledges a notable limitation concerning the inherent challenge in precisely measuring a state's commitment to United Nations drug control treaties. The study grappled with the assumption that the act of signing and ratifying a treaty could be interchangeably considered indicators of commitment. This assumption introduces a potential source of ambiguity, as it overlooks the intricate nuances that might differentiate the symbolic act of signing from the substantive commitment implied by ratification.

Furthermore, a significant constraint in this research lies in the reliance on data sourced from the United Nations Office on Drugs and Crime (UNODC) and the World Bank (WB). While the utilisation of such data facilitated accessibility, it introduced a limitation related to consistent reporting across time. The reluctance of states to consistently report to the UNODC annually compromises the temporal continuity and reliability of the data. This limitation underscores the need for caution in interpreting and generalising findings, recognising the inherent variability in data reporting practices among states.

Chapter 4

Research Methodology

4.1 Research Design

This research adopted a hypothesis-driven descriptive study framework, leveraging quantitative methodologies to examine the intricate interplay between variables systematically. Employing a dual approach, this study utilises a logistic regression model with random effects and a linear mixed effects model as the analytical lens, this study conducts a longitudinal investigation spanning the period from 1996 to 2019. The research amalgamates data from diverse sources, encompassing nine variables across seven regions, including 145 nations, adhering to stringent reporting guidelines mandated by international institutions, notably the United Nations (UN). This commitment to conformity enhances the study's validity, ensuring robustness in its analytical approach and findings.

4.1.1 Geographical Variables

This study dissects the intricate nexus between international drug control conventions and the seizures of cocaine, spanning the period from 1996 to 2019. To ensure precision, the analysis leans on the established system of three-letter ISO codes, a recognised standard in international law (IBAN, 2023). The foundational principles of international law, which demand a permanent population, defined territory, functional government, and diplomatic capacity, serve as the stringent criteria for including nations in this study's analytical framework. Adhering to these principles upholds the sanctity of international legal norms, safeguarding the integrity of the findings.

The sample, encompassing 145 internationally recognised nations, strategically spans diverse geographic regions. These nations were selected based on the availability of reliable data, presenting an intricate matrix of political systems and economic development levels. The chosen regions and nations are as follows:

- East Asia & Pacific (15 States or 10.7%): Australia, Cambodia, China, Indonesia, Japan, Laos, Malaysia, Mongolia, Myanmar, New Zealand, Philippines, Singapore, South Korea, Thailand and Vietnam.
- Europe & Central Asia (46 States or 32.8%): Albania, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Latvia, Lithuania, Luxembourg, Moldova, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Turkmenistan, Türkiye, Ukraine, Uzbekistan and United Kingdom.
- Latin America & Caribbean (22 States or 14.6%): Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.
- Middle East & North Africa (16 States or 11.0%): Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Tunisia and the United Arab Emirates.
- North American (2 States or 1.6%): Canada and the United States of America.
- South Asia (5 States or 3.7%): Bangladesh, India, Nepal, Pakistan and Sri Lanka.
- Sub-Saharan Africa (38 States or 25.6%): Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, the Democratic Republic of the Congo, Republic of the Congo, Côte d'Ivoire, Equatorial Guinea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia and Zimbabwe.

Categorising nations into regions provides an inherent framework for comparative analysis. Regions have unique geopolitical, cultural, and economic characteristics that significantly influence the patterns and trends within the data. This approach facilitates a

more comprehensive understanding of how geopolitical factors shape state commitment to cocaine seizures, aligning with specific policy considerations and interventions often formulated and implemented at the regional level.

However, it is crucial to acknowledge the study's limitations. Some regions may be under-represented due to data constraints, potentially limiting the generalisability of findings to the global community. Recognising these limitations underscores the study's commitment to providing valuable insights into international cooperation and drug control policies across diverse contexts.

4.1.2 International Drug Control Convention Variables

Within the annals of international drug control, the first convention, labelled as "UN 1961," bears the identity of the United Nations Single Convention on Narcotic Drugs of 1961 (UNODC, 1961). This convention aims to combat drug abuse by coordinated international action. It serves as a universal compass, guiding the regulation of the cultivation, production, manufacture, export, import, distribution, trade, utilisation, and possession of illicit narcotics.

"UN 1961" reports a mean of 0.29, which indicates that, on average, 29% of the observed cases are classified as adhering to the Convention. A closer look reveals that 69.15% of nations report a value of 0 in "UN 1961," signifying non-adherence to the Single Convention or its related regulations. On the other hand, 28% of nations report a value of 1 in "UN 1961," indicating adherence.

The United Nations Convention on Psychotropic Substances of 1971, "UN 1971," has the objective of controlling the international trade and usage of psychotropic substances (UNODC, 1971). "UN 1971" reports a mean of 0.11, which indicates that, on average, about 11% of the observed cases, or 15 nations, are classified as adhering to the Convention. While 10% adhere partially, a significant 90%, or 130 nations, indicate non-adherence.

"UN 1988" represents the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 (UNODC, 1988). Within the structures of combating illicit drugs and international trafficking, this convention provides measures, including provisions against money laundering and the diversion of precursor chemicals. A significant 77% (111 nations) exhibit a value of 0 in "UN 1988," indicating a lack of adherence to the Single Convention or its regulations. 24% (34 nations) report a value of 1, signifying their commitment to the convention's objectives.

Member-state signatories to the United Nations Drug Control Conventions have been categorised into four sub-groups, distinguishing between those states who have signed or

not signed each convention and those who have signed at least one of the three drug control treaties. This classification identifies nations as either signatories or non-signatories to the United Nations Office on Drugs and Crime (UNODC), forming the structural foundation for the analysis.

4.1.3 Cocaine Seizures

"Seizures" is the unique lens through which to scrutinise commitment to the ongoing battle against the distribution of illicit drugs. At its core, it quantifies the annual cocaine seizures self-reported by nations to the UNODC, denominated in kilograms. This metric affords a direct glimpse into the efforts of law enforcement agencies, exemplifying the effectiveness of their interdiction measures in the persistent struggle against the illicit drug trade. It undergoes a transformative journey, a mathematical metamorphosis achieved through logarithmic conversion. This alteration is not arbitrary but rather essential to align the variable with the prerequisites of the analysis.

In preparation for the planned regression analysis, the "seizures" variable was transformed into a binary format to simplify model fitting and interpretation, as well as a mean for each three-year interval. Nations reporting at least one annual seizure within the data time frame were coded as "1," while those with no reported seizures were coded as "0." This binary outcome variable exhibits a mean of 0.43, indicating that approximately 43% of the countries reported at least one annual cocaine seizure. Interestingly, 57% of nations fall into the "no reported seizures" group.

This transformation offers several advantages for subsequent analysis. First, it reduces the complexity of the data by converting a potentially continuous or categorical variable into a binary format. Second, it facilitates model interpretability by focusing on the presence or absence of cocaine seizures, which may be more relevant to the specific research question. Finally, it can improve the efficiency and stability of the regression analysis, particularly when dealing with limited data or potential outliers.

However, it is important to acknowledge the potential limitations of using a binary outcome variable. This transformation discards information regarding the frequency or amount of cocaine seizures, which may be relevant for certain research questions. Additionally, it may mask potential non-linear relationships or heterogeneity within the "at least one seizure" category. Therefore, while advantageous for simplifying analysis and model fitting, the choice of this binary transformation should be made with careful consideration of its implications for the specific research objectives.

To further elaborate on mean cocaine seizures, it is essential to understand its significance in the overall analysis. Calculating the mean seizures for each year interval provides

a valuable summary statistic that represents the average amount of cocaine seized annually by countries reporting at least one seizure. This measure helps to identify trends and patterns in cocaine interdiction efforts over time, allowing researchers and policymakers to assess the overall effectiveness of global drug control strategies.

Sourced from the United Nations Office on Drugs and Crime (UNODC), which harmonises a myriad of data sources, including those from the UNODC itself, ARQ data, EMCDDA, and the Statistical Bulletin (UNODC, 2023a). This comprehensive compilation ensures the reliability and validity of the data, establishing a foundation for the subsequent analytical endeavours in this study.

4.1.4 Economic Indicators

In the exploration of the correlation between a state's commitment to international drug control conventions and the volume of cocaine seizures, scrutiny of pivotal economic variables becomes imperative. Sourced from the World Bank, these variables serve as indicators that offer insights into the multifaceted dimensions of a nation's response to drug-related challenges.

Gross Domestic Product (GDP) is represented as the variable "log(GDP)". GDP, sourced from the World Bank (WorldBank, 2024a), represents the natural logarithm of a nation's Gross Domestic Product. GDP measures a nation's total economic activity, encompassing all goods and services produced within its borders over a specific period, typically a year.

"log(GDP)" as a variable helps to interpret the relationship between GDP and other variables in terms of percentage changes. This transformed variable allows for a more accurate understanding of the relationships between economic development and other factors, such as cocaine seizures or geopolitical commitments.

Additionally, the Gross Domestic Product (GDP) is represented *per capita* in current US (2015) Dollars (WorldBank, 2024c), emerging as a linchpin metric, casting a discerning light on a nation's economic prosperity and laying bare the contours of its potential resources earmarked for the formidable task of drug control.

Meanwhile, the fluctuating tides of inflation, a barometer of economic stability, exert a palpable influence on the financial commitment a nation can muster in its relentless pursuit of countering drug trafficking. The GDP deflator (annual %) acts as a panoramic lens, providing a nuanced view of a nation's overall economic health (WorldBank, 2024b). This, in turn, wields a substantial impact on its capacity to implement and sustain stringent drug control measures.

In the adjustment of GDP variables, especially when denominated in current US dollars, it is advisable to enhance transparency by utilising the US GDP deflator. The rationale for this preference lies in the intent to achieve a more coherent and interpretable adjustment. The adjustment process is articulated by the formula:

$$\text{Adjusted GDP } \textit{per capita} \leftarrow \frac{\text{GDP } \textit{per capita}}{0.01 \times \text{USD Deflator}} \tag{4.1}$$

This procedure involves the division of the GDP *per capita* in USD by the product of 0.01, a multiplier to ensure that a deflator value of 100 (representative of the base year, 2015) results in a factor of one and the GDP deflator for the United States. This approach underscores the equivalence between base year current dollars and real dollars, rendering the adjustment more intuitive.

Subsequently, the resultant adjusted GDP variable underwent a logarithmic transformation. This approach aligns with the imperative to standardise economic indicators. By incorporating the GDP deflator, a metric designed to capture deflationary tendencies, the resultant adjusted GDP assumes the role of a normalised representation of economic performance.

Meanwhile, imports and exports of goods and services as a percentage of GDP, alongside their tangible values in current US Dollars, afford a panorama of a nation's economic interconnectedness (WorldBank, 2018a,b). The intricacies of economic interdependence, in turn, significantly influence a nation's vulnerability to the machinations of the transnational drug trade.

The integration of imports and exports was accomplished through a transformative process, specifically realised by synthesising them into a ratio. This integration aimed to encapsulate the trade dynamics within a given economy. The procedural course to achieve this amalgamation was as follows:

$$\text{Trade Ratio} \leftarrow \frac{\text{Exports (\% of GDP)} + \text{Imports (\% of GDP)}}{\text{GDP } \textit{per Capita}} \tag{4.2}$$

Consequently, the resultant variable emerged through the summation of the GDP-weighted exports and imports as a percentage of GDP divided by GDP. This composite trade ratio is a pivotal metric, encapsulating the relative magnitude of international trade vis-à-vis the overall economic output. This approach provides a holistic indicator of a nation's trade openness and engagement in the global marketplace. Standardising trade

indicators concerning GDP provides a ratio perspective on the trade interdependencies and international trade proclivities of the entities under scrutiny. The amalgamation of imports and exports into a unified metric aids in comprehending the trade positioning and external economic relations of the observed nations within the broader analytical framework of this study.

While the data curated by the World Bank data bank is robust, an inherent limitation lies in the potential for lag and reporting discrepancies.

4.1.5 Governance Indicators

The foundation of this analysis rests upon an array of governance indicators. These measures, sourced from the World Governance Indicators (WGI) sourced by the World Bank (Kaufmann, 2010), serve as critical instruments for evaluating the quality of governance within each nation. Each indicator is a distinct facet of governance, encompassing the principles and obligations integral to international drug control treaties. These encompass respect for human rights, the prevention of drug diversion, the provision of treatment and alternative development programs.

The Control of Corruption ("CC") quantifies the magnitude of corruption within the public sector, while simultaneously evaluating the efficacy of initiatives aimed at mitigating corrupt practices. Government Effectiveness ("GE") appraises the calibre of public services, the degree of bureaucratic efficiency, the quality of policy formulation and execution, and the credibility of the government's commitment to policy implementation. Regulatory Quality ("RQ") assesses the government's capacity to devise and implement sound policies and regulations that foster private sector development.

The Rule of Law ("RL") provides insight into the extent to which citizens have faith in the judiciary, the impartiality of the legal system, and the effectiveness of law enforcement mechanisms. Voice and Accountability ("VA") evaluate the extent to which citizens may participate in the political process, express their opinions, and hold their government accountable. Political Stability and Absence of Violence/Terrorism ("PV") reflect the probability of political instability and the prevalence of violent conflicts within a nation.

Examining these indicators offers an understanding of the governance landscape within a nation, enabling researchers and policymakers to identify areas of strength and weakness. Ultimately, informing the development of targeted strategies to improve governance, promote democratic values, and foster sustainable development outcomes.

4.2 Methods

In the pursuit of this comprehensive study, the decision to aggregate the data into three-year intervals is made to enhance the clarity of analytical results. The condensation of data within these intervals offers a panoramic understanding of trends and patterns over time, effectively mitigating potential fluctuations and transient variations. This methodological approach not only provides a more stable foundation for analysis but also actively facilitates the identification of enduring trends, thus enabling an insightful examination of the relationship between state commitment to drug control conventions and cocaine seizures.

By adopting this approach, the research aims to contribute to the existing body of knowledge on drug control and illicit substance interdiction. The analysis of aggregated data within three-year intervals allows for a more precise evaluation of the effectiveness of international drug control conventions and the commitment of individual nations to combating the illicit drug trade. This, in turn, informs the development of targeted and evidence-based policy recommendations, ultimately fostering a more comprehensive and collaborative approach to addressing the global challenge of illicit drug trafficking.

In tandem with the judicious aggregation of data, a meticulous logarithmic transformation is applied to the variables of commitment, cocaine seizures, GDP, and GDP *per capita*. Both trade ratio and military expenditure are expressed as percentages of GDP. This methodological approach serves not only to foster a clearer interpretation of findings but also to contribute to the overarching rigour and validity of the research endeavour.

The analytical journey unfolds with the unveiling of a map of commitment and a comprehensive tableau, constituting vital instruments for the probing exploration of state commitment. This approach, far from being merely perfunctory, presents an exposé of the data distribution, affording a snapshot that encapsulates the landscape of state commitment to drug control conventions and the concurrent trends in cocaine seizures.

Subsequently, the analysis delves into the relationship between state commitment and cocaine seizures in a detailed descriptive analysis. This phase incorporates an array of summary statistics and visual representations, seeking to provide a succinct overview of data distribution and central tendency. However, it is paramount to acknowledge that while these statistical summaries offer valuable insights, they may not comprehensively capture the intricate complexity inherent in the relationships between variables.

As the paper progresses, the study embraces the methodology of a multi-level logistic regression model with random effects and a multi-level linear mixed effects model. This choice is not arbitrary; it is rooted in the model's suitability to estimate the impact of adherence to international drug control conventions. The regression models adeptly accommodate

regional-level and temporal changes, offering a statistical framework for understanding the nuanced interplay between state commitment and cocaine seizures.

4.3 Ethical Considerations

This study adheres to the stringent ethical guidelines as stipulated by the University of the Witwatersrand, the entity overseeing the conduct of this research. The research employed publicly accessible data obtained from esteemed sources, such as the United Nations Office on Drugs and Crime (UNODC), the World Bank, and the European Union Statistics (Eurostat). This data is collated and utilised under the assurance of maintaining the confidentiality and anonymity of the entities involved, thereby adhering to the highest standards of ethical conduct.

All sources used in this research are properly cited, ensuring the acknowledgement of intellectual property and the avoidance of plagiarism. Furthermore, the study refrains from any form of manipulation or misrepresentation of data, thereby maintaining the integrity and authenticity of the research findings.

In conducting this research, particular attention was paid to avoiding any form of harm, be it physical, psychological, or social, to individuals or entities involved. This study focuses solely on the analysis of aggregate data, thus ensuring that no individual or specific group is directly affected by the research outcomes.

Adherence to these ethical guidelines not only ensures the credibility and reliability of the research findings but also aligns with the broader ethical obligations of the research community to contribute to the advancement of knowledge while respecting the rights and dignity of all stakeholders involved.

Chapter 5

Results

The objective of this chapter is to examine data related to state commitments to international drug control conventions and the corresponding cocaine seizures. To fulfil the study's objectives, the first section delves into variations in state commitment to foundational pillars of international drug control. These pillars include the following conventions: the Single Convention on Narcotic Drugs of 1961, the Convention on Psychotropic Substances of 1971, and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988.

5.1 State Commitment

This section delves into the analysis of state commitment to international drug control conventions and its relationship with cocaine seizures. To assess state commitment, the analysis focuses on three primary conventions: the Single Convention on Narcotic Drugs of 1961 (amended by the 1972 Protocol), the Convention on Psychotropic Substances of 1971, and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988. The data is analysed through various statistical methods, including descriptive statistics and regression models, to explore the nuances of this relationship.

Analysing state commitment to these conventions establishes a baseline for understanding their official stance on distributing the trade of cocaine. This baseline then paves the way for the second section, which examines reported cocaine seizures, as annually, self-reported by nations to the United Nations Office on Drugs and Crime (UNODC), as a

tangible indicator of drug control efforts. By contrasting commitment with concrete action by law enforcement, this analysis holds the potential to uncover fascinating discrepancies.

From a functionalist perspective, this suggests that, while treaty signatures signal adherence to international norms, domestic realities, and resource constraints. Competing priorities might create a disconnect between official commitment and operational effectiveness. Investigating such discrepancies, therefore, holds significant promise for illuminating factors beyond official decree, potentially revealing insights into resource allocation, policy priorities, and implementation challenges faced by nations (Jacobson and Weiss, 1997; Lines and Barrett, 2018).

Ultimately, exploring international obligations and domestic outcomes, illuminated by state commitment to cocaine seizures, contributes insights to understanding state behaviour and its relationship to broader governance indicators.

5.1.1 Commitment to United Nations Conventions

The analysis begins with a descriptive overview of state commitment to the three principal United Nations drug control conventions: the Single Convention on Narcotic Drugs of 1961 (UN 1961), the Convention on Psychotropic Substances of 1971 (UN 1971), and the United Nations Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 (UN 1988). The data reveals varying levels of adherence among nations, with some states demonstrating high levels of commitment across all conventions, while others exhibit selective adherence

Figure 5.1 visually explores the crucial variable of commitment, depicting average state commitment to the 1961, 1971, and 1988 United Nations Conventions through a shaded world map. Each nation's hue corresponds to its commitment level: one or more United Nations Conventions or no commitment.

By offering a global snapshot, *Figure* 5.1 provides insights into regional trends and geographical distribution of commitment levels. A striking contrast between the Western Hemisphere, predominantly characterised by high commitment scores, and the Eastern Hemisphere, where clusters of high commitment emerge alongside significant outliers such as India and China. This initial glimpse raises intriguing questions about potential connections between commitment levels and geographical factors, such as proximity to major cocaine trafficking routes or economic development.

While the global average commitment score of 0.37 or 37% may appear straightforward, *Table* 5.1 dissects it further, revealing shifts across regions and by convention. By categorising the sample, a comprehensive perspective on commitment to all three United Nations

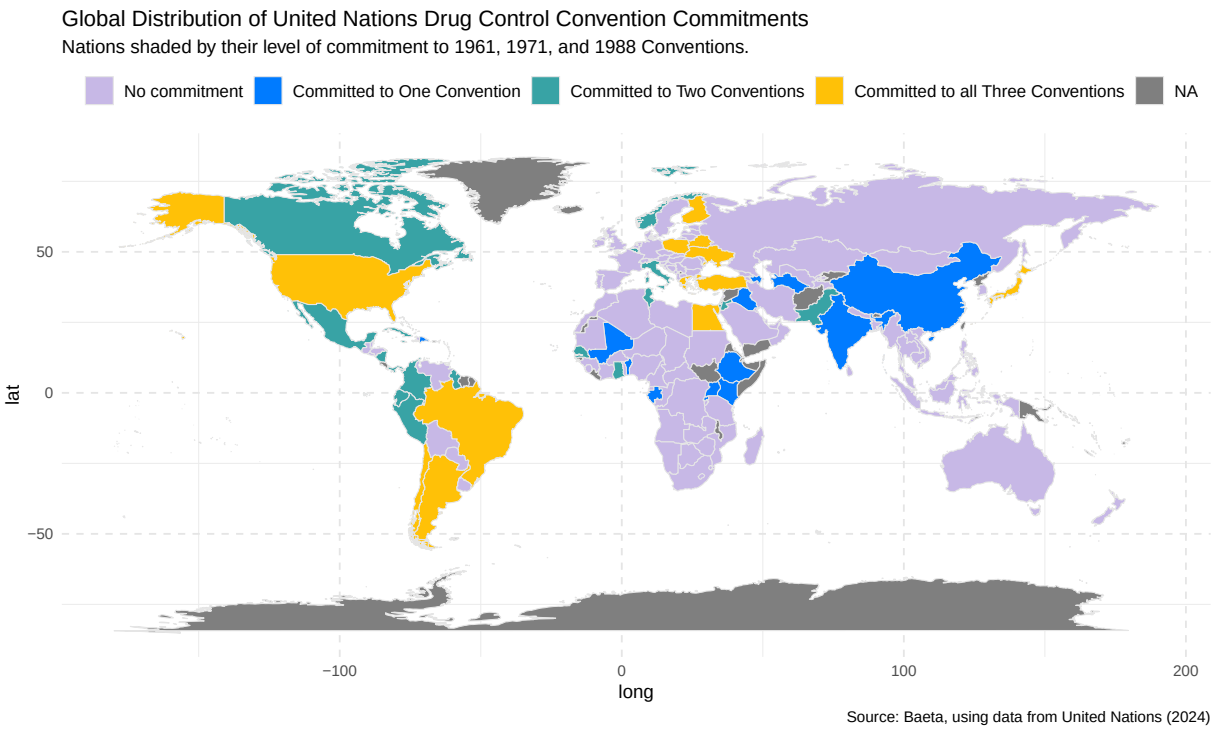


Figure 5.1: Map of Commitment to Drug Control Conventions Across the Globe

conventions highlights not only overall levels but also variations within each convention and region.

North America stands out for unwavering commitment, consistently achieving maximum scores across all three conventions. This dedication underscores the region's alignment with international drug control efforts strategies.

Latin America and the Caribbean, ranking second with an overall score of 0.59 or 59% of nations, distinguishes itself through dedication, notably manifested in its commitment to the Single Convention on Narcotic Drugs of 1961. This persistence in upholding international drug control conventions underscores the region's resolute determination to combat illicit drug trading and contribute to global efforts aimed at mitigating the adverse effects of substance abuse and trafficking.

In contrast, Europe and Central Asia exhibit a moderate overall commitment with 28% (0.28) of nations, with a sustained emphasis on the 1961 convention but noticeable fluctuations in subsequent ones. East Asia and the Pacific present a similar picture, marked by nuanced trends and variations in adherence to the Convention on Psychotropic Substances

Table 5.1: Mean Commitment to the United Nations (UN 1961, UN 1971, and UN 1988) Across Different Regions.

Region	**UN Mean**	**UN 1961**	**UN 1971**	**UN 1988**
East Asia & Pacific [15]	0.13	0.07	0.07	0.13
Europe & Central Asia [46]	0.28	0.28	0.13	0.24
Latin America & Caribbean [22]	0.59	0.59	0.18	0.50
Middle East & North Africa [16]	0.31	0.31	0.06	0.25
North America [2]	1	1	0.50	1
South Asia [5]	0.40	0.40	0	0.20
Sub-Saharan Africa [38]	0.23	0.15	0.05	0.08

of 1971, and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988.

South Asia's commitment fluctuates significantly, ranging from 40% (0.40) to 20% (0.20), particularly lacking in adherence to the 1961 convention. The Middle East and North Africa demonstrate a mixed commitment 30% of (0.31) committed nations, with discernible fluctuations. These fluctuations are particular to the 1971 convention, suggesting potential challenges.

Finally, Sub-Saharan Africa showcases a gradual upswing in commitment, increasing from 15% (0.15) to 8% (0.08) over conventions. This upward trajectory reflects a growing consciousness and engagement with the principles outlined in the United Nations conventions.

5.1.2 Commitment to Cocaine Seizures

Cocaine, the illicit powerhouse, continues to pose complex challenges for international law enforcement and collaboration. *Table* 5.2 delves into the metric of regional commitment manifested through cocaine seizures, offering a lens through which to examine the interplay between treaty adherence and tangible action. *Table* 5.2 groups annual mean and total reported cocaine seizures in kilograms (kg) by region, allowing for comparisons and correlations with commitment scores from *Table* 5.1.

A critical component of this analysis is the examination of the relationship between state commitment to the UN drug control conventions and the reported cocaine seizures.

The data indicates that nations with higher levels of commitment to these conventions tend to report higher volumes of cocaine seizures. This observation aligns with the hypothesis that state commitment to international drug control treaties is expected to influence the effectiveness of national drug interdiction efforts.

Figure 5.2 depicts the trend in reported cocaine seizures by nations adhering to the UN conventions over the period from 1996 to 2019. The visual representation underscores the fluctuations in seizure volumes, highlighting periods of significant increases and decreases, which may correspond to changes in state commitment and international cooperation.

Table 5.2: Annual and Total Quantities of Seized Cocaine in Kilograms (kgs) by Region.

Region	**Mean Seizures (kg)**	**Total Seizures (kg)**
East Asia & Pacific	103	2,117
Europe & Central Asia	734	15,341
Latin America & Caribbean	31,656	662,355
Middle East & North Africa	18	367
North America	25,414	533,687
South Asia	26	522
Sub-Saharan Africa	17	287

East Asia and the Pacific strike a measured balance, reporting moderate commitment to United Nations conventions and relatively low cocaine seizures. With an annual average of 103 kilograms and a total haul of 2,117 kilograms, the area faces drug enforcement challenges but grapples with a comparatively smaller impact of cocaine trafficking. Referring to *Table* 5.1, their moderate level of commitment, suggests a balanced strategy with an emphasis on international collaboration. Their proactive stance may be a reflection of a calculated approach seeking to manage regional security threats posed by narcotics, without incurring excessive costs or jeopardising diplomatic relationships.

Europe and Central Asia appear to take a proactive approach, demonstrating moderate levels in both annual (734 kilograms) and total (15,341 kilograms) cocaine seizures. This may reflect their enforcement measures in tackling drug-related challenges. Notably, their moderate to high levels of commitment align with the theoretical notion that it results in higher seizure volumes, showcasing sustained efforts to navigate the complexities of cocaine trafficking.

Latin America and the Caribbean emerge as big players, as this region reports signif-

icantly higher annual (31,656 kilograms) and total (662,355 kilograms) cocaine seizures compared to other regions. These quantities mark their role in the illicit trade of cocaine and the formidable challenges confronted in combating drug trafficking. High commitment to conventions, similar to Europe and Central Asia, aligns with the theorised efforts required to address significant drug-related issues. Functionalists view this as a proactive commitment, as a strategy to mitigate internal security threats posed by the cocaine trade, enhance regional stability, and potentially gain influence within the global drug control regime (Jacobson and Weiss, 1997).

The Middle East and North Africa exhibit a moderate commitment to United Nations conventions and experience relatively lower annual (18 kilograms) and total (367 kilograms) cocaine seizures. The moderate commitment aligns with lower seizure quantities, suggesting a strategic response to the challenges posed by cocaine trafficking. This strategic response may be interpreted as prioritising internal security concerns and resource allocation, potentially leveraging limited engagement with international agreements for maximum benefit.

North America presents itself as a focal point for enforcement efforts, as this region reports the highest level of commitment to United Nations conventions. This commitment mirrors their high annual cocaine seizures (25,414 kilograms), marking potential challenges in dealing with high quantities of cocaine trafficking activities. Despite these obstacles, North America's proactive stance reflects a determined effort to address substantial drug-related challenges. North America's leadership role in combating cocaine trafficking may be seen as a means to secure its borders, protect national interests, and potentially exert influence over regional security dynamics.

South Asia exhibits relatively low levels of annual (26 kilograms) and total (522 kilograms) cocaine seizures, this region indicates a lesser impact of cocaine trafficking. Despite this, the region reports a moderate level of commitment to United Nations conventions, suggesting a proactive stance in addressing challenges associated with the global cocaine trade. While moderate commitment is evident, there is room for increased vigilance and collaboration to fortify efforts. South Asia's approach may be interpreted as balancing limited domestic resources with a cautious engagement in international efforts to control potential future threats posed by the cocaine trade.

Sub-Saharan Africa maintains a moderate level of UN commitment, this region exhibits moderate levels of annual (17 kilograms) and total (287 kilograms) cocaine seizures. This proactive stance in addressing drug enforcement challenges is evident, showcasing effective control measures amidst existing complexities. The commitment aligns with the region's higher seizure quantities, indicating sustained efforts to address the impact of the global cocaine trade. Sub-Saharan Africa's dedication to international collaboration, coupled

with its measured approach to drug control, positions it as an active participant in the global effort to mitigate the adverse effects of cocaine trafficking. This reflects a strategy to manage internal security threats and potentially leverage international cooperation for resource and capacity-building purposes.

5.1.3 Regional Overview on Commitment & Cocaine Seizures

This subsection provides a regional analysis of the commitment to UN drug control conventions and the corresponding cocaine seizure volumes. The regions analysed include East Asia & Pacific, Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, North America, South Asia, and Sub-Saharan Africa.

The analysis reveals distinct regional patterns in the commitment to UN conventions and cocaine seizures. For instance, Latin America & the Caribbean, a region heavily impacted by the cocaine trade, show a strong correlation between high levels of commitment to UN conventions and substantial cocaine seizure volumes. Conversely, regions such as Sub-Saharan Africa exhibit lower levels of commitment and correspondingly lower seizure volumes.

Delving into the relationship between international commitment and illicit activities, an interesting perspective emerges through the comparison of annual mean and total cocaine seizures. *Figures* 5.2 through 5.5 further enrich this understanding by visually portraying individual-level commitment to cocaine seizures alongside commitment to United Nations conventions. Grouping cocaine seizure quantities into five categories ("Low," "Low-Medium," "Medium," "Medium-High," and "High") provides a clear interpretation of the regional distribution.

East Asia & the Pacific (EAP)

Within this framework, *Table* 5.3 shows that commitment demonstrated by East Asia and the Pacific nations varies considerably. While all 15 nations adhere to at least one, the degree of engagement exhibits striking diversity. Japan stands out for its comprehensive commitment, embracing all three conventions, while China focuses solely on the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988. This dichotomy hints that Japan aligns with the broader United Nations strategy and China adopts a more targeted stance.

Examining individual conventions reveals further complexity. The Single Convention on Narcotic Drugs of 1961 and the Convention on Psychotropic Substances of 1971 report

Table 5.3: Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in East Asia & the Pacific.

Country	**Any UN**	**1961**	**1971**	**1988**	**Mean (kgs)**	**Total (kgs)**
Australia	0	0	0	0	471	9,884
Cambodia	0	0	0	0	3	55
China	1	0	0	1	86	1,805
Indonesia	0	0	0	0	2	47
Japan	1	1	1	1	45	947
Laos	0	0	0	0	0.96	13
Malaysia	0	0	0	0	741	15,556
Mongolia	0	0	0	0	0.02	0.40
Myanmar	0	0	0	0	56	450
New Zealand	0	0	0	0	12	259
Philippines	0	0	0	0	111	2,322
Singapore	0	0	0	0	0.19	4
South Korea	0	0	0	0	0.19	4
Thailand	0	0	0	0	13	275
Vietnam	0	0	0	0	9	139

similar mean commitment levels of 7% (0.07), while the 1988 convention enjoys a notably higher score of 13% (0.13). This pattern potentially reflects a shift in regional priorities towards combating illicit traffic, aligning with the focus on the 1988 convention.

Cocaine seizures further illuminate the region's multifaceted reality. The average quantity stands at 103 kilograms, but the range stretches from 0 to 15,247 kilograms. Nations, individually, yield fascinating insights. Malaysia, Australia, and the Philippines emerge as high-seizure nations, with annual averages of 741 kilograms, 471 kilograms, and 111 kilograms, respectively. These figures suggest significant trafficking challenges and large cocaine markets. Conversely, nations like Singapore and South Korea display remarkably low seizure values (0.19 kilograms and 0.18 kilograms annually), possibly indicating limited data on drug movements or efficient enforcement measures.

By categorising annual mean cocaine seizures into the aforementioned five groups, a better understanding of regional distribution is provided. Notably, six nations fall within the "Low" and "Low-Medium" categories, accounting for a combined annual average of only 8 kilograms. Meanwhile, the remaining nine nations collectively average 527 kilograms,

highlighting a concentrated distribution of cocaine activity within the region.

It's crucial to acknowledge that these patterns may arise from factors beyond commitment levels. Geopolitical positioning, proximity to trafficking routes, and national enforcement capacities play a role in seizure volumes. For instance, Japan's insular location might contribute to its lower seizure quantity, of 45 kilograms compared to geographically vulnerable nations like Malaysia reporting a mean of 741 kilograms. Similarly, efficient law enforcement practices could account for Singapore's low annual figure of 0.19 kilograms.

Figure 5.2 delves further into the East Asia and the Pacific (EAP) region, providing a visual comparison of cocaine seizure categories within and against South Asia (SA). This graphical representation sheds light on the stark disparities in the scale and patterns of cocaine trafficking across both regions, hinting at potential differences in commitment to drug control measures.

At a glance, the significant discrepancies in seizure size breaks between East Asia, the Pacific and South Asia are striking. EAP exhibits considerably higher volumes across all categories: "Low-Medium" reported 175 kilograms compared to SA's reported 21 kilograms, and "Medium" reported 350 kilograms versus 43 kilograms. Notably, EAP's "Low-Medium" category surpasses South Asia's "High" category reports volumes nearly eightfold (175 kilograms versus 21 kilograms). This contrast suggests a substantially larger scale of cocaine trafficking within East Asia and the Pacific, where even smaller seizures represent significant quantities compared to South Asia.

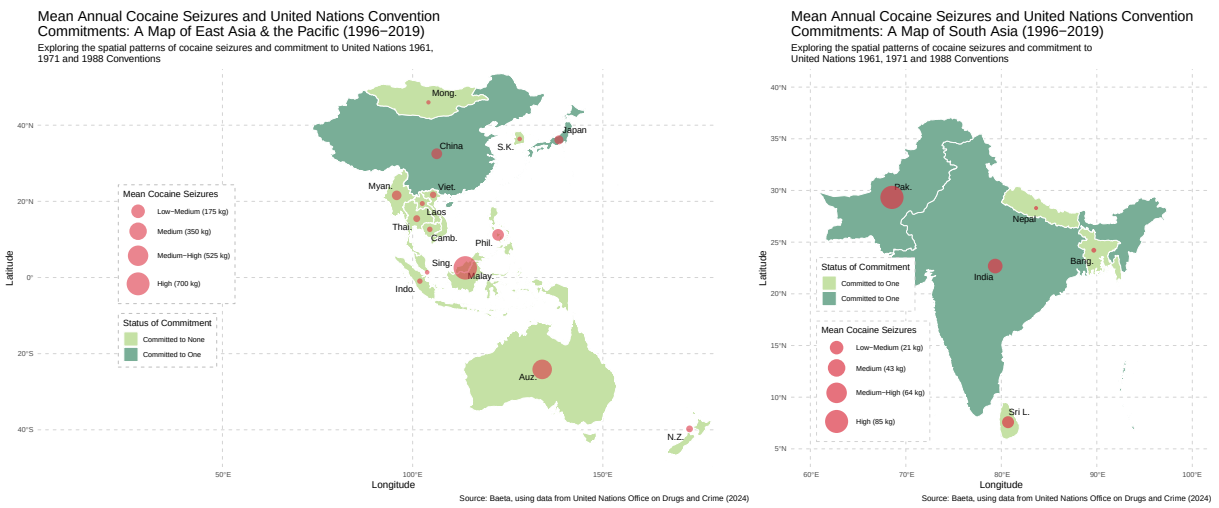


Figure 5.2: Map of Annual Mean Cocaine Seizures in Kilograms (kgs) in East, South Asia & the Pacific

Furthermore, the presence of a "High" category in both regions does not mask the substantial difference in absolute volumes. East Asia and the Pacific's "High" category reaches 700 kilograms, exceeding the bounds of South Asia's high annual and total thresholds (85 kilograms and 100 kilograms). This implies that while occasional large cocaine seizures occur in both regions, they are far less frequent and considerably smaller in magnitude within South Asia.

Delving deeper, the smaller size breaks within South Asia's cocaine seizure categories (21 kilograms, 43 kilograms, 64 kilograms) compared to EAP (175 kilograms, 350 kilograms, 525 kilograms, 700 kilograms) offer further insights. This suggests a higher prevalence of smaller seizure volumes within South Asia, potentially indicating a different trafficking pattern characterised by smaller shipments or less efficient smuggling operations in comparison to East Asia and the Pacific.

South Asia (SA)

While East Asia and the Pacific show a diverse landscape of commitment and cocaine activity, South Asia, a region represented by five states in the context of this study, exhibits a distinct pattern. Two nations, India and Pakistan, have committed to at least one United Nations convention, highlighting a partial engagement with international drug control measures. This commitment, however, shows variations shown in *Table* 5.4.

Both countries are signatories to the Single Convention on Narcotic Drugs of 1961, but only Pakistan aligns with the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, targeting illicit traffic, however, neither nation endorses the Convention on Psychotropic Substances of 1971 focusing on psychotropic substances. This selective adherence suggests a strategic focus on specific aspects of drug control.

Examining commitment levels reveals interesting disparities. The 1961 convention reports a mean of 40% (0.4) of nations adhering, while the 1971 convention scores 0. This implies that while individual conventions might not attract universal endorsement, some degree of regional participation across conventions exists. The enforcement landscape paints a picture of varying activity levels. The average annual cocaine seizure stands at 27 kilograms, with a range stretching from 0 to 86 kilograms.

Individual nations display diverse engagement within this picture. India and Pakistan emerged as key players, with substantial total cocaine seizures of 557 kilograms and 1,807 kilograms, respectively. Their annual mean volumes were reported as 27 kilograms for India and 86 kilograms for Pakistan, further marking their consistent efforts.

Table 5.4: Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in South Asia.

Country	**Any UN**	**1961**	**1971**	**1988**	**Mean (kgs)**	**Total (kgs)**
Bangladesh	0	0	0	0	0.24	5
India	1	1	0	0	27	557
Nepal	0	0	0	0	0.10	2
Pakistan	1	1	0	1	86	1,807
Sri Lanka	0	0	0	0	15	237

Sri Lanka, with a moderate mean seizure volume of 15 kilograms, suggests a discernible presence of cocaine activity, albeit at a lower scale compared to the leading nations. Conversely, Bangladesh and Nepal report minimal total seizure volumes (0.24 kilograms and 0.10 kilograms), indicating limited involvement in cocaine trafficking within these nations.

Europe & Central Asia (ECA)

Turning to Europe and Central Asia (ECA), this vast region encompasses 46 nations. The ECA region has a complex relationship with commitment and action in tackling cocaine trafficking. 13 nations are signatories, aligning themselves with at least one United Nations convention. *Table* 5.5 present variations in the nature and depth of commitment in ECA.

All 13 nations are signatories to the Single Convention on Narcotic Drugs of 1961, the cornerstone of international drug control conventions. However, adherence to the Convention on Psychotropic Substances of 1971 and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 diverges.

Six nations are signatories to the 1971 convention, suggesting a more cautious approach towards psychotropic substances, while eleven nations are signatories to the 1988 convention, highlighting a stronger focus on combating illicit traffic. This selective engagement speaks to strategic priorities, with nations tailoring their commitments to specific aspects of drug control.

Table 5.5: Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in Europe & Central Asia.

Country	**Any UN**	**1961**	**1971**	**1988**	**Mean (kg)**	**Total (kg)**
Albania	0	0	0	0	10	218
Armenia	0	0	0	0	1	30
Austria	0	0	0	0	40	829
Azerbaijan	1	1	0	0	0.21	4
Belarus	1	1	1	1	0.12	2
Belgium	1	1	0	1	5,692	119,532
Bosnia & Herzegovina	0	0	0	0	1	20
Bulgaria	0	0	0	0	30	639
Croatia	0	0	0	0	24	496
Cyprus	1	1	0	1	10	199
Czechia	0	0	0	0	23	487
Denmark	0	0	0	0	73	1,534
Estonia	0	0	0	0	3	62
Finland	1	1	1	1	5	97
France	0	0	0	0	2,833	59,485
Georgia	0	0	0	0	1	30
Germany	0	0	0	0	957	20,092
Greece	1	1	1	1	183	2,563
Hungary	0	0	0	0	12	243
Ireland	0	0	0	0	138	2,901
Italy	1	1	0	1	553	11,612
Kazakhstan	0	0	0	0	0.10	2
Latvia	0	0	0	0	105	2,212
Lithuania	0	0	0	0	62	1,303
Luxembourg	1	1	0	1	18	386
Moldova	0	0	0	0	0.25	5
Montenegro	0	0	0	0	6	81
Netherlands	0	0	0	0	6,369	133,742
North Macedonia	0	0	0	0	2	32
Norway	1	1	0	1	20	428
Poland	1	1	1	1	39	810
Portugal	0	0	0	0	988	20,739
Romania	0	0	0	0	102	2,143

Table 5.5: Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in Europe & Central Asia (continued).

Country	Any UN	1961	1971	1988	Mean (kgs)	Total (kgs)
Russia	0	0	0	0	115	2,415
Serbia	0	0	0	0	9	132
Slovakia	0	0	0	0	0.73	15
Slovenia	0	0	0	0	13	273
Spain	0	0	0	0	13,492	283,332
Sweden	0	0	0	0	80	1,682
Switzerland	0	0	0	0	44	921
Tajikistan	0	0	0	0	0	0.03
Türkiye	1	1	1	1	107	2,246
Turkmenistan	1	1	0	0	1	1
Ukraine	1	1	1	1	7	149
Uzbekistan	0	0	0	0	0	0.01

Moving beyond commitment, the enforcement landscape presents diverse activity levels. The mean annual cocaine seizure stands at 794 kilograms, but the range stretches from 0 kilograms to a staggering 53,032 kilograms, revealing significant disparities across nations. Spain, the Netherlands, France, the United Kingdom, and Germany emerge as prominent players, reporting high total seizures indicative of potentially substantial cocaine activity within their jurisdictions. Their mean annual volumes, which range from 1,577 kilograms to 13,492 kilograms, further mark their consistent interdiction efforts.

However, Europe and Central Asia also present cases of focused engagement. Nations like Luxembourg, Finland, and Norway, despite their commitment to United Nations conventions, report relatively low total seizures. This suggests a strategic focus on specific types of controlled substances or potentially different trafficking patterns compared to high-seizure nations. *Figure* 5.3 visually emphasises this contrast, with the region's range for cocaine seizure categories significantly exceeding that of Asia aforementioned, indicating a wider spectrum of activity levels.

Figure 5.3 presents a striking contrast in cocaine seizure size breaks when compared to *Figure* A.1 for East Asia, the Pacific and South Asia. Europe and Central Asia adopt a significantly wider range for their volume categories. This revised scheme commences with "Low-Medium" encompassing seizures between 0 kilograms and 3,250 kilograms, nearly

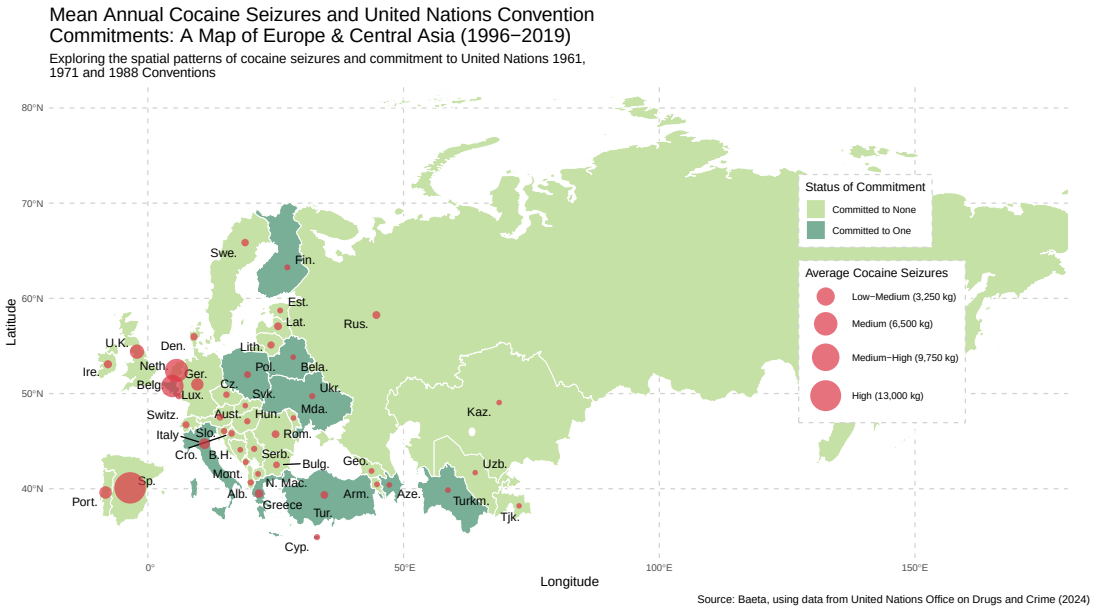


Figure 5.3: Map of Annual Mean Cocaine Seizures in Kilograms (kgs) in Europe & Central Asia.

twenty times the upper limit of East and South Asia's "Low" volume category. The subsequent categories of "Medium" (3,250 kilograms to 6,500 kilograms), "Medium-High" (6,500 kilograms to 9,750 kilograms), and "High" (9,750 kilograms to 13,000 kilograms) further underscore the expanded scale of cocaine activity evident within Europe and Central Asia.

This stark disparity in cocaine seizure size breaks suggests potentially larger volumes of cocaine trafficking, different patterns of consumption or smuggling compared to the East and South Asia, and the Pacific region, or potentially variations in data collection and reporting practices.

Latin America & the Caribbean (LAC)

Latin America and the Caribbean, a region of 22 nations. Notably, 13 nations, including Argentina, Brazil, Chile, Colombia, Cuba, the Dominican Republic, Ecuador, Guyana, Jamaica, Mexico, Nicaragua, Panama, and Peru, formally adhere to at least one of the three United Nations conventions, demonstrating a substantial regional commitment with global drug control frameworks. Four nations are signatories to the United Nations Convention on Psychotropic Substances of 1971 and eleven nations committed to the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances

of 1988. Among these committed nations, Argentina, Chile, and Brazil stand out for their unwavering commitment, as signatories to all three conventions.

Table 5.6: Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in Latin America & the Caribbean.

Country	**Any UN**	**1961**	**1971**	**1988**	**Mean (kgs)**	**Total (kgs)**
Argentina	1	1	1	1	15,548	326,508
Belize	0	0	0	0	243	4,855
Bolivia	0	0	0	0	97,587	2,049,333
Brazil	1	1	1	1	9,712	203,950
Chile	1	1	1	1	2,136	44,846
Colombia	1	1	0	1	153,415	3,221,716
Cuba	1	1	0	1	165	1,651
Dominican Rep.	1	1	0	0	2,253	47,311
Ecuador	1	1	0	1	15,584	327,256
El Salvador	0	0	0	0	772	16,210
Guatemala	0	0	0	0	2,647	55,577
Guyana	1	1	1	0	27	160
Honduras	0	0	0	0	1,437	27,304
Haiti	0	0	0	0	10	67
Jamaica	1	1	0	1	492	10,333
Mexico	1	1	0	1	7,838	164,605
Nicaraguan	1	1	0	1	3,421	71,841
Panama	1	1	0	1	0	0
Peru	1	1	0	1	373,001	7,833,031
Paraguay	0	0	0	0	583	12,233
Uruguay	0	0	0	0	32	666
Venezuela	0	0	0	0	9,523	152,368

Examining commitment levels through mean volumes the 1961 convention reports a mean of 59% (0.59), underscoring significant regional dedication to its provisions. In contrast, the 1971 convention registers a more moderate mean of 18% (0.18), emphasising a cautious approach towards broader psychotropic substance regulation. Notably, the 1988 convention exhibits a mean of 50% (0.50), signifying a strong dedication to combating illicit traffic across the region. Additionally, commitment to any three United Nations

conventions reports a mean of 59% (0.59), emphasising a substantive, albeit nuanced, commitment to the collective conventions.

Shifting the lens to the enforcement landscape, the average annual cocaine seizure stands at a significant 36,891 kilograms. However, the vast range stretching from 0 to 373,001 kilograms reveals stark disparities. A panorama emerges when examining the nations spearheading cocaine seizures in Latin America and the Caribbean.

Peru stuns with an annual mean of 373,001 kilograms, amassing 7.83 million kilograms of cocaine seized. Colombia closely follows, recording an annual mean of 153,415 kilograms and accumulating over 3.2 million kilograms of cocaine. These figures position Peru and Colombia as epicentres of illicit cocaine activity, potentially due to their geographic proximity to Andean coca production zones or interdiction efforts (DEA, 2024). Bolivia sits firmly within the top three, contributing an annual mean of 97,587 kilograms and exceeding a total of 2 million kilograms of cocaine seized. This suggests significant cocaine movement within its borders, highlighting potential trafficking routes or domestic consumption patterns (DEA, 2024).

Furthering the regional picture, Argentina and Brazil contribute, albeit with lower annual means of 15,548 and 9,712 kilograms, respectively. Though their total volume seizures (326,508 kilograms and 203,950 kilograms) are substantial, they represent a different tier of activity compared to Peru, Colombia, and Bolivia. This pattern suggests diversified trafficking flows and enforcement priorities across the region (DEA, 2024; van der Hoek, 2001).

However, the landscape is not uniformly high-volume. Haiti and Panama exhibit lower figures, potentially revealing data limitations or significantly less cocaine activity within their jurisdictions. Haiti's annual mean and total volume of cocaine seizures stand at a mere 10 kilograms and 67 kilograms, while Panama reports no seizures at all. This marks the need for cautious interpretation of seizure data and acknowledges the importance of data harmonisation efforts within the region to paint a more accurate picture.

Figure 5.4 offers a glimpse into the contrasting landscapes of commitment and cocaine seizures across Latin America and the Caribbean (LAC), as well as North America (NA). Analysing the annual mean cocaine seizures categorised as "Low," "Low-Medium," "Medium," "Medium-High," and "High" reveals some intriguing regional patterns.

Latin America and the Caribbean (LAC), together with North America (NA) produce a stark difference in cocaine seizure categories between the two regions. LAC's "Low-Medium" category commences at 93,000 kilograms, nearly eight times higher than North America's "High" category capped at 50,000 kilograms. This disparity suggests a considerably larger volume of cocaine moving through LAC compared to North America. This

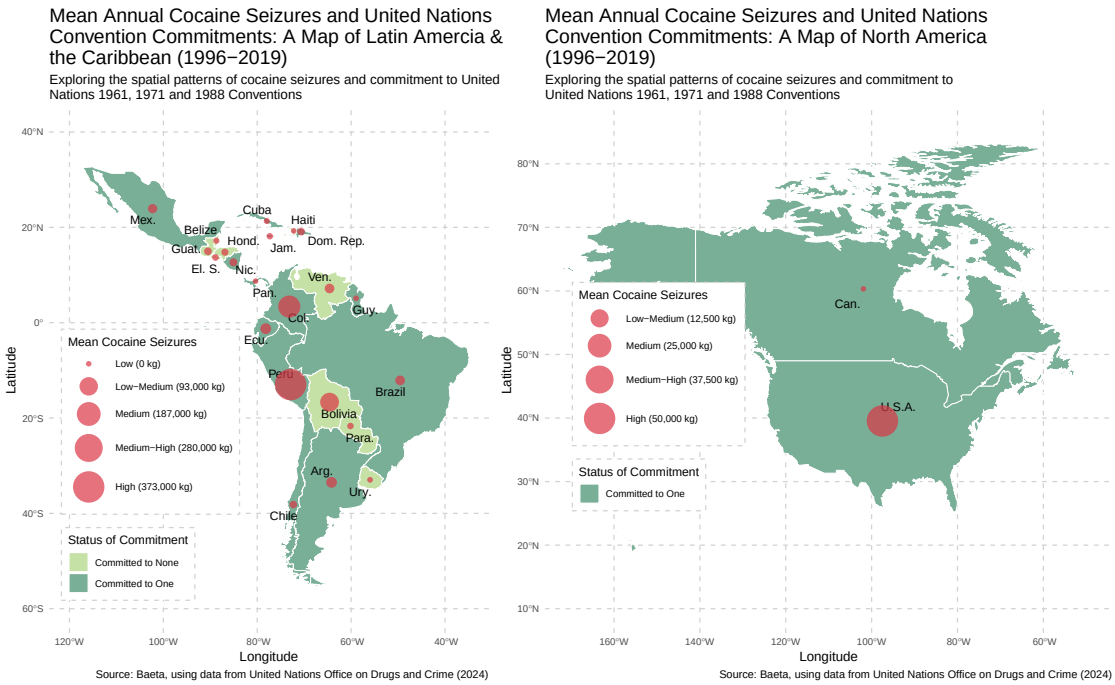


Figure 5.4: Map of Annual Mean Cocaine Seizures in Kilograms (kgs) in Latin America, the Caribbean & North America.

aligns with research highlighting LAC's role as a major production and transit zone for cocaine destined for both North American and European markets (Roaf, 2014; Mera, 2012).

The cocaine seizure category distribution between regions furthers the nuances observed in *Table* 5.6. LAC exhibits a relatively even distribution across all cocaine seizure categories, implying sustained pressure on cocaine trafficking across various volume levels. Conversely, North America's high concentration in the "Medium" and "Medium-High" categories suggests a focus on interdicting mid-size shipments, potentially reflecting stronger border security measures or targeting specific trafficking routes.

North America (NA)

Both Canada and the United States demonstrate commitment to fundamental frameworks that regulate international drug control by adhering to the 1961 convention and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 which targets illicit trafficking. The United States distinguishes itself as a signatory

to all three conventions, signifying a comprehensive approach to global control measures. This divergence hints at potential differences in national priorities and risk perceptions towards various types of controlled substances within the region.

Table 5.7: Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in North America.

Country	**Any UN**	**1961**	**1971**	**1988**	**Mean (kgs)**	**Total (kgs)**
Canada	1	1	0	1	731	15,355
United States	1	1	1	1	50,096	1,052,018

North America reports a relatively high mean cocaine seizure volume of 25,413 kilograms, though considerable intra-regional disparities exist. Notably, the United States stands out as a regional powerhouse, consistently seizing significantly larger quantities of cocaine compared to Canada. This disparity may be attributed to geographical proximity to major trafficking routes, differences in national strategies, or resource allocation within each nation.

Comparing North America's enforcement landscape with other regions (LAC and EAP) paints a complex landscape. While LAC exhibits even higher mean seizure volumes and a wider range of cocaine activity categories, its geographic proximity to coca production zones offers a partial explanation (DEA, 2024; Mera, 2012). Conversely, EAP's lower seizure quantities might reflect stricter border controls or different consumption patterns (UNODC, 2023b).

Middle East & North Africa (MENA)

From the Middle East and North Africa (MENA), 16 nations are signatories, creating a multifaceted landscape in commitment to the disruption of cocaine trafficking presented in *Table* 5.8. While adherence to the three central United Nations conventions remains uneven, regional commitment exhibits distinct patterns compared to LAC and EAP.

The Middle East and North Africa (MENA) showcase a moderate overall commitment to the United Nations conventions compared to LAC's strong and EAP's weak commitment. Notably, five nations namely, Egypt, Iraq, Israel, Jordan, and Tunisia, are signatories to at least one convention. Egypt stands out for its full commitment to all three conventions, further solidifying its regional leadership in drug control efforts.

In contrast, Lebanon exemplifies the region's partial adherence, a signatory to the Single Convention on Narcotic Drugs of 1961 and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988, but not the Convention on Psychotropic Substances of 1971. This fragmented commitment may reflect specific regional priorities as a focus on combating illicit trafficking represented in the 1988 convention while acknowledging resource constraints for broader psychotropic substance regulation represented in the 1971 convention.

Table 5.8: Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in the Middle East and North Africa.

Country	**Any UN**	**1961**	**1971**	**1988**	**Mean (kgs)**	**Total (kgs)**
Bahrain	0	0	0	0	0.03	0.69
Egypt	1	1	1	1	5	108
Iran	0	0	0	0	3	52
Iraq	1	1	0	0	22	350
Israel	1	1	0	1	31	646
Jordan	1	1	0	1	20	414
Kuwait	0	0	0	0	2	43
Lebanon	0	0	0	0	24	502
Libya	0	0	0	0	0.82	8
Morocco	0	0	0	0	106	2,223
Oman	0	0	0	0	0.90	19
Qatar	0	0	0	0	0	0
Saudi Arabia	0	0	0	0	27	576
Tunisia	1	1	0	1	9	181
U.A. Emirates	0	0	0	0	5	58

Middle East and North Africa's mean cocaine seizure quantity of 20 kilograms pales in comparison to LAC's 36,891 kilograms and EAP's 805 kilograms. This disparity may be attributed to several factors. Geographically, most MENA nations are further from major coca production zones in South America, unlike LAC countries directly on trafficking routes (Roaf, 2014; DEA, 2024). Additionally, stricter border controls in neighbouring nations and regions may push trafficking towards alternative routes, bypassing the Middle East and North Africa to some extent.

However, within the Middle East and North Africa, nations such as Morocco and Algeria demonstrate considerable enforcement efforts reporting means of 106 kilograms and 33 kilograms, while Bahrain and Qatar report minimal or no seizures. This highlights the impact of internal dynamics, with porous borders in Libya (Mashi and Bala, 2022), ongoing political instability (later explored through World Governance Indicator, "PV") in Syria and Iraq, and the role of militant groups in Lebanon hindering effective commitment in certain areas (O'Regan, 2010). These challenges contribute to cocaine trafficking routes shifting through MENA, posing risks to regional stability and security.

The Middle East and North Africa exhibit distinctions in their cocaine trafficking routes and consumption patterns. Turkey serves as a crucial processing hub, while African routes offer alternatives to circumvent stricter European controls. Jordan emerges as a key transit point, while Saudi Arabia reports high consumption levels of cocaine (Bird, 2022; Kangaspunta and Whelan, 2020). This differs from LAC's preference for cocaine powder and EAP's lower overall consumption levels.

Figure 5.5 offers a glimpse into the contrasting landscapes of cocaine trafficking in the Middle East, North Africa, and Sub-Saharan Africa. Analysing the annual mean cocaine seizures categorised as "Low," "Low-Medium," "Medium," "Medium-High," and "High" reveals some regional patterns. The most striking observation is the lower starting point for seizure categories in MENA compared to Sub-Saharan Africa. MENA's "Low-Medium" category commences at 25 kilograms whereas Sub-Saharan Africa's begins at 30 kilograms. This suggests, on average, a lower quantity of cocaine intercepted per seizure in MENA. This observation aligns with the overall lower total seizure figures reported for MENA compared to Sub-Saharan Africa.

Despite the lower average seizure volumes, Sub-Saharan Africa's "High" cocaine seizure category reaches 120 kilograms, exceeding MENA's maximum of 100 kilograms. This implies the possibility of larger individual cocaine seizures occurring within Sub-Saharan Africa, albeit potentially less frequent. This observation could reflect diverse trafficking routes through Sub-Saharan Africa, including land and maritime pathways, compared to MENA's more concentrated routes (Bird, 2022).

Sub-Saharan Africa (SSA)

Unlike the stark engagement of Latin America and the Caribbean (LAC) or the partial adherence of the Middle East and North Africa (MENA), Sub-Saharan Africa presents a fragmented landscape of commitment to the United Nations conventions regulating cocaine trafficking. Only 9 out of 39 states are signatories to any of the three conventions, highlighting a patchwork of regional commitment. Notably, none of these states are signatories

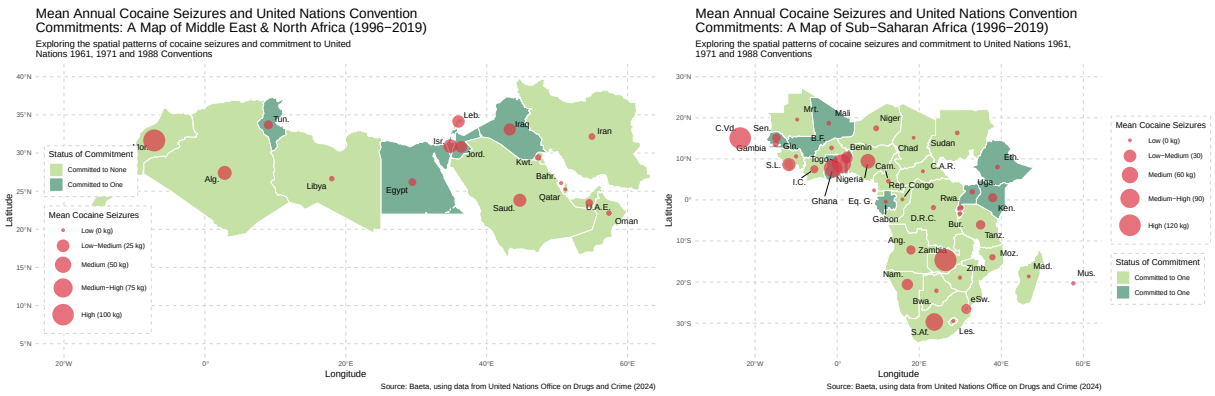


Figure 5.5: Map of Annual Cocaine Seizures in Kilograms (kgs) in the Middle East, North Africa, & Sub-Saharan Africa.

to all three conventions, unlike some countries in MENA, suggesting divergent priorities and resource constraints across the region.

Table 5.9: Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in Sub-Saharan Africa Countries.

Country	**Any**	**1961**	**1971**	**1988**	**Mean (kgs)**	**Total (kgs)**
Angola	0	0	0	0	11	204
Benin	1	1	0	0	25	379
Botswana	0	0	0	0	0.19	4
Burkina Faso	0	0	0	0	0.31	7
Burundi	0	0	0	0	0.30	5
Cameroon	0	0	0	0	0.25	5
Cape Verde	0	0	0	0	119	1,549
Central African Rep.	0	0	0	0	0	0.05
Chad	0	0	0	0	0	0
Congo, DR	0	0	0	0	0.66	13
Equatorial Guinea	0	0	0	0	0	0
Eswatini	0	0	0	0	14	294
Ethiopia	1	1	0	0	0.36	3

Table 5.9: Commitment to UN Conventions and Cocaine Seizures in Kilograms (kgs) in Sub-Saharan Africa Countries (continued).

Country	**Any**	**1961**	**1971**	**1988**	**Mean (kgs)**	**Total (kgs)**
Gabon	1	0	0	1	0.03	0.42
Gambia	0	0	0	0	2	30
Ghana	1	0	1	1	77	1,612
Guinea	0	0	0	0	0.07	0.87
Kenya	1	1	0	0	10	220
Lesotho	0	0	0	0	0	0
Madagascar	0	0	0	0	0	0.11
Mali	1	1	0	0	0.31	7
Mauritania	0	0	0	0	0.02	0.33
Mauritius	0	0	0	0	0.10	2
Mozambique	0	0	0	0	2	49
Namibia	0	0	0	0	22	454
Niger	0	0	0	0	2	29
Nigeria	0	0	0	0	45	938
Rep. Congo	0	0	0	0	0	0.02
Rwanda	1	0	1	0	2	39
Senegal	1	1	0	1	9	188
Sierra Leone	0	0	0	0	34	710
South Africa	0	0	0	0	72	1,501
Sudan	0	0	0	0	0.29	1
Tanzania	0	0	0	0	12	246
Togo	0	0	0	0	87	1,299
Uganda	1	1	0	0	1	21
Zambia	0	0	0	0	2	36
Zimbabwe	0	0	0	0	0.07	1

Six states are signatories to the Single Convention on Narcotic Drugs of 1961, laying the foundational framework for control measures. However, only two are signatories to the Convention on Psychotropic Substances of 1971, indicating limited attention to broader control aspects beyond the core illicit traffic focus. Three states are signatories to the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic

Substances of 1988, prioritising interdiction efforts while potentially neglecting preventive measures.

Sub-Saharan Africa's mean cocaine seizure quantity of 16 kilograms is substantively lower in comparison to both MENA's 20 kilograms and LAC's 36,891 kilograms. This disparity may be attributed to a confluence of factors. Geographically, most Sub-Saharan African countries are further removed from LAC production zones, leading to lower trafficking volumes. Additionally, the diverse and dynamic nature of trafficking routes, encompassing both land and maritime pathways, presents formidable challenges for effective interdiction (Bird, 2022).

Sub-Saharan African nations, in general, exhibit lower cocaine seizures compared to other regions, with several countries reporting minimal or no seizures at all. SSA's cocaine seizures range is wide, spanning from no seizures to 86 kilograms as reported by Togo. Notable standouts with relatively higher mean seizures include Cape Verde (119 kilograms), Togo (87 kilograms), Ghana (77 kilograms), and South Africa (72 kilograms).

Sub-Saharan Africa reveals significant disparities, illustrating a diverse approach to tackling the illicit trade and distribution of cocaine. Conversely, nations such as Equatorial Guinea and Lesotho report no cocaine seizures at all, indicating minimal cocaine activity or a lack of sufficient enforcement capacity within their jurisdictions. These disparities illuminate the heterogeneous landscape of commitment across Sub-Saharan Africa, where some nations actively engage in interdiction efforts while others remain largely unaffected or lack the resources to combat this complex challenge (Dechery and Ralston, 2015).

The relationship between state commitment to United Nations conventions and cocaine seizures, concludes with a clear correlation. Regions with higher commitment scores, such as Latin America and the Caribbean, tend to exhibit higher seizure quantities, while regions with lower commitment scores, such as the Middle East, North Africa, and South Asia, tend to have lower seizure quantities. This suggests that policy engagement and adherence to conventions may play a significant role in achieving tangible outcomes in the fight against cocaine trafficking. The findings mark the importance of sustained efforts to strengthen international cooperation and promote effective policy measures to combat this pervasive issue.

However, exceptions including Europe and Central Asia challenge this simplistic correlation. With a relatively high commitment score, its seizure quantity falls short of the top contenders. This suggests that beyond commitment, other factors such as resource allocation, enforcement capacity, and regional drug production dynamics play crucial roles in determining interdiction success (Dechery and Ralston, 2015).

In the next section, economic indicators are analysed to offer further insights into

the complexities of distributing the illicit distribution of cocaine. Regions with higher Gross Domestic Products (GDPs), including North America, Europe, and Central Asia, often possess the resources to invest in sophisticated enforcement apparatus and proactive intelligence gathering. This assumption aligns with their high seizure rates. Conversely, Sub-Saharan Africa, despite exhibiting an upward trend in GDP, faces resource constraints and geographic vulnerabilities, contributing to its lower seizure figures.

Analysing economic indicators reveals that tackling cocaine trafficking necessitates a multi-layered approach. Strengthening state commitment to United Nations conventions, coupled with targeted investments in enforcement infrastructure and regional collaboration, may enhance interdiction capacities across the board. Additionally, considering and addressing the unique economic realities and vulnerabilities of each region is crucial for forging effective and sustainable solutions.

5.2 Economic Indicators

Exploring the relationship between state commitment to international drug control conventions and its effectiveness in stemming cocaine trafficking through economic indicators. Across the globe, nations embark on this fight armed with unique economic tool-kits, shaped by diverse histories, priorities, and circumstances.

A spectrum of commitment levels reveals each region colours this analysis with its distinctive hues. East Asia and the Pacific, for instance, showcase a dynamic interplay between moderate adherence to United Nations conventions and fluctuating cocaine seizures. This dynamism hints at an evolving approach to drug control, potentially impacting their economic indicators. Similarly, Europe and Central Asia, while manifesting moderately consistent commitment, demonstrate a sustained emphasis on the Single Convention on Narcotic Drugs of 1961, suggesting focused strategies with potential economic correlations.

Latin America and the Caribbean stand out as paragons of regional dedication. Their top-ranking commitment, reflected in the second-highest cocaine seizures, paints a picture of resilience against the illicit drug market. This alignment is assumed to translate into economic indicators that emphasise stability and resource allocation toward countering this persistent challenge. In contrast, the Middle East and North Africa present lower seizures and mixed commitment, particularly towards the Convention on Psychotropic Substances of 1971, signify potential challenges and fluctuating priorities. Their economic indicators may mirror this instability, offering valuable insights into the complexities of combating drug trafficking in the region.

North America emerges as a titan of commitment. Consistently high seizure quantities and maximal adherence to all conventions underscore their well-funded and sustained effort against cocaine trafficking. This dedication likely translates into demonstrably positive economic indicators, showcasing the potential benefits of resolve. Meanwhile, South Asia's fluctuating commitment and notable lack of commitment with the 1961 Convention call for heightened attention and enhanced regional cooperation.

Finally, Sub-Saharan Africa presents a glimmer of hope. A gradual upswing in commitment, reflected in modest but increasing cocaine seizures, signals a promising trajectory. This upward trend may signify a growing resolve to combat drug trafficking, which may soon be reflected in strengthened economic indicators, indicative of a region rising to the challenge.

Now, with the diverse shades of regional commitment illuminated, the economic variables serve as a lens through which to assess their effectiveness. These variables, chosen and defined, serve as the instruments to understand how economic realities intertwine with the global fight against illicit drugs.

5.2.1 Trade Ratio as Percentage of GDP

The trade ratio, reflecting the sum of exports and imports as a percentage of GDP serves as an indicator of economic openness and globalisation. The analysis explores the relationship between trade openness and cocaine seizures, hypothesising that higher trade ratios may correlate with increased opportunities for illicit drug trafficking.

The level of a nation's commitment to the global marketplace emerges as a crucial factor in analysing its effectiveness in combating drug trafficking. This is revealed through the "trade openness" or trade ratio as a percentage of GDP, a ratio that illuminates how heavily a nation leans on imports and exports relative to its overall economic size. Understanding regional variations in *Table* 5.10, *Figures* 5.6 and 5.7, provides valuable insights into the nation's unique strengths and vulnerabilities in the fight against illicit drugs.

The mean trade ratio across these three-year intervals is 4%, and the reported medium is 2%. This metric provides an interpretable snapshot of the typical level of trade exchange between the observed actors. However, the geometric mean of 2%, offers an alternative measure of central tendency less susceptible to the influence of outliers, particularly if high-volume trade partnerships skew the distribution.

Additionally, the Gini mean difference of 0.42% quantifies the degree of inequality present in the distribution of trade ratios. This highlights the extent to which trade

is concentrated among certain pairings of actors and reveals potential power imbalances within the system.

Table 5.10: Regional Statistics on UN Commitment, Annual Mean Cocaine Seizures in Kilograms (kgs), and Trade Ratio as a Percentage of GDP.

Region	**UN Score**	**Mean (kgs)**	**Trade Ratio (%)**
East Asia & Pacific [15]	0.13	103	5
Europe & Central Asia [46]	0.28	734	2
Latin America & Caribbean [22]	0.59	31,656	3
Middle East & North Africa [16]	0.31	367	1
North America [2]	1	25,414	0.12
South Asia [5]	0.40	26	6
Sub-Saharan Africa [38]	0.23	17	8

Furthermore, the discrepancy between the median (2%) and the mean (4%) points towards a right-skewed distribution. This suggests a preponderance of lower trade ratios, indicating that many actor pairs engage in relatively modest levels of trade, while a smaller number of partnerships exhibit significantly higher volume exchanges. This skewness is visualised in *Figure* 5.6. The skewness warrants further investigation into the factors driving the formation and operation of these high-volume trade relationships within the broader international trade landscape.

East Asia and the Pacific, with a moderate mean trade ratio of 5%, exhibit a balanced distribution of data points on the scatter plot. This suggests a mixed approach to international trade within East Asia and the Pacific, with some nations engaging more actively than the average suggests.

South Asia and Sub-Saharan Africa stand out at opposite ends of the spectrum. South Asia, with a low GDP and trade ratio, occupies a corner of the plot, signifying a less interconnected economy. This might pose challenges in accessing resources for drug control initiatives. Conversely, Sub-Saharan Africa explodes with data points, defying expectations. Despite a relatively low GDP, many nations display a high trade openness, suggesting dynamic and diverse economic landscapes with potential vulnerabilities to drug trafficking.

Europe and Central Asia, despite showcasing a lower average trade ratio, present a wider spread on the scatter plot. This indicates that while Europe and Central Asia as a

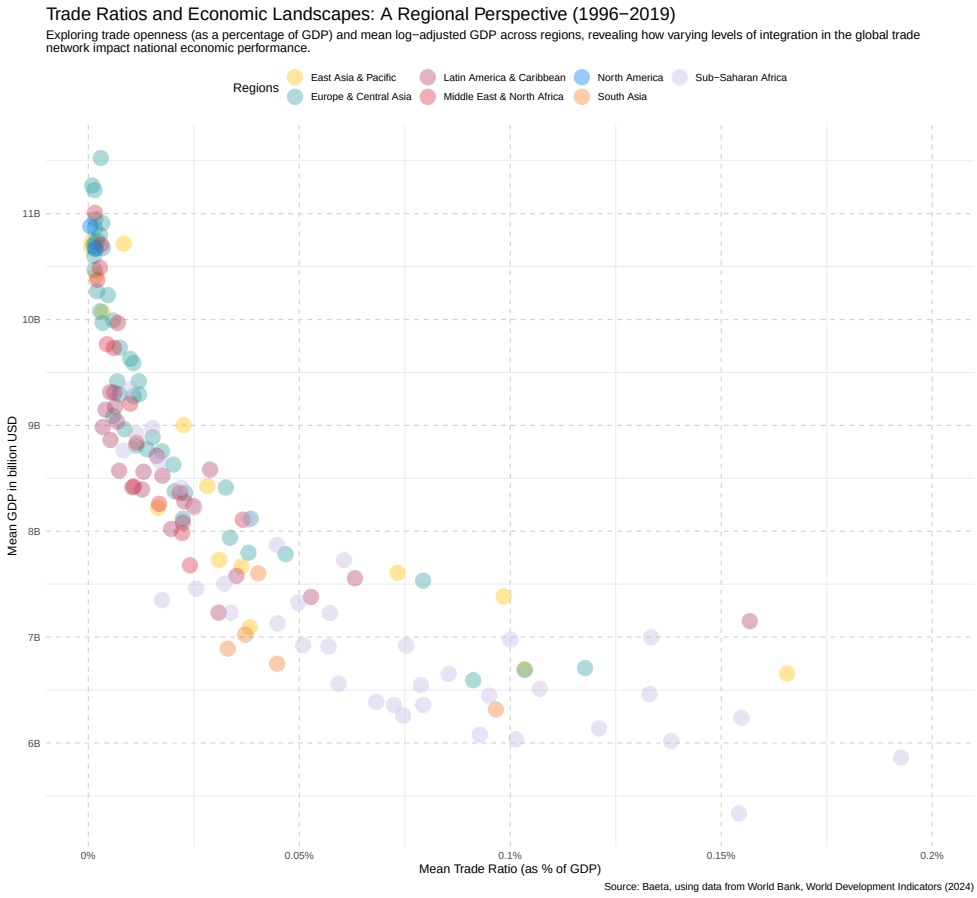


Figure 5.6: Scatter Plot of The Relationship Between Trade Ratio and Log-Adjusted-GDP.

whole lean towards domestic production, high-GDP nations engage in more international trade, creating a diverse landscape. The Middle East and North Africa present a stark contrast. Their data points cluster below 5% on the trade ratio axis, revealing a region less integrated into the global market compared to others. This relative isolation presents unique challenges and opportunities for drug control efforts.

Latin America and the Caribbean, for example, report the second-highest commitment score and moderate trade openness. This combination suggests a potentially well-coordinated strategy that leverages economic connections for efficient drug interdiction. Conversely, North America, with the highest commitment score but surprisingly low trade openness, indicates a focus on internal resources and strong domestic control measures for curbing cocaine trafficking.

Figure 5.7 explores the relationship between commitment to United Nations drug control conventions and trade openness as detailed in *Figure* 5.10. *Figure* 5.7 examines how this association varies across different regions. Employing data from the World Bank's World Development Indicators from 1996 to 2019 (aggregated into three-year intervals), the stacked bar graph reveals a nuanced picture.

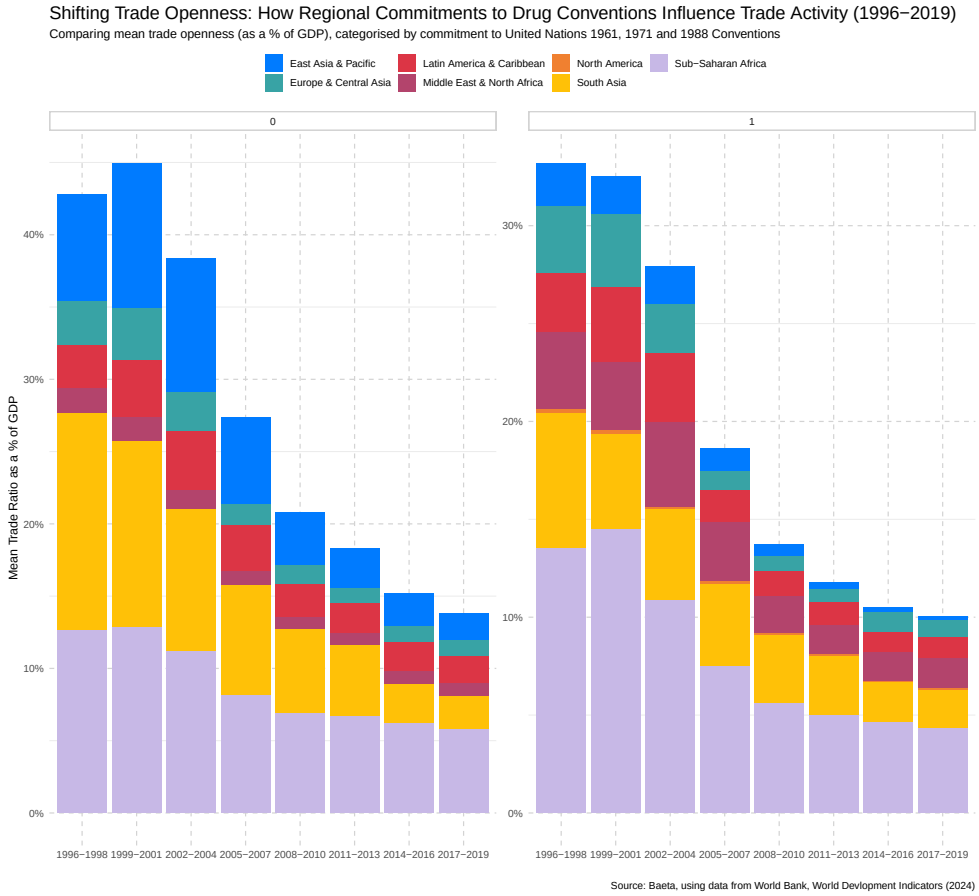


Figure 5.7: Stacked Bar Graph of Mean Trade Ratio by Region and Commitment to United Nations Conventions.

Overall, both "committed" (represented by 1) and "non-committed" (represented by 0) nations follow a similar trajectory, exhibiting a peak in trade openness from 1996 to 2004, followed by a decline towards comparable levels from 2005 to 2019. Intriguingly, non-committed nations appear to maintain marginally higher trade openness throughout the period.

The analysis further illuminates regional variations. Sub-Saharan Africa consistently demonstrates the highest trade openness across both commitment categories. However, within other regions such as South Asia, East Asia and the Pacific, commitment seems to play a less consistent role. South Asian non-committed countries display considerably higher openness than their committed counterparts, a pattern mirrored in East Asia and the Pacific. Conversely, Middle Eastern and North African committed nations appear more open to trade than their non-committed counterparts.

The initial rise in openness (1996 to 2004) could be attributed to broader trends like globalisation and trade liberalisation initiatives. Conversely, the subsequent decline (2005 to 2019) may be linked to factors such as the 2008 financial crisis or the growing adoption of protectionist policies by certain countries (Steenblik and Hoekman, 2009).

Figure 5.7 and 5.6 highlight the need for further investigation into the intricate interplay between commitment to drug control conventions, trade openness, and regional dynamics. Building on the need for further investigation into the complex relationships between commitment to drug control conventions, trade openness, and regional dynamics, another crucial factor to consider is the economic prosperity of a nation. Gross Domestic Product (GDP) is introduced in the next section serving as a compass for a nation's economic prosperity and, by extension, its potential resources for tackling drug control efforts.

5.2.2 Gross Domestic Product (GDP)

GDP *per capita*, adjusted for inflation and converted to constant 2015 US dollars, is analysed to understand its relationship with cocaine seizures. The hypothesis suggests that nations with higher GDP *per capita* may have more resources to allocate towards drug interdiction efforts, resulting in higher reported seizures.

Gross Domestic Product (GDP) *per capita* and Gross Domestic Product (GDP) are utilised to examine regional trends. *Table* 5.11 presents *Figures* 5.8 and 5.9 to allow the identification of potential correlations between economic strength and commitment to combating illicit activities.

Table 5.11: Regional Log-Adjusted GDP in billion USD, UN Commitment, and Mean Cocaine Seizures in Kilograms (kgs).

Region	**UN Score**	**Mean (kgs)**	**GDP(*per cap*)**
East Asia & Pacific [15]	0.13	103	9
Europe & Central Asia [46]	0.28	734	9
Latin America & Caribbean [22]	0.59	31,656	8
Middle East & North Africa [16]	0.31	367	9
North America [2]	1	25,414	11
South Asia [5]	0.4	26	7
Sub-Saharan Africa [38]	0.23	17	7

Within this study, "log-Adjusted GDP" reports a mean of 8 billion USD, and a Gini Mean Difference of 2, quantifying inequality in the distribution of GDP. The global range of mean GDP stretched from 5 billion USD in South Asia to 11 billion USD in North America.

While East Asia and the Pacific report a mean of 9 billion USD, Europe and Central Asia report 9 billion USD. The Middle East and North Africa report 9 billion USD exhibiting slightly higher levels of economic development. Notably, Sub-Saharan Africa 7 billion USD, Latin America and the Caribbean report 8 billion USD displaying moderate economic prosperity, while South Asia occupies the lower end of the spectrum.

Intriguingly, the observed economic disparities may offer clues when investigating the link between commitment to United Nations drug control conventions and cocaine seizures. Could stronger economies, as reflected in higher GDP, possess greater resources and capabilities for implementing effective drug control measures? This possibility aligns with the temporal line graph from 1996 to 2019 in *Figure* 5.8, showcasing consistently higher GDP for nations committed to United Nations drug control conventions compared to those not committed. Interestingly, the gap between these GDPs fluctuates over time, with periods of relative convergence (2008 to 2010, 2011 to 2013) and pronounced divergence (2014 to 2016). Examining the global events and policy changes coinciding with these shifts could shed light on their underlying causes.

While committed nations generally experienced higher GDP growth compared to their non-committed counterparts across the 1996 to 2019 period, the disparity between these GDPs fluctuates over time (Johnson, 1998). To delve deeper into these fluctuations and

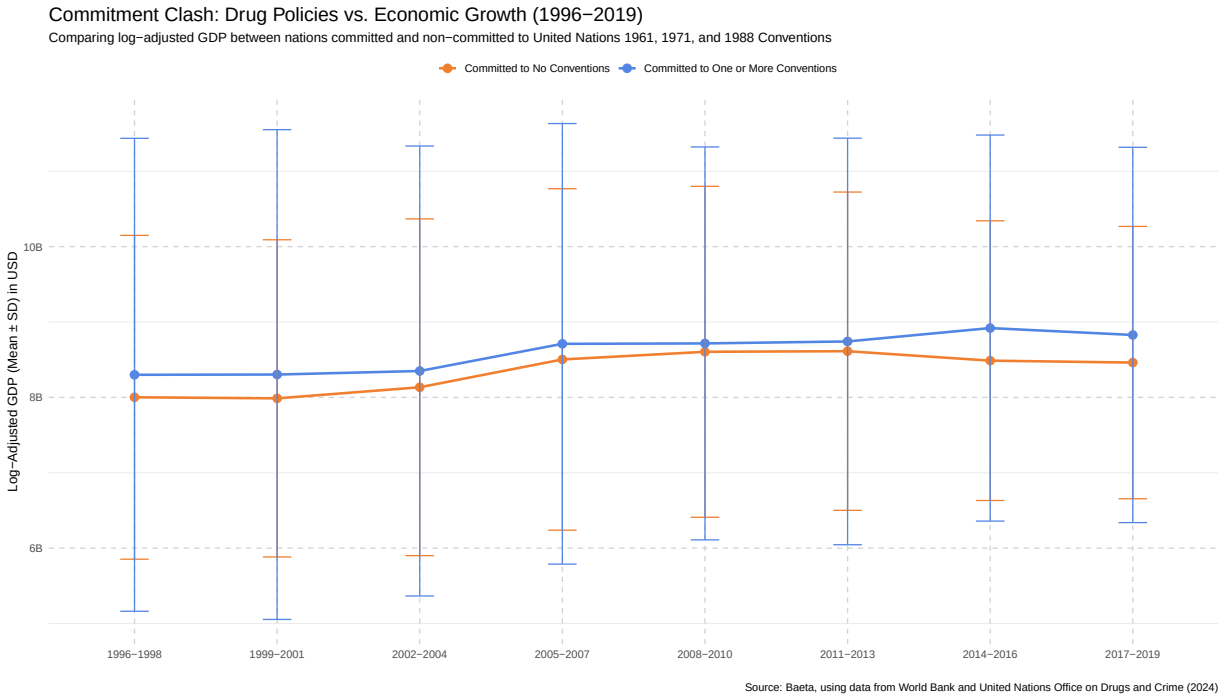


Figure 5.8: Line Graph of A Temporal Analysis of Log-Adjusted GDP.

examine regional variations, *Figure* 5.8 depicts the percentages of increase or decrease in GDP for both committed and non-committed nations from 1996 to 2019.

Figure 5.8 utilises a conditional colour scheme that categorises regions based on whether their mean log-adjusted GDP increased or remained stagnant compared to the previous period. This insightful distinction allows regions that experienced economic growth, stagnation, or even potential decline to be identified.

Additionally, categorising the sample by commitment status to United Nations conventions enables an analysis of how state commitment might be linked to these observed economic transformations. By providing a side-by-side comparison of regions with similar commitment levels, this faceting approach offers insights into potential correlations between adherence to United Nations conventions and economic growth.

The overall picture reveals a fascinating dynamic. Committed nations generally experienced higher GDP growth compared in *Figure* 5.9 to their non-committed counterparts throughout the 1996 to 2019 study period. However, beneath this surface trend, significant regional variations emerge.

Commitment in the Middle East and North Africa appears to be a clear boon. Nations

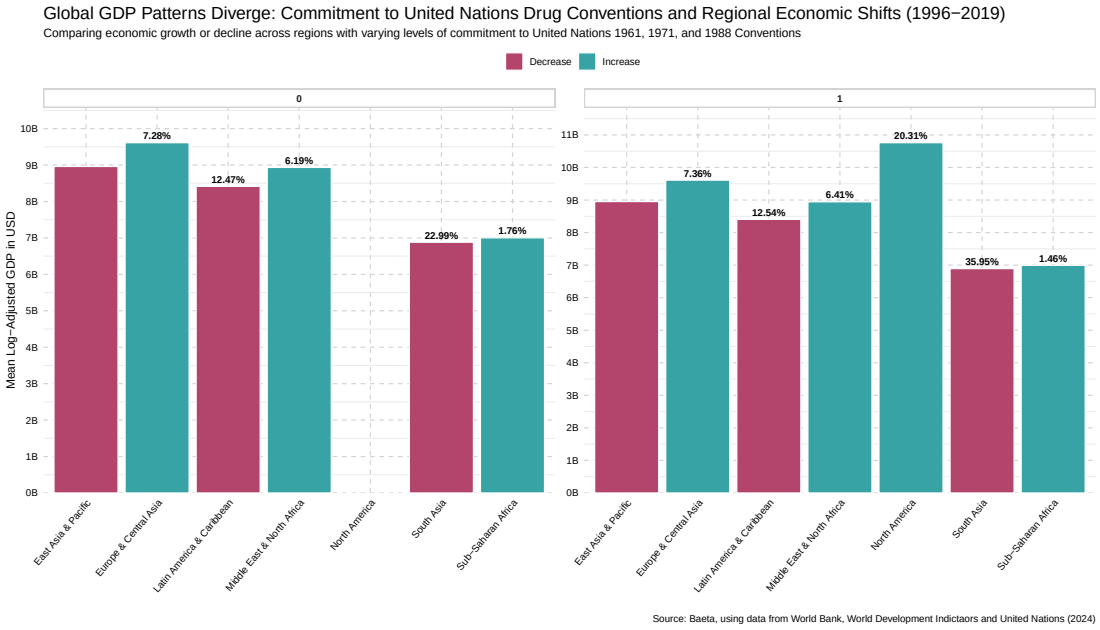


Figure 5.9: Bar Graph of A Regional Analysis of Log-Adjusted GDP Trends.

that embraced the conventions enjoyed substantially higher GDP growth compared to those on the sidelines. This pattern suggests that, in this region, the conventions may have facilitated improved governance, access to international resources, or increased trade opportunities, leading to stronger economic performances.

Sub-Saharan Africa, however, presents a contrasting picture. Here, nations not bound by the conventions surprisingly outpaced their committed counterparts in terms of GDP growth. This anomaly begs further investigation. Could it be driven by resource booms in specific countries, independent policy changes unrelated to the conventions, or unique regional factors influencing economic trajectories?

East Asia and the Pacific offer another intriguing nuance. Both committed and non-committed nations in this region experienced a marginal decrease in GDP growth. This suggests that factors beyond United Nations conventions, such as regional economic slowdowns or internal policy shifts, may be at play in East Asia and the Pacific's case.

These regional disparities mark the complexity of the relationship between economic prosperity and commitment to United Nations conventions. While higher GDPs generally appear to correlate with better economic resources for tackling drug control efforts, the story isn't as straightforward as a simple linear relationship. Specific regional contexts, the nature of individual conventions, and other economic and political factors all play a

role in shaping this dynamic.

Moving forward, analysing the regional distribution of cocaine control effectiveness alongside GDP growth patterns is important. Do economically stronger regions, regardless of convention commitment, show better control over cocaine trafficking? Or do specific United Nations conventions offer unique benefits that enhance a nation's ability to combat this illicit activity? By untangling these intricate threads, a deeper understanding of the potential influence of economic prosperity on tackling drug control challenges such as cocaine trafficking may be gained.

5.2.3 Military Expenditure as a Percentage of GDP

Military expenditure as a percentage of GDP is analysed to explore its potential impact on cocaine seizures. The hypothesis posits that nations allocating more resources to their military may have better-equipped law enforcement agencies, thereby enhancing their capacity to conduct drug interdiction operations.

While economic prosperity appears to influence a nation's capacity to tackle illicit activities such as cocaine trafficking, another crucial resource comes into play: military might. Analysing a nation's Military Expenditure as a percentage of GDP ("Milex % of GDP") presented in *Table* 5.12 offers insights into their prioritisation of security measures and sheds light on a key question: do nations with higher military allocations demonstrably exhibit greater success in cocaine seizures?

Table 5.12: Regional Military Expenditure as a Percentage of GDP, Log-adjusted GDP in USD, UN commitment, and Cocaine Seizures in Kilograms (kgs).

Region	**UN Score**	**Mean (kgs)**	**Milex (%)**
East Asia & Pacific [15]	0.13	103	0.02
Europe & Central Asia [46]	0.28	734	0.02
Latin America & Caribbean [22]	0.59	31,656	0.01
Middle East & North Africa [16]	0.31	367	0.04
North America [2]	1	25,414	0.03
South Asia [5]	0.40	26	0.02
Sub-Saharan Africa [38]	0.23	17	0.02

Military expenditure across observations presented in *Table* 5.12 stands at 0.02%, offering a general sense of the prevailing level of national resource allocation towards defence. However, to delve deeper into the distribution of this burden, the Gini mean difference of 0.01% quantifies the degree of inequality present. This metric allows assessing the extent to which some nations shoulder a disproportionately higher share of the global military expenditure burden compared to others.

Furthermore, the discrepancy between the median (0.02%) and the mean (0.02%) points towards a right-skewed distribution. This implies that the majority of nations dedicate a relatively smaller percentage of their GDP to military expenditures, while a smaller group exhibits significantly higher percentages. This pattern warrants further investigation into the factors driving such divergence, potentially including security threats, geopolitical alliances, and domestic political dynamics.

A glance at regional variations in military expenditure as a percentage of GDP ("Milex%) reveals a diverse landscape. In East Asia, the Pacific, Europe and Central Asia, moderate proportions of military expenditures relative to GDP are observed, averaging around 0.02%. Latin America and the Caribbean allocate a slightly lower share (0.01%), while Sub-Saharan Africa exhibits a similar trend (0.02%) to EAP and ECA. South Asia and North America dedicate larger portions of their GDP to military spending, with means of 0.02% and 0.03%, respectively. However, the Middle East and North Africa stand out with a significantly higher mean military expenditure percentage of GDP reporting 0.04%.

Beyond these averages presented in *Table* 5.12, *Figure* 5.10 provides a visual aid. The vast disparity in mean cocaine seizures across regions, ranging from 17 kilograms in Sub-Saharan Africa to 31,656 kilograms in Latin America and the Caribbean, begs the question: does higher military expenditure as a percentage of GDP translate to demonstrably stronger cocaine control outcomes?

While a straightforward correlation may seem tempting, the relationship between military resources and drug control effectiveness is likely more intricate. Other factors, including political stability, law enforcement infrastructure, and regional trafficking dynamics, undoubtedly play a role. Additionally, within each region, significant variations in military expenditure percentage of GDP exist, potentially influencing individual nations' cocaine control capabilities.

Figure 5.10 utilises a line plot, to visualise the relationship between military expenditure, commitment to cocaine seizure reporting, and time. This analysis reveals a dynamic interplay between these factors between 1996 and 2019. In the initial spike from 1996 to 2004, nations demonstrating commitment to cocaine seizure control exhibited a notable increase in military expenditure. This upward trend could be attributed to two primary factors.

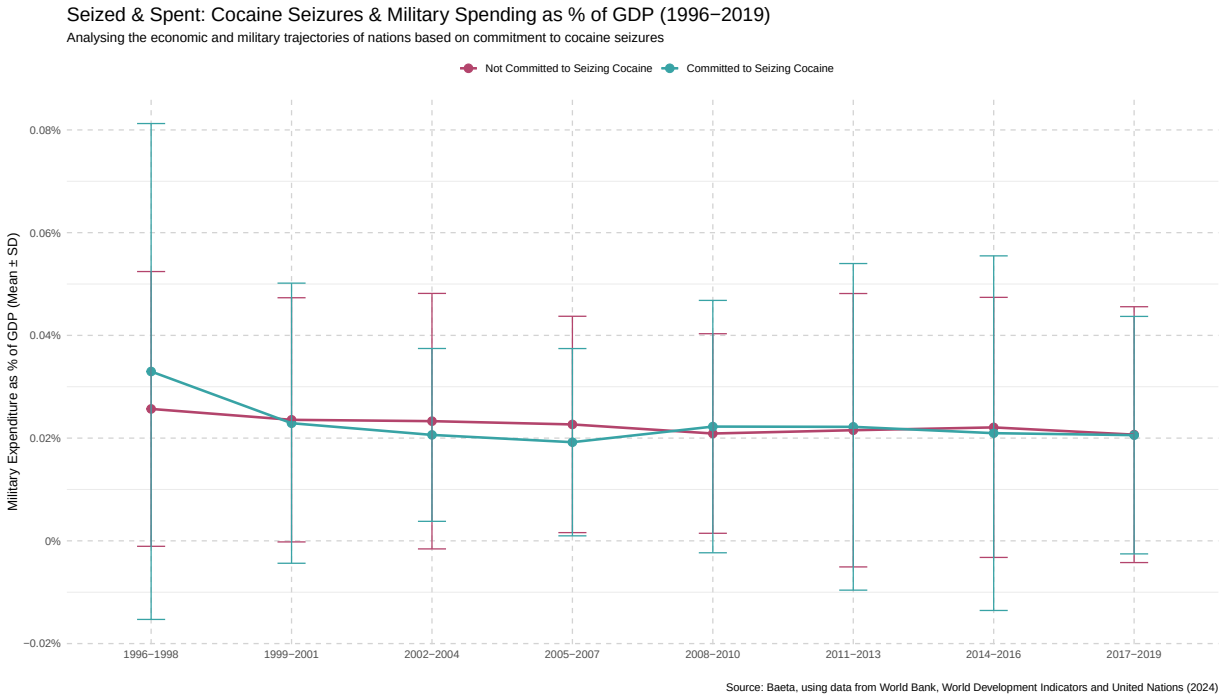


Figure 5.10: Line Plot of Temporal Trends in Military Expenditure as a Percentage of GDP.

The first spike may be in response to enhanced anti-trafficking efforts, as increased commitment likely translated into targeted allocation of resources towards military initiatives aimed at disrupting cocaine trafficking networks. These initiatives may encompass border security enhancements, interdiction operations, and strengthened intelligence gathering. The second trend observed is external influences through global events such as the 9/11 attacks and the ensuing War on Terror may have indirectly impacted military spending patterns (Björnehed, 2004), influencing nations committed to cocaine control even without direct involvement in these conflicts.

Fluctuations and adjustments occurred from 2005 to 2019 in *Figure* 5.10 further reveal subsequent fluctuations in military expenditure for committed nations. The observed decrease from 2002 to 2007 in spending may suggest either an initial success in curbing cocaine trafficking, enabling strategic resource reallocation, or potentially indicating economic constraints or strategic adjustments within military programs. The resurgence in spending from 2008 to 2010 may be linked to a surge in cocaine trafficking activity or the emergence of new challenges within the drug control landscape (Serrano, 2006).

Alternatively, it may reflect the broader impact of external economic trends, such as the 2008 financial crisis, on military budgets (Serrano, 2006). The final dip from 2017 to 2019 in spending may signify continued optimisation of drug control strategies, leading to efficient resource allocation without requiring the same level of military expenditure. However, the influence of external factors such as political changes or regional security concerns on military budgets should also be considered.

Figure 5.11 provides a deeper look into the regional nuances of military expenditure relating to GDP (Milex % of GDP) concerning cocaine control. This visualisation categorises nations by geographic location and further segments nations based on their commitment to the United Nations drug control conventions of 1961, 1971, and 1988. This visual dissection allows potential variations to be discovered in military spending patterns arising from both geographic and commitment factors.

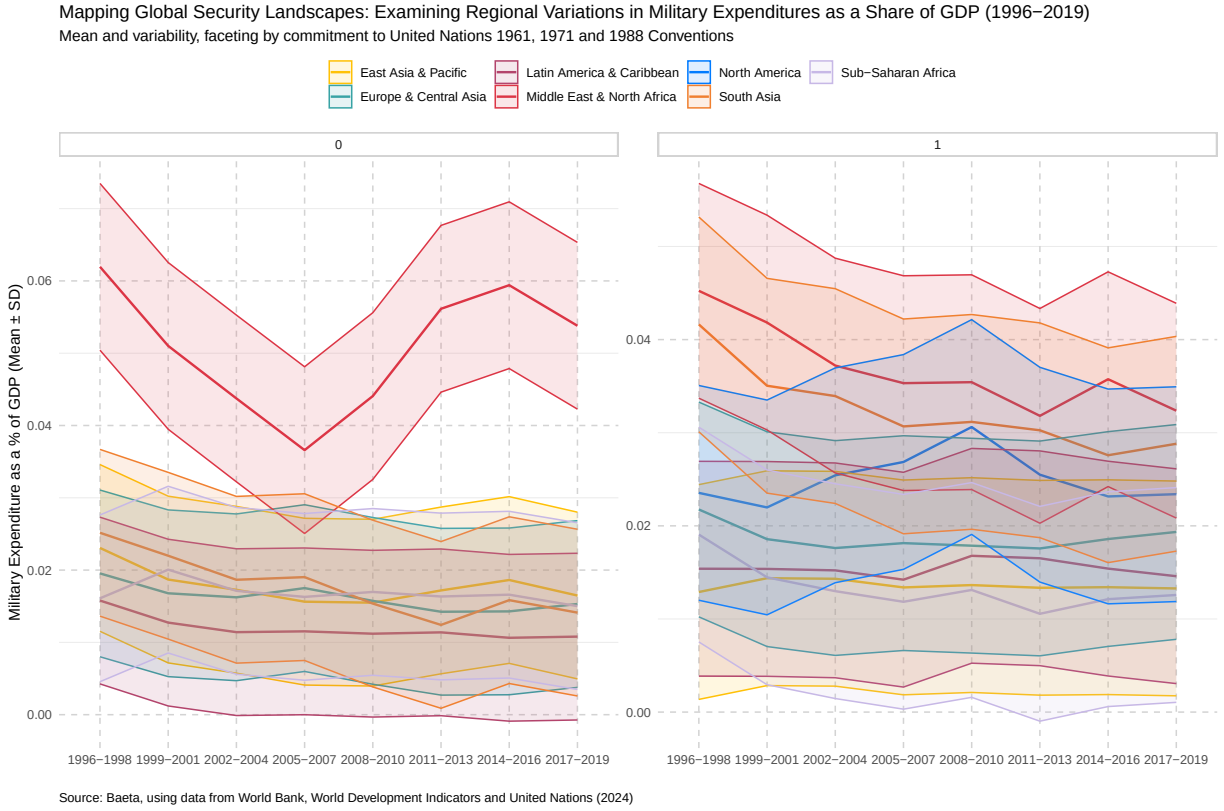


Figure 5.11: Line Plot of Regional Analysis of Military Expenditure Percentage of GDP in USD.

The Middle East and North Africa emerge as the highest spenders, regardless of commit-

ment status. Committed nations within this region still maintain the top spot, suggesting a complex interplay between regional security challenges and drug control priorities. In contrast, Sub-Saharan African nations committed to the conventions exhibit lower military spending compared to their non-committed counterparts. This pattern raises questions about resource allocation strategies and the relative priority assigned to drug control measures within the region.

Further intrigue arises when looking to other regions. ECA nations maintain a relatively consistent spending level regardless of their commitment status, hinting at potentially different approaches to resource allocation within this established economic bloc. SA nations closely follow the spending patterns of the MENA, while NA occupies the third spot on the spectrum. Interestingly, EAP nations committed to the conventions display lower spending compared to those not committed, while the opposite trend holds for LAP. This suggests that commitment to international conventions alone may not necessarily translate directly into proportional increases in military expenditure across different regional contexts.

5.3 Governance Indicators

Beyond surface-level correlations, *Table* 5.13 reveals a captivating interplay between distinct World Governance Indicators (WGI) and cocaine seizure patterns across regional landscapes. Analysing mean estimates from 1996 to 2019 offers crucial insights into how individual indicators including Control of Corruption ("CC"), Government Effectiveness ("GE"), Regulatory Quality ("RQ"), Rule of Law ("RL"), Voice and Accountability ("VA") and Political Stability and Absence of Violence ("PV") intertwine with the complex dynamics of cocaine trafficking.

For instance, regions scoring positive Control of Corruption ("CC") estimates, suggest sound public resource management and reduced bribery and often exhibit lower cocaine seizure levels. This link between governance and effective law enforcement deserves closer scrutiny, considering alternative factors such as geographical barriers or differing drug preferences might also play a role. Governance estimates are presented in *Table* 5.13 by region and governance indicator.

Table 5.13: World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) by Region.

Region	**Seizures (kgs)**	**(CC)**	**(GE)**	**(RQ)**	**(RL)**	**(VA)**	**(PV)**
EAP	103	0.14	0.36	0.26	0.18	−0.18	0.07
ECA	734	0.44	0.56	0.61	0.48	0.49	0.36
LAC	31656	−0.38	−0.33	−0.20	−0.53	0.03	−0.29
MENA	18	−0.11	−0.05	−0.16	−0.11	−0.86	−0.45
NA	25,414	1.68	1.68	1.57	1.65	1.32	0.76
SA	27	−0.68	−0.50	−0.55	−0.43	−0.32	−1.34
SSA	17	−0.63	−0.73	−0.63	−0.66	−0.58	−0.53

The mean estimate for Control of Corruption ("CC") across observations presented in *Table* 5.13 is −0.03. While this offers a starting point, it masks the underlying complexity of the distribution. The discrepancy between the median (−0.32) and the mean (−0.03) points towards a left-skewed distribution. This suggests most nations exhibit higher or more negative crime control estimates, implying a concentration of nations struggling with significant crime challenges. Conversely, a smaller tail of observations exhibits lower, potentially more effective, crime control estimates. This pattern necessitates further investigation into the factors differentiating these two groups, potentially including governance structures, socio-economic conditions, and specific crime types prevalent in each case.

Conversely, the juxtaposition of high Government Effectiveness ("GE") estimates and moderate-to-high cocaine seizures in certain regions presents a fascinating paradox. While strong government structures likely facilitate enforcement efforts, vulnerabilities, such as established trafficking routes or porous borders (Mashi and Bala, 2022), may explain the seemingly elevated cocaine seizure quantities. Examining specific sub-indicators such as the Rule of Law ("RL") within these regions may shed further light on this intricate dynamic.

The mean estimate for Government Effectiveness ("GE") is 0.03, providing a preliminary glimpse into the prevailing state of governance across nations. However, this singular metric risks obscuring the complex dynamics at play. The Gini mean difference is 1, similar to "CC". This figure reveals a remarkable degree of inequality in the distribution of government effectiveness estimates.

This raises critical questions about the factors driving such disparities, potentially including political systems, economic development levels, and institutional capacity. Furthermore, the discrepancy between the median (−0.17) and the mean (0.03) hints at a

potential left-skewed distribution. This suggests a concentration of cases with lower, or less effective, governance estimates, while a smaller tail represents states exhibiting higher effectiveness.

Both Regulatory Quality ("RQ") and Rule of Law ("RL") estimates exhibit hints of left-skewed distributions, implying a prevalence of higher scores alongside a smaller tail of lower scores. While both indicators suggest room for improvement in governance, their average estimates reveal a subtle disparity.

The slightly positive mean of 0.08 for Regulatory Quality ("RQ") compared to the slightly negative mean of -0.03 for Rule of Law ("RL") hints that, across the observed nations, establishing effective regulations might be marginally easier than fostering a robust rule of law system. This warrants further inquiry into the potential explanations for this difference, considering factors such as political context, cultural norms, and economic development levels.

This intricate dance between governance and cocaine control continues across the globe. Regions battle pronounced governance challenges, reflected in negative Voice and Accountability ("VA") and Political Stability/Absence of Violence/Terrorism ("PV") estimates. This leads to the assumption that nations report lower cocaine seizure quantities. This signifies increased cocaine trafficking activity due to weak institutions and lax oversight. However, further research into specific governance shortcomings within these regions, such as ineffective border control measures, is crucial to fully understand the interplay.

Both Voice and Accountability ("VA") and Political Stability and Absence of Violence/Terrorism ("PV") hint at left-skewed estimates, suggesting a relative concentration of higher scores with a tail of lower scores. While both indicators point towards lower estimates compared to an ideal state of governance, the slight disparity in their estimates is noteworthy. The significantly more negative estimate of -0.13 for Political Stability/Absence of Violence/Terrorism ("PV") compared to -0.03 for Voice and Accountability ("VA") suggests that, across the observed nations, maintaining political stability and controlling violence/terrorism may be generally more challenging than ensuring voice and accountability.

To understand governance a little deeper, the Gini mean reveals a difference of 1, a level of inequality in the distribution of all governance estimates. This highlights the diverse approaches in effectiveness amongst different nations, raising crucial questions about policy approaches, resource allocation, and the overall landscape of prevention strategies.

Intriguingly, regions with mixed governance indicators, evident in fluctuations between positive and negative scores across various sub-indicators, present a complex picture. For instance, relatively low cocaine seizures despite governance challenges may be attributed

to factors such as lower demand or effective local enforcement strategies. Delving deeper into the specific enforcement approaches employed in these regions may prove highly enlightening.

5.3.1 Regional Overview on World Governance Indicators (WGI)

Figure 5.12 paints a richer visual than mere correlations between governance and cocaine seizures presented in *Table* 5.13. Weaving the interplay of diverse indicators, specific regional vulnerabilities, and nuanced enforcement strategies are highlighted.

In East Asia and the Pacific (EAP), positive indicators for "CC" (0.14) and "GE" (0.36) suggest robust governance. This, coupled with low cocaine seizures (103 kilograms), hints at a potential link between strong governance and effective law enforcement, curbing trafficking activity. However, factors including geographical barriers or differing drug preferences also deserve consideration.

Europe and Central Asia (ECA) report high WGI estimates including "CC" (0.44) and Regulatory Quality (0.61) points to strong governance. Yet, moderate to high cocaine seizures (734 kilograms) pose a paradox. While good governance likely facilitates enforcement, vulnerabilities, such as established trafficking routes or porous borders, might explain the seizure numbers. Examining specific sub-indicators such as the Rule of Law (RL) could shed further light.

Governance indicators including "CC" (1.68) and "RQ" (1.57) reported in North America (NA) are coupled with surprisingly high cocaine seizures (25,414 kilograms). This seemingly paradoxical relationship could be explained by two factors: efficient interdiction due to strong law enforcement, and significant domestic demand driving supply routes through the region. Investigating both avenues within NA's context would paint a clearer picture.

Latin America and the Caribbean (LAC) show mixed indicators, including negative values for "CC" (-0.38) and "GE" (-0.33), reflecting governance challenges. These align with LAC's position as a major cocaine producer and transit hub, potentially contributing to high seizures (31,656 kilograms). Further research into specific governance shortcomings within LAC, including weak border control, may yield valuable insights.

Mixed WGI estimates are also reported by South Asia (SA), including negative values for "CC" (-0.68) and "RL" (-0.43), suggesting governance challenges. Yet, relatively low cocaine seizures (26 kilograms) indicate other factors at play. Lower demand or effective local enforcement might be contributing factors.

Middle East and North Africa (MENA) report negative WGI estimates like "CC" (-0.11) and "RQ" (-0.16) suggesting governance challenges. However, surprisingly low

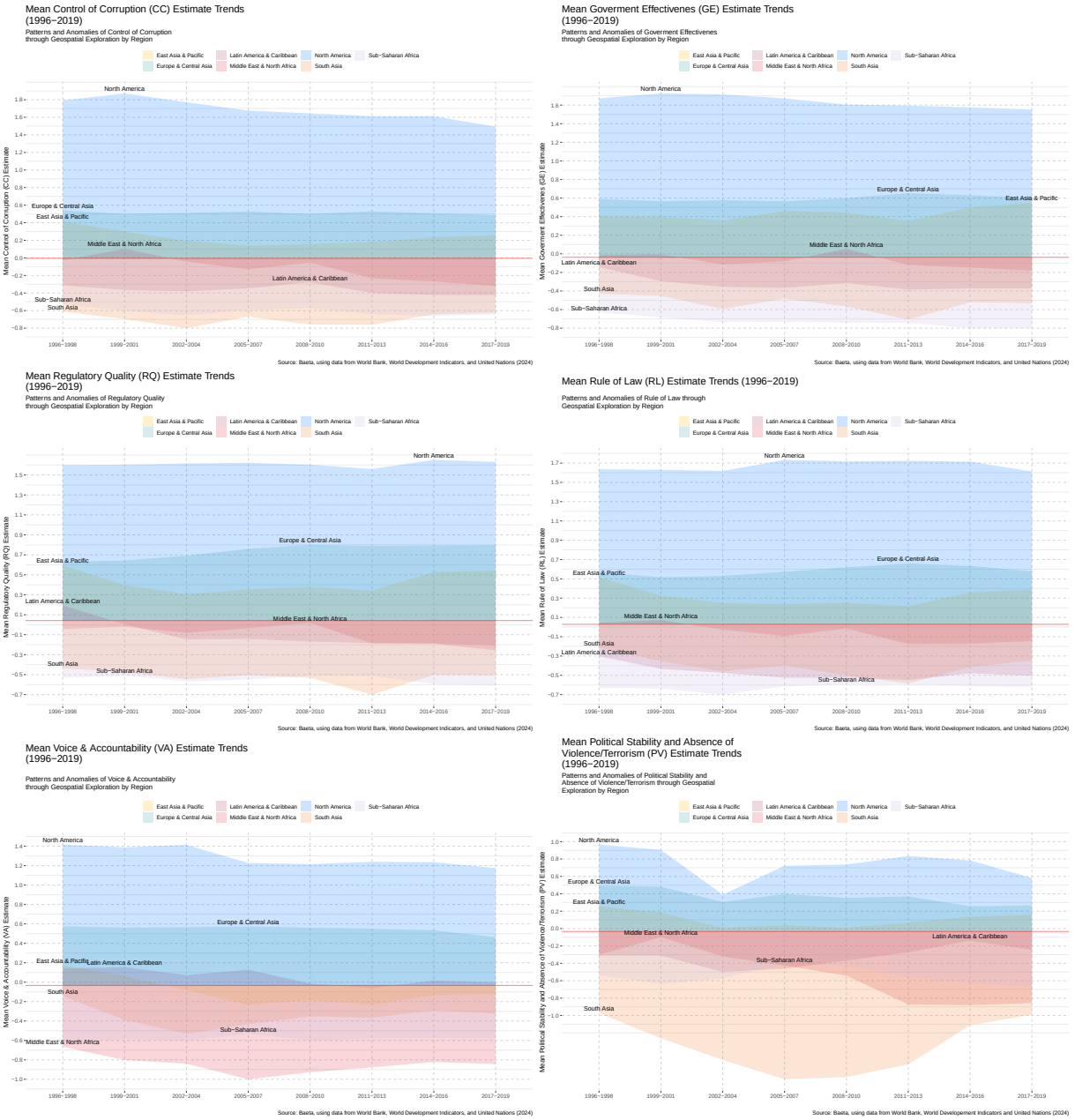


Figure 5.12: Area Plots of Regional Trends of World Governance Indicators

cocaine seizures (18 kilograms) defy expectations. This hints at potentially effective control measures, possibly through stringent border controls and regional cooperation.

Exploring specific enforcement strategies employed in the Middle East and North Africa could be highly informative. Similar to MENA, Sub-Saharan Africa (SSA) reports negative WGI estimates such as "CC" (-0.63) and "RQ" (-0.63) suggesting governance challenges, yet cocaine seizures are low (17 kilograms). This again hints at the effectiveness of regional control measures despite governance issues. Examining specific enforcement policies and regional cooperation efforts within SSA could offer valuable insights.

Chapter 6

Regression Analysis

In this exploration, the focus spans the intricacies between state commitment to international drug control conventions and the consequential outcomes of cocaine seizure efforts. By employing multi-level regression models, the complexities of this relationship are addressed in both binary commitments and averaged variations from 1996 to 2019.

The relationship between state commitment to United Nations conventions and cocaine seizures shows a correlation, with regions including Latin America and the Caribbean exhibiting higher seizure quantities, and regions including the Middle East, North Africa, and South Asia showing lower seizure quantities. However, exceptions such as Europe and Central Asia suggest that beyond commitment, other factors including resource allocation, enforcement capacity, and regional drug production dynamics also play crucial roles in determining interdiction success.

The first regression begins in the binary realm, where commitment is distilled into a binary outcome of "committed" or "non-committed." Recognising the potential variation in commitment levels, this approach aligns with the questions that drive this study, fostering meaningful comparisons across nations, regions, and time. Utilising a logistic regression model with random effects ensures accurate estimation by acknowledging the nested data dynamics. However, this binary lens comes with trade-offs, sacrificing information about varying commitment degrees within the "committed" variable.

To account for the trade-offs in the binary commitment approach of the first model, the exploration continues through a linear mixed-effects model in the second model, which aims to provide a more nuanced understanding of the complex relationship between state commitment and cocaine seizure outcomes. The second model aims to deepen the understanding of the association between state commitment to United Nations drug control

conventions and the subsequent evolution of governance indicators, while also considering the nuanced relationship with economic factors.

Committed nations generally experienced higher GDP growth compared to their non-committed counterparts from 1996 to 2019, but significant regional variations and complexities emerged beneath this surface trend. The relationship between economic indicators and commitment to United Nations conventions is not straightforward, and different regions exhibit distinct patterns in resource allocation and military expenditure.

These models aim to deepen the understanding of the association between state commitment to United Nations drug control conventions and the subsequent evolution of governance indicators. The positive synergy between convention commitment and governance practices paints a compelling picture, yet the nuanced relationship with economic factors adds layers of complexity.

These models aim to deepen the understanding of the association between state commitment to United Nations drug control conventions and the evolution of governance indicators. The positive synergy between convention commitment and governance practices is compelling, though the nuanced relationship with economic factors adds complexity.

This combined narrative aims to offer insight into the intricate dynamics between state commitment to drug control conventions, cocaine seizure outcomes, and the broader governance landscape. Navigating binary distinctions, averaged variations, and intricate relationships, the multi-level models guide the path towards understanding these critical intersections in international agreements and their impact on state-level policy and governance.

6.1 Logistic Regression Model with Random Effects

Intriguingly, while previous research has largely focused on quantifying the level of state commitment to international drug control conventions, this study delves deeper into exploring its binary presence or absence in cocaine seizure outcomes.

Leveraging the nested structure of nations within regions and across periods, a multilevel binary logistic regression model (glmer) is employed to analyse panel data aggregated into three-year intervals from 1996 to 2019. This approach, presented in *Table* 6.1, allows the estimation of the influence of both state-level characteristics and broader contextual factors.

The first analysis delves into the individual and combined effects of three World Governance Indicators (WGI): Government Effectiveness ("GE"), Rule of Law ("RL"), and Po-

litical Stability and Lack of Violence ("PV") on commitment to conventions and seizures. Furthermore, additional state-level economic and governance indicators: log-adjusted GDP ("log(Adj.GDP)"), log-GDP ("log(GDP)"), military expenditure as a percentage of GDP ("Milex-GDP"), and trade ratio as a percentage of GDP ("Trade Ratio(GDP)").

The logistic regression framework yields readily interpretable odds ratios, quantifying how commitment and other variables influence the probability of a state exhibiting commitment to conventions and cocaine seizures (Reuter and Kleiman, 1986).

The goodness of fit of the three models was assessed using the log-likelihood, Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC). The log-likelihood is a measure of how likely the observed data is to occur given the model, with a higher log-likelihood indicating a better fit. Among the three models, Model 2 or "RL" had the highest log-likelihood, indicating that it is the most likely to have produced the observed data.

The AIC and BIC are measures of the relative quality of a statistical model, with lower values indicating a better fit. These measures not only reward goodness of fit but also include a penalty for the number of parameters in the model, based on the principle of parsimony. The AIC applies a penalty that increases as the number of parameters increases, while the BIC applies a stronger penalty for including additional parameters. This is because unnecessary parameters may lead to overfitting, where the model fits the data too closely and may not generalise well to new data.

In *Table* 6.1, Model 2 or "RL" had the lowest AIC and BIC values among the three models, indicating that it is the best-fitting model. This suggests that Model 2 provides the most parsimonious explanation of the data, balancing goodness of fit with model complexity. The results of the AIC and BIC are consistent with the log-likelihood, further supporting the selection of Model 2 as the best-fitting model.

Overall, the goodness of fit measures suggest that Model 2 provides the best fit to the data among the three models. However, it is important to consider other factors as well, such as the theoretical justification for the model and the practical implications of the findings. A well-fitting model should not only provide a good statistical explanation of the data but also offer insights into the underlying mechanisms and processes that generate the observed patterns.

However, the variations prompt deeper inquiry. Could the close scores suggest that commitment to conventions alone may not be the primary determinant of state-level cocaine seizures, as initially suggested? Alternatively, might these subtle distinctions obscure dynamics in how each model captures the interplay between convention commitment and other crucial variables identified, such as economic factors or governance indicators? Fur-

Table 6.1: Logistic Regression Model with Random Effects

	Dependent variable:		
	Cocaine Seizures		
	(1)	(2)	(3)
UN Conventions	0.089	0.071	0.178
	(0.184)	(0.184)	(0.181)
log(GDP *per capita*)	−0.137	−0.218	−0.038
	(0.136)	(0.139)	(0.124)
log(GDP)	0.264***	0.288***	0.299***
	(0.062)	(0.063)	(0.065)
Milex (% of GDP)	−6.613	−5.284	−6.430
	(5.600)	(5.652)	(5.696)
Trade Ratio	−0.062***	−0.066***	−0.057**
	(0.022)	(0.023)	(0.022)
GE Estimate	0.404**		
	(0.165)		
RL Estimate		0.491***	
		(0.153)	
PV Estimate			0.222*
			(0.127)
Constant	−4.733***	−5.012***	−5.959***
	(1.545)	(1.540)	(1.527)
Observations	1,074	1,074	1,074
Log Likelihood	−546.902	−544.676	−548.381
Akaike Inf. Crit.	1,111.804	1,107.353	1,114.762
Bayesian Inf. Crit.	1,156.617	1,152.165	1,159.574

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

ther investigation is warranted to untangle these complexities and refine our comprehension of the underlying relationships.

The key findings presented in *Table* 6.1 are that none of the three models show a statistically significant relationship between commitment to United Nations Conventions ("UN Conventions") and commitment to "Cocaine Seizures." The coefficients for "UN Conventions" in all models are not significant ($p > 0.05$), and the largest coefficient is 0.178 in Model 3 or "PV," but still not significant.

Therefore, the null hypothesis that there is no relationship between commitment to United Nations Conventions and "Cocaine Seizures" cannot be rejected. This contradicts the hypothesis (H1) that states' commitment to United Nations drug control treaties would have a significant effect on the volume of cocaine seizures when compared to non-compliant states. The constant term is statistically significant at the $p < 0.01$ level in all three models.

Marginal Effects for Logistic Regression Model with Random Effects

Table 6.2 presents the predicted probabilities of "Cocaine Seizures" for different levels of commitment to United Nations conventions, based on three logistic regression models. The 95% confidence intervals (CI) for these probabilities are also provided in *Table* 6.2.

The predicted probability of a nation seizing cocaine is 0.71 if it is not committed to United Nations drug control conventions and 0.72 if it is committed, based on the models in *Table* 6.2. This suggests that there is a slight increase in the probability of cocaine seizures for nations that are committed to United Nations drug control conventions compared to those that are not committed.

Table 6.2: Predicted Probabilities of Commitment to UN on Cocaine Seizures

Model	Commitment Level	Predicted probabilities	95% Confidence Interval
(1)	0	0.71	0.56, 0.82
	1	0.72	0.57, 0.84
(2)	0	0.71	0.54, 0.83
	1	0.72	0.55, 0.84
(3)	0	0.70	0.56, 0.81
	1	0.74	0.60, 0.84

However, the difference is small and may not be practically significant. Furthermore, the wide and overlapping confidence intervals suggest a high degree of uncertainty around

these probabilities and that the difference between the two groups may not be statistically significant.

In terms of the hypothesis, these findings do not provide strong evidence to support that states' commitment to United Nations drug control conventions is associated with a higher probability of "Cocaine Seizures". Additionally, the varying magnitudes and statistical significance levels of the coefficients for United Nations Convention commitment across the three models suggest that contextual factors may play a role in understanding the relationship between convention commitment and cocaine seizures.

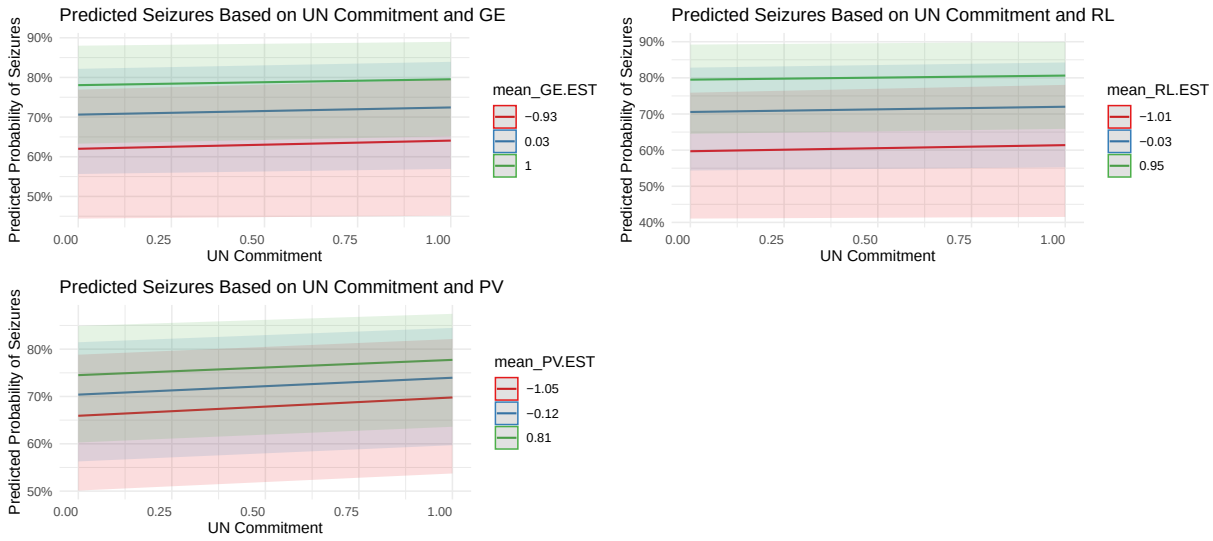


Figure 6.1: Predicted Seizures from Logistic Model with Random Effects

The overall trend in the predicted probabilities of cocaine seizures presented in *Figure* 6.1 as the mean "GE.EST" increases from −0.93 to 1 shows an upward trend. Similarly, the trend for mean "RL.EST" as its values range from −1.01 to 0.95 also shows an upward trend. Lastly, the trend for mean "PV.EST" as its values range from −1.05 to 0.81 shows an upward trend as well.

The graphs in *Figure* 6.1 for all three mean governance indicators ("GE.EST," "RL.EST," and "PV.EST") show a similar upward trend, suggesting that improvements in government effectiveness, rule of law, and political stability are associated with an increase in the predicted probabilities of cocaine seizures.

6.2 Linear Mixed Effects Model (LMM)

Table 6.3 delves into the potential connection between a nation's commitment to United Nations drug control conventions and mean cocaine seizures. Understanding this association is crucial for evaluating the effectiveness of these conventions in curbing cocaine trafficking at the state level. To navigate this complex relationship, a linear mixed effects model (lmer), presented in *Table* 6.3, is employed, focusing on a volume of seizures from 1996 to 2019.

The second analysis delves into the individual and combined effects of three World Governance Indicators (WGI): Government Effectiveness ("GE"), Rule of Law ("RL"), and Political Stability and Lack of Violence ("PV") on commitment and mean seizures. Furthermore, additional state-level economic and governance indicators: log-adjusted GDP ("log(Adj.GDP)"), log-GDP ("log(GDP)"), military expenditure as a percentage of GDP ("Milex-GDP"), and trade ratio as a percentage of GDP ("Trade Ratio(GDP)").

While state commitment suggests potential variation in the degree of engagement, focusing on the average volume simplifies the interpretation and facilitates meaningful comparisons across nations, regions, and time, allowing assessment of the categorical influence of convention involvement on seizure activity (Reuter and Kleiman, 1986). Furthermore, cocaine seizure data often exhibits over-dispersion, meaning the actual variance in seizures may be higher than the average commitment score.

The goodness of fit of the three models was assessed similarly to the logistic regression model, using the log-likelihood, Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC). The log-likelihood measures the likelihood of the observed data in the estimated model parameters, with a higher value indicating a better fit.

The AIC and BIC are both measures of the relative quality of a statistical model presented in *Table* 6.3, based on both the goodness of fit and the complexity of the model, with lower values indicating a better-fitting model. However, the BIC places a greater penalty on model complexity compared to the AIC.

Based on *Table* 6.3, Model 3 or "PV" has the highest log-likelihood value (−1,908.707), followed by Model 2 or "RL" (−1,909.583) and Model 1 or "GE" (−1,909.623). However, the differences in log-likelihood values between the three models are minimal, suggesting they have similar fits to the data.

In terms of the AIC, Model 3 "PV" has the lowest value (3,837), followed by Model 2 or "RL" (3,839) and Model 1 or "GE" (3,839). The differences in AIC values between the three models are again minimal, suggesting they have similar fits to the data. The BIC values also suggest that Model 3 has the best fit (3,883), followed by Model 2 (3,885)

Table 6.3: Linear Mixed Effects Model

	Dependent variable:		
	log(Cocaine Seizures)		
	(1)	(2)	(3)
UN Conventions	0.365	0.377	0.415
	(0.274)	(0.273)	(0.271)
log(GDP *per capita*)	−0.158	−0.169	0.494
	(0.245)	(0.244)	(0.209)
log(GDP)	0.887***	0.901***	0.776***
	(0.090)	(0.091)	(0.097)
Milex (% of GDP)	−31.408***	−31.257***	−40.001***
	(9.885)	(9.886)	(10.130)
Trade Ratio	0.013	0.012	0.024
	(0.046)	(0.047)	(0.046)
GE Estimate	0.506*	-	-
	(0.275)		
RL Estimate	-	0.479*	-
		(0.251)	
PV Estimate	-	-	−0.532**
			(0.224)
Constant	−18.854***	−19.142***	−18.451***
	(2.379)	(2.359)	(2.371)
Observations	736	736	736
Log Likelihood	−1,909.623	−1,909.583	−1,908.707
Akaike Inf. Crit.	3,839.245	3,839.167	3,837.415
Bayesian Inf. Crit.	3,885.257	3,885.179	3,883.427
Note:			*p<0.1; **p<0.05; ***p<0.01

and Model 1 (3,885). The differences in BIC values between the three models are slightly larger than the differences in AIC values, but still relatively small.

Overall, the goodness of fit measures suggest that all three models have similar fits to the data, with Model 3 or "PV" having a slight advantage based on the AIC and BIC values. However, the minimal differences in fit between the three models suggest that the choice of the model may depend on other factors, such as theoretical considerations or ease of interpretation.

The key findings reported in *Table* 6.3 show that in all three models, the coefficient for commitment to United Nations conventions is positive, but none of them is statistically significant at the conventional alpha level of 0.05. The p−values for the commitment to United Nations conventions are greater than 0.1, which suggests weak evidence against the null hypothesis that the coefficient is equal to zero.

The key findings reported in *Table* 6.3 show that in all three models, the coefficient for commitment to United Nations conventions is positive, but none of them is statistically significant at the conventional alpha level of 0.05. The p−values for the commitment to United Nations conventions are greater than 0.1, which suggests weak evidence against the null hypothesis that the coefficient is equal to zero.

The results presented in *Table* 6.3 do not provide sufficient evidence to accept that states' commitment to United Nations drug control conventions has a significant effect on the volume of cocaine seizures when compared to non-committed states. It is possible that other factors, such as logged GDP ("log(GDP)"), military expenditure as a percentage of GDP ("milex % of GDP"), and governance indicators, namely Governance Effectiveness ("GE") and Political Stability and Lack of Violence ("PV"), which are statistically significant in the models, may play a more important role in explaining the variation in cocaine seizures.

Marginal Effects for Linear Mixed Effects Model (LMM)

The predicted probabilities of log(Cocaine Seizures) are depicted in *Table* 6.4. The probabilities of predicted kilogram cocaine seizures are based on the commitment level of nations to United Nations drug control conventions while keeping all other variables constant. Additionally, the 95% confidence intervals (CI) for these probabilities are provided in *Table* 6.4.

In all three models, the predicted cocaine seizures of log(Cocaine Seizures) are higher for nations that are committed to United Nations drug control conventions compared to nations with no commitment. However, the differences in predicted probabilities between

Table 6.4: Predicted Probabilities of Commitment to UN on Log(Cocaine Seizures) in Kilograms (kgs).

Model	Commitment Level	Predicted Kilograms (kgs)	95% Confidence Interval
(1)	0	10	0.48, 4.19
	1	15	0.83, 4.57
(2)	0	10	0.44, 4.18
	1	15	0.80, 4.58
(3)	0	11	0.64, 4.17
	1	17	1.04, 4.60

the two groups are not statistically significant, as indicated by the overlapping confidence intervals.

In Model 1 or "GE" and Model 2 or "RL", the predicted probability for non-committed nations is 10 kilograms. For committed nations, the predicted probability is 15 kilograms. The difference in predicted probabilities between the two groups is 5 kilograms. Model 3 or "PV" presents a slightly wider gap, the predicted probability for non-committed states is 11 kilograms. For committed states, the predicted probability is 17 kilograms. The difference in predicted probabilities between the two groups is 6 kilograms.

The results in *Table* 6.4 suggest that there is no statistically significant difference in the predicted probabilities of log(Cocaine Seizures) between committed and non-committed nations, after controlling for other factors. This may indicate that commitment to United Nations drug control conventions is not a significant predictor of cocaine seizures, or that other factors not included in the models may be driving the relationship between compliance and seizures.

The overall trend in the predicted probabilities of log(Cocaine Seizures) shows variation as the mean "GE.EST" increases from -0.71 to 1.17. Similarly, the trend for mean "RL.EST" varies as its values range from -0.82 to 1.13. Lastly, the trend for mean "PV.EST" also varies as its values range from -0.87 to 0.9.

The graphs for all three mean governance indicators: "GE.EST", "RL.EST", and "PV.EST", show different trends, suggesting that the relationship between these indicators and the predicted probabilities of log(Cocaine Seizures) is not consistent.

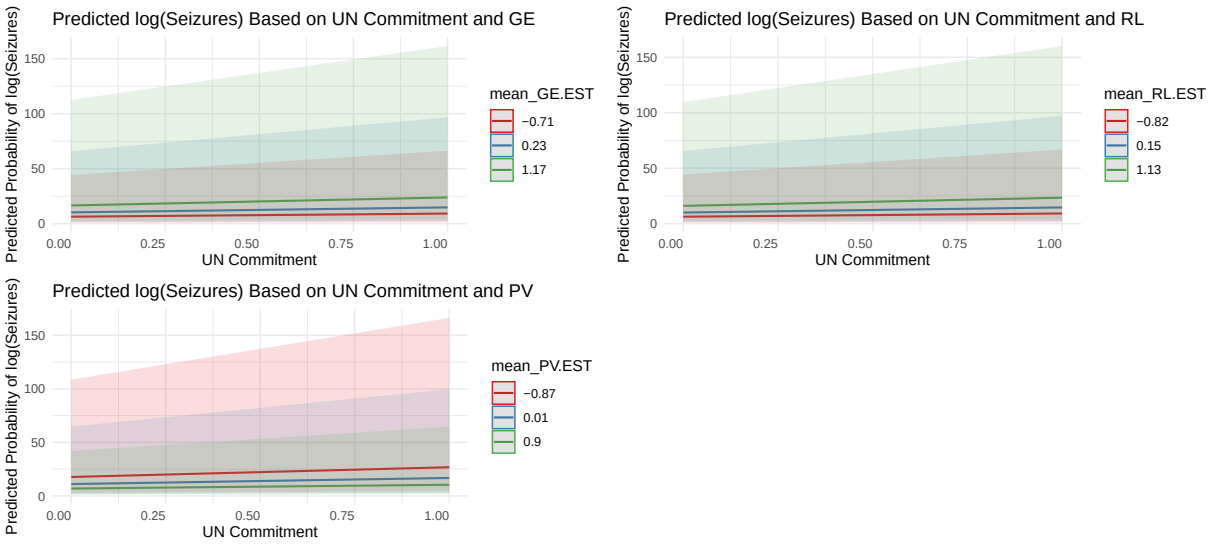


Figure 6.2: Predicted Seizures from Linear Mixed Effects Model (LMM)

6.3 RQ1: Relationship Between State Commitment and Cocaine Seizure Outcomes

The first research question investigates the tangible impact of convention commitment on cocaine seizure outcomes, from a realist perspective by taking into account the evolving nature of this relationship over time. By scrutinising three World Governance Indicators (WGI): Government Effectiveness ("GE"), Rule of Law ("RL"), and Political Stability and Lack of Violence ("PV"), the results in *Table* 6.1 and *Table* 6.3 indicate that none of the three models presents statistically significant outcomes ($p > 0.05$).

The Logistic Regression Model with Random Effects and the Linear Mixed Effects Model both explore the relationship between state commitment to United Nations drug control conventions and cocaine seizures. Nevertheless, these two models yield varying outcomes concerning the significance of commitment to United Nations Conventions.

In the context of the logistic regression model presented in *Table* 6.1, the coefficients for commitment to United Nations Conventions in Models 1, 2, and 3 are 0.089, 0.071, and 0.178, respectively. None of these coefficients are statistically significant ($p > 0.05$). This implies that, given all other variables remain constant, an increase in commitment to United Nations Conventions by one unit does not significantly influence the log odds of cocaine seizures. Notably, the largest coefficient is observed in Model 3, focusing on

Political Stability and Lack of Violence ("PV"), with a value of 0.178 and a standard error of 0.181. Nevertheless, the p−value remains insignificant.

Conversely, the linear mixed effects model presented in *Table* 6.3 reveals that the coefficients for commitment to United Nations Conventions in Models 1, 2, and 3 are 0.365, 0.377, and 0.415, respectively. Although all coefficients are positive, they are not statistically significant ($p > 0.05$). The standard errors for commitment to United Nations Conventions across all three models are relatively high, ranging from 0.271 to 0.274, which indicates a considerable degree of uncertainty surrounding these estimates. Similar to the Logistic Regression Model, the largest coefficient in the Linear Mixed Effects Model is found in Model 3, focusing on Political Stability and Lack of Violence ("PV"), with a value of 0.415 and a standard error of 0.271. However, similar to the logistic regression model in *Table* 6.1, the p-value remains insignificant.

While both models explore the relationship between commitment to United Nations conventions and cocaine seizures, neither model offers robust evidence to substantiate the hypothesis that states' commitment to United Nations drug control conventions exerts a significant impact on cocaine seizure outcomes. The logistic regression model suggests no significant association between commitment to United Nations Conventions and cocaine seizures, whereas the linear mixed effects model implies a possible positive association. However, the estimates remain uncertain and statistically insignificant.

These results imply that despite efforts to adhere to international agreements on drug control, practical outcomes may not meet expectations. A higher commitment to United Nations drug control conventions does not necessarily translate into reduced cocaine seizures, hinting at potential challenges or inefficiencies in implementation or enforcement at the national level.

This highlights the importance of recognising the limitations of international conventions and cooperation frameworks in addressing complex transnational issues, such as drug trafficking. The absence of a significant association between convention commitment and cocaine seizures implies that other factors, such as national interests, domestic politics, and resource allocation, might play a more crucial role in determining the rational effectiveness of drug control measures (Waltz, 1979; Reuter and Kleiman, 1986; Jenner, 2011).

Moreover, the results emphasise the necessity for comprehensive strategies beyond governance indicators alone, suggesting that addressing drug trafficking requires multifaceted approaches that consider socio-economic dynamics, law enforcement capabilities, and international cooperation (Kaufmann and Zoido-Lobatón, 2000).

6.4 RQ2: Impact of Commitment on Government Expenditure

The second research question explores the impact of commitment to United Nations conventions on government expenditure related to drug control, considering economic factors such as GDP ("log(GDP *per capita*)" and "log(GDP)"), trade openness as a percentage of GDP ("TradeRatio(GDP)"), and military expenditure as a percentage of GDP ("Milex(GDP)"). The logistic regression model with random effects in *Table* 6.1 and the linear mixed effects model in *Table* 6.3 are employed to investigate the interplay between economic factors, power dynamics, and convention commitment in shaping cocaine seizures.

In the context of the logistic regression model with random effects (*Table* 6.1), the interaction between convention commitment and economic factors is examined by incorporating additional variables that capture a nation's GDP *per capita*, GDP, military expenditure as a percentage of GDP, and trade openness. The results indicate that GDP *per capita* is not a statistically significant predictor of cocaine seizure outcomes. However, GDP and trade openness play complex roles influenced by the interplay of state interests, capabilities, and contextual factors.

The results presented in *Table* 6.1 and *Table* 6.3, indicate that GDP *per capita* is not a statistically significant predictor of cocaine seizure outcomes, with coefficients ranging from -0.137 to -0.038; -0.169 to 0.494 and p$-$values greater than 0.1. However, GDP and trade openness play complex roles influenced by the interplay of state interests, capabilities, and contextual factors.

The findings suggest that nations with higher GDPs tend to be more likely to commit to cocaine seizures, as shown by the positive and statistically significant coefficients for log(GDP) in all three models (0.264, 0.288, and 0.299, with p$-$values less than 0.01). This does not necessarily mean that higher GDP leads to a higher chance of nations committing to cocaine seizures. Instead, it may be that nations with higher GDPs have more resources to devote to drug enforcement, leading to more seizures (Nadelmann, 1992; Jenner, 2011). Strong economies may prioritise tackling more valuable drugs such as heroin, leading to fewer cocaine seizures despite robust enforcement capabilities. This reflects the strategic allocation of resources based on perceived impact and potential returns, aligning with a realist perspective where nations pursue national interests (Waltz, 1979; Jenner, 2011).

Trade openness, represented by "Trade Ratio," has negative and statistically significant coefficients in all three models. The coefficients for Trade openness are -0.062, -0.066, and -0.057, with p$-$values less than 0.05 and 0.01, indicating a strong negative relationship between Trade Ratio and cocaine seizures. This suggests that countries with higher trade

ratios, indicating more open economies, tend to have lower odds of cocaine seizures, holding other factors constant.

The linear mixed effects model presented in *Table* 6.3, further explores the potential moderating effects of economic factors and power dynamics on the relationship between convention commitment and average cocaine seizure. The results indicate that the relationship between GDP *per capita* and cocaine seizures may be more complex and may depend on other factors included in the model. The findings also suggest that nations with larger economies tend to have higher volumes of cocaine seizures, holding other factors constant, as shown by the positive and statistically significant coefficients for log(GDP) in all three models (0.887, 0.901, and 0.776, with p−values less than 0.01).

Additionally, nations with higher military expenditures tend to have lower volumes of cocaine seizures, which may reflect the fact that these nations may prioritise national security over drug control efforts or have more effective border control measures in place (Waltz, 1979; Kaufmann and Zoido-Lobatón, 2000), as indicated by the negative and statistically significant coefficients for "Milex (% of GDP)" in all three models −31.408, −31.257, and −40.001, with p-values less than 0.01).

Trade Ratio in *Table* 6.3 has positive but statistically insignificant coefficients in all three models. The coefficients are 0.013, 0.012, and 0.024, with p−values greater than 0.1, indicating a weak and insignificant relationship between trade openness and log(Cocaine Seizures).

This suggests that, in this model, the relationship between trade openness and cocaine seizures is not strong enough to be statistically significant, and other factors may play a more significant role in determining cocaine seizures. In such contexts, governments may prioritise fiscal discipline or austerity measures to maintain economic stability or mitigate potential trade-related risks (Nadelmann, 1992; Jenner, 2011).

The discrepancy between the two models regarding the relationship between variables highlights the importance of considering different models and approaches when analysing complex phenomena. It underscores the need to account for other factors, such as economic prosperity, military capabilities, and governance indicators when examining the relationship between trade openness and drug control outcomes.

6.5 RQ3: Relationship Between Commitment and Governance Indicators

The third research question investigates the potential relationship between nations' commitment to United Nations drug control conventions and their evolving governance landscape. While the models adeptly identify correlations between changes in commitment levels and shifts in governance indicators, it's crucial to acknowledge the influence of various external factors on both constructs. Both models underscore the intricate balance that governments must navigate between upholding their national interests and fulfilling their international obligations.

These factors may range from domestic political dynamics and international pressures to economic shocks and regional instabilities. Governance indicators, representing a nation's domestic context and capabilities, emerge as key players in moderating this relationship, highlighting the complex trade-offs governments navigate between national interests and international obligations (Waltz, 1979; Kaufmann and Zoido-Lobatón, 2000).

In the logistic regression model with random effects (*Table* 6.1), the Governance Effectiveness ("GE") Estimate is statistically significant at the $p < 0.05$ level in Model 1. The coefficient for GE is 0.404, with a standard error of 0.165. This means that for a one-unit increase in Government Effectiveness, the log odds of "Cocaine Seizures" are expected to increase by 0.404, holding all other variables constant.

Enhancing governance effectiveness through structures and regulations suggests better capabilities, however, alone may not be sufficient to curb drug trafficking activities and additional strategies are needed to address this issue comprehensively (Waltz, 1979; Reuter and Kleiman, 1986; Kaufmann and Zoido-Lobatón, 2000).

Nations prioritising international drug control efforts may also invest in strengthening the overall effectiveness of their governance structures. Well-functioning democracies with active civil societies might demand action from their governments to address drug trafficking, even if it carries some economic costs (Kaufmann and Zoido-Lobatón, 2000).

The Rule of Law ("RL") Estimate is statistically significant at the $p < 0.01$ level in Model 2. The coefficient for RL is 0.491, with a standard error of 0.153. This means that for a one-unit increase in the Rule of Law, the log odds of "Cocaine Seizures" are expected to increase by 0.491, holding all other variables constant.

Effective prosecution of drug offenders and disruption of illicit drug networks are facilitated in environments where the rule of law is upheld, leading to tangible reductions in drug seizures (Bird, 2022). This highlights the importance of adopting multifaceted

approaches that encompass both legal and enforcement measures. This also suggests that specific aspects of legal frameworks may have more direct impacts on combating drug trafficking (Nadelmann, 1992).

In Model 3, the Political Stability and Lack of Violence ("PV") Estimate is statistically significant at the $p < 0.1$ level. The coefficient for PV is 0.222, with a standard error of 0.127. This means that for a one-unit increase in Political Stability and Lack of Violence, the log odds of "Cocaine Seizures" are expected to increase by 0.222, assuming other factors remain the same.

In the linear mixed effects model (*Table* 6.3), the GE Estimate variable has a positive and statistically significant coefficient of 0.506 with a standard error of 0.275 in Model 1. This indicates that higher governance effectiveness is associated with an increase in cocaine seizures, holding other factors constant.

In Model 2, the "RL" Estimate variable has a positive and statistically significant coefficient of 0.479 with a standard error of 0.251. This suggests that nations with a stronger rule of law tend to have higher cocaine seizures, holding other factors constant. Model 3, the "PV" Estimate variable has a negative and statistically significant coefficient of -0.532 with a standard error of 0.224.

A stronger commitment to drug control conventions corresponds to a higher Rule of Law. It suggests that nations dedicated to international drug control may also concentrate on enhancing regulatory frameworks and promoting democratic governance. This also indicates that nations with higher political stability tend to have lower cocaine seizures, keeping other factors unchanged (Kaufmann and Zoido-Lobatón, 2000).

Effective law enforcement assumes strong institutions allow for better resource allocation and targeted interventions, potentially leading to higher seizures despite economic considerations. Robust anti-corruption measures assume that by curbing corruption within law enforcement agencies (UNODC, 2023a; Waltz, 1979; Jenner, 2011), resources are used more efficiently, maximising the impact of drug control efforts (Waltz, 1979).

Both models suggest that governance indicators, such as Government Effectiveness ("GE"), Rule of Law ("RL"), and Political Stability and Lack of Violence ("PV"), play a significant role in moderating the relationship between a nation's commitment to United Nations drug control conventions and cocaine seizures. These findings highlight governments' complex trade-offs between national interests and international obligations.

Chapter 7

Conclusion

This study aimed to investigate the relationship between state commitment to United Nations drug control conventions and cocaine seizures at a state-level involving 145 nations between the years 1996 and 2019. The hypothesis was that states' commitment to United Nations drug control conventions would have a significant effect on the volume of cocaine seizures when compared to non-committed nations. However, the results of the regression analyses did not support this hypothesis.

The first regression in *Table* 6.1 analysis found no significant relationship between commitment to United Nations Conventions and cocaine seizures, contradicting the hypothesis. The second regression in *Table* 6.3 analysis also found no significant relationship between commitment to United Nations conventions and cocaine seizures. Although the coefficient for commitment to United Nations conventions was positive, it was not statistically significant at the conventional alpha level of 0.05. However, some coefficients in *Table* 6.4 had $p-$values less than 0.2, which might be suggestive of a positive relationship, though it is not possible to reject the null hypothesis confidently.

The findings of this study imply that despite efforts to adhere to international conventions on drug control, practical outcomes may not meet expectations. A higher commitment to United Nations drug control conventions does not necessarily translate into reduced cocaine seizures, hinting at potential challenges or inefficiencies in implementation or enforcement at the national level. The absence of a significant association between convention commitment and cocaine seizures implies that other factors, such as national interests, domestic politics, and resource allocation, might play a more crucial role in determining the effectiveness of drug control measures.

Moreover, the results suggest that governance indicators, such as Government Effectiveness ("GE"), Rule of Law ("RL"), and Political Stability and Lack of Violence ("PV"),

play a significant role in moderating the relationship between a nation's commitment to United Nations drug control conventions and cocaine seizures. These findings highlight governments' complex trade-offs between national interests and international obligations.

The discrepancy between the two models regarding the relationship between variables highlights the importance of considering different models and approaches when analysing complex phenomena. It underscores the need to account for other factors, such as economic prosperity, military capabilities, and governance indicators when examining the relationship between trade openness and drug control outcomes.

In conclusion, this study contributes to the literature on drug control policies and provides insights for policymakers interested in understanding the complex relationship between state commitment and cocaine seizures. The findings suggest that governments should consider comprehensive strategies beyond governance indicators alone. This indicates that addressing drug trafficking requires multifaceted approaches that consider socio-economic dynamics, law enforcement capabilities, and international cooperation. The limitations of international conventions and cooperation frameworks in addressing complex transnational issues, such as drug trafficking, should also be recognised. Future research could explore the role of other factors, such as national interests, domestic politics, and resource allocation, in determining the effectiveness of drug control measures.

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APPENDICES

Appendix A

Regional Trends

In the pursuit of unravelling the intricate relationship between state commitment to United Nations (UN) drug control policies and the yearly occurrences of cocaine seizures, this section delves into a comprehensive analysis encompassing nine variables across seven regions of the world. The temporal scope spans from 1996 to 2019, offering a robust examination of trends and patterns over two decades.

The analysis traverses diverse factors, ranging from state commitment and annual cocaine seizures to broader economic indicators such as Gross Domestic Product (GDP), trade ratio as a percentage of GDP, and military expenditure as a percentage of GDP. Additionally, governance nuances captured by the Worldwide Governance Indicators (WGI) provide a contextual backdrop for understanding state behaviour concerning drug control efforts.

Within this appendix, the focus narrows to a meticulous evaluation of time in East Asia & the Pacific, South Asia, Europe & Central Asia, North America, Middle East & North Africa, and Sub-Saharan Africa. Each region's performance is scrutinised concerning the aforementioned variables, offering insights into temporal trends and regional disparities.

This appendix aims to enrich the understanding of regional dynamics concerning state commitment to drug control treaties and their impact on cocaine seizure outcomes. By dissecting time series data, this appendix provides a granular perspective, allowing for nuanced insights into the evolving landscape of drug control efforts across different regions of the world.

A.1 East Asia & the Pacific (EAP)

Trade Ratio as a Percentage of GDP

The observed resilience of East Asia and the Pacific's economic performance suggests a strategic allocation of resources, allowing the region to juggle security concerns and economic growth effectively. Further insights arise from analysing cocaine seizures and their intricate relationship with trade dynamics, reflected in the fluctuating trade ratios.

Table A.1: East Asia & the Pacific Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**TR (%)**	**Exp %**	**Imp %**
1996-1998	0.30	8	0.05	48	46
1999-2001	58	8	0.07	53	52
2002-2004	14	8	0.07	57	56
2005-2007	34	9	0.05	60	57
2008-2010	29	9	0.03	53	52
2011-2013	73	9	0.02	51	50
2014-2016	129	9	0.02	50	47
2017-2019	682	9	0.02	50	48

Cocaine seizures exhibit considerable fluctuations, ranging from 0.30 kilograms from 1996 to 1998 to a peak of 682 kilograms from 2017 to 2019. This variability mirrors the region's evolving engagement with global trade, as reflected in the shifting trade ratios. From 1996 to 2001, a high trade ratio (0.05%) coincided with a low average cocaine seizure (0.30 kilograms), suggesting there was an initial phase of open trade with minimal drug enforcement. The sharp rise in seizures (58 kilograms) from 1999 to 2001, despite a slight dip in the trade ratio, indicates the potential influence of intensified enforcement efforts or shifting trafficking routes.

Later, from 2005 to 2007, the highest trade ratio (0.06%) and a moderate seizure level (34 kilograms), highlight a potential correlation between higher trade openness and increased vulnerability to drug trafficking. Lastly, from 2011 to 2013, the trade ratio

remained moderate, and seizures surged to 73 kilograms, suggesting that heightened security measures or regional dynamics might have played a significant role (Williams and Felbab-Brown, 2012; Pempel, 2010).

East Asia and Pacific's dynamic embrace of global trade, reflected in fluctuating trade ratios, showcases their strategic juggling act of exploiting economic opportunities while combating illicit drug trafficking. Adaptable engagement highlights the diverse priorities and challenges faced in balancing development goals with the delicate realities of regional drug control.

Military Expenditure as a Percentage of GDP

East Asia and the Pacific's economic resilience in *Table* A.2 suggests a balancing act between security and growth. The region's mean military expenditure of 0.02% of GDP hints at a strategic approach to defence. A stable approach reveals adaptability and a potential influence on global convention adherence. Notably, the transient decrease in military spending from 1996 to 1998 followed by a period of relative stability suggests a strategic re-calibration in response to evolving threats and priorities.

However, the relationship between military expenditure and cocaine seizures in the region remains complex. While some periods with higher military spending coincide with increased cocaine seizures (e.g., 2014 to 2016), others do not (e.g., 2005 to 2007). This suggests factors beyond military spending, such as law enforcement effectiveness, regional drug dynamics, and international cooperation, play significant roles in cocaine interdiction.

Table A.2: Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Cocaine Seizures in Kilograms (kgs) in East Asia & the Pacific.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**Military Expenditure (%)**
1996-1998	0.30	8	0.02
1999-2001	58	8	0.02
2002-2004	14	8	0.02
2005-2007	34	9	0.02
2008-2010	29	9	0.02
2011-2013	73	9	0.02
2014-2016	129	9	0.02

Table A.2: Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Cocaine Seizures in Kilograms (kgs) in East Asia & the Pacific (continued).

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**Military Expenditure (%)**
2017-2019	682	9	0.02

Ultimately, East Asia and the Pacific's story is one of dynamic engagement with both economic and security considerations. The fluctuating trade ratios, military spending, and cocaine seizures highlight the region's constant balancing act in its pursuit of sustainable development and adherence to international conventions (Williams and Felbab-Brown, 2012). Understanding these interconnected dynamics is crucial for crafting effective drug control policies and fostering regional security, allowing the region to continue its impressive economic trajectory while maintaining a stable and secure environment (Pempel, 2010).

EAP presents economic growth and strategic defence, evidenced by fluctuating trade and cocaine seizures alongside a stable military budget presented in *Table* A.2. Vital roles for factors beyond their military might be suggested, and unravelling these nuances is crucial for crafting effective drug control policies that resonate with each region's unique rhythm.

World Governance Indicators (WGI)

In *Table* A.3, East Asia and the Pacific report the mean WGI estimate of 0.25, suggesting moderate governance performance, fluctuations and trends within specific indicators reveal deeper insights. Understanding how these indicators relate to cocaine seizure patterns is important for answering the questions that aim to understand if there is a relationship between state commitment to United Nations drug control conventions and governance indicators.

Control of Corruption ("CC") reports a declining trend from an estimate of 0.42 from 1996 to 1998 to an estimate of 0.29 from 2017 to 2019. These estimates align with East Asia and the Pacific's relatively low cocaine seizures of 103 kilograms. This potential link between improved corruption control and reduced trafficking activity, however, cannot be definitively established without considering other factors like geographical barriers or differing drug preferences.

Table A.3: World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in East Asia & the Pacific.

Interval	**Seizures (kgs)**	**(CC)**	**(GE)**	**(RQ)**	**(RL)**	**(VA)**	**(PV)**
1996-1998	0.30	0.42	0.44	0.56	0.49	0.21	0.29
1999-2001	58	0.30	0.43	0.36	0.30	0.10	0.22
2002-2004	14	0.20	0.40	0.26	0.22	−0.05	0.04
2005-2007	34	0.15	0.50	0.31	0.21	−0.20	0.07
2008-2010	29	0.16	0.48	0.34	0.22	−0.15	0.04
2011-2013	73	0.21	0.42	0.33	0.21	−0.17	0.10
2014-2016	129	0.24	0.54	0.49	0.33	−0.10	0.17
2017-2019	682	0.29	0.61	0.53	0.37	−0.03	0.20

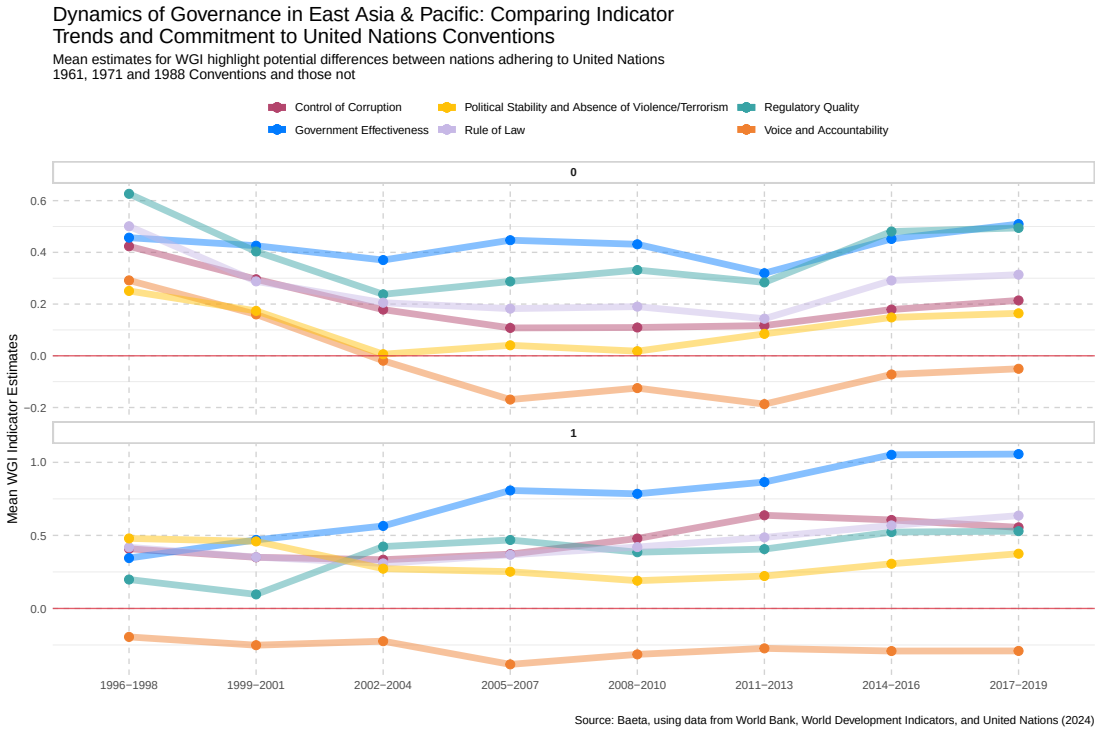


Figure A.1: Line Plot: UN Commitment and WGI Trends in East Asia & the Pacific.

In contrast, Government Effectiveness ("GE") show a positive trend in "GE" (0.44 from 1996 to 1998 and 0.61 from 2017 to 2019) is suggestive of improved government functionality. However, this doesn't fully explain the low cocaine seizures. Further research into specific enforcement strategies and regional cooperation efforts could shed light on how effective governance translates into seizure outcomes.

Both Regulatory Quality ("RQ") and Rule of Law ("RL") exhibit negative trends, suggesting challenges in maintaining consistent legal frameworks and upholding the rule of law. While these weaknesses might not directly translate to higher cocaine seizures, they may create vulnerabilities that trafficking networks might exploit.

Voice and Accountability ("VA") and Political Stability/Absence of Violence/Terrorism ("PV") show a decline and raise concerns about citizen engagement, government responsiveness, and political stability. This could potentially create an environment conducive to illicit activities, although more research is needed to establish a direct link with cocaine trafficking.

A.2 South Asia (SA)

Trade Ratio as Percentage of GDP

South Asia's trade trajectory, characterised by a gradual decline shown in *Table* A.4 through trade ratios. This reveals a region cautiously navigating the interplay between economic openness and drug control efforts. The trade ratio's evolution holds particular significance in understanding this dynamic. The pronounced trade ratio of 0.08% between 1996 and 1998 signalled a significant initial reliance on international trade. However, this vibrancy steadily waned, reaching 0.02% from 2017 to 2019, suggesting a deliberate recalibration of trade engagement.

Table A.4: South Asia Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**TR (%)**	**Exp (%)**	**Imp (%)**
1996-1998	0.12	6	0.08	19	25
1999-2001	0.20	6	0.08	19	24
2002-2004	0.67	7	0.07	19	25

Table A.4: South Asia Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP (continued).

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**TR (%)**	**Exp (%)**	**Imp (%)**
2005-2007	16	7	0.06	19	29
2008-2010	21	7	0.04	16	26
2011-2013	95	7	0.04	17	27
2014-2016	40	7	0.03	14	25
2017-2019	35	8	0.02	14	26

From 1996 to 1998, a high trade ratio coincided with a relatively low mean cocaine seizure of 0.12 kilograms, potentially reflecting a time of open trade with manageable drug infiltration. A moderate decline in the trade ratio between 2002 to 2004 was accompanied by a slight increase in seizures (Schneider and Enste, 2002), hinting at a possible link between reduced trade openness and intensified drug control efforts.

From 2005 to 2007 and 2011 to 2013, notable cocaine seizures (16 kilograms and 95 kilograms, respectively) despite further trade ratio declines. This suggests the influence of factors beyond trade alone, such as heightened law enforcement, shifting trafficking routes, or regional drug dynamics (Sultan Hafeez Rahman and Brunner, 2012). The imbalance between imports and exports underscores the need for strategic measures to promote sustainable economic growth without compromising security.

Military Expenditure as a Percentage of GDP

Scrutinising South Asia's military expenditure unveils a deliberate re-calibration, a nuanced interplay between security priorities and resource allocation presented in *Table* A.5. The region exhibits a mean of 0.02% and a median of 0.02%, with a range spanning from 0.02% to 0.03% of GDP.

Notably, a declining trend emerges, with military spending transitioning from a high of 0.03% in the initial period (e.g., 1996 to 1998) to a leaner 0.02% in later years. This gradual decrease suggests a calculated and strategic shift in defence spending, potentially indicative of a maturing security landscape and evolving geopolitical considerations. This realignment of resources frees up capital for potential redirection towards other critical

sectors beyond defence, highlighting the adaptability and dynamism inherent in South Asia's approach to security and economic development.

Table A.5: Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Cocaine Seizures in Kilograms (kgs) in South Asia.

Interval	**Seizures (kgs)**	**GDP(*captia*)**	**Military Expenditure (%)**
1996-1998	0.12	6	0.03
1999-2001	0.20	6	0.03
2002-2004	0.67	7	0.03
2005-2007	16	7	0.02
2008-2010	21	7	0.03
2011-2013	95	7	0.02
2014-2016	40	7	0.02
2017-2019	35	8	0.02

However, the relationship between military spending and cocaine seizures remains intricately connected. While periods of higher military expenditure coincide with some increases in seizures (e.g., 2005 to 2007), others don't show a clear correlation (e.g., 2014 to 2016). This suggests factors beyond military funding, such as law enforcement effectiveness, regional drug trafficking routes, and international cooperation, likely play significant roles in shaping seizure patterns (Sultan Hafeez Rahman and Brunner, 2012).

Interestingly, the decline in military spending coincides with a period of heightened cocaine seizures (2011 to 2013). This could indicate a successful deployment of resources beyond the military, or perhaps a shift in regional trafficking dynamics that placed less pressure on traditional control methods.

Ultimately, South Asia's narrative is one of strategic adaptation and dynamic resource allocation. The region's evolving military expenditure, coupled with fluctuating cocaine seizures, reveals a constant balancing act between security concerns and economic development. Understanding this intricate interplay is crucial for crafting effective drug control strategies, fostering regional cooperation, and enabling South Asia to continue its development journey while maintaining a stable and secure environment.

World Governance Indicators (WGI)

South Asia's governance estimates in *Table* A.6, show challenges in governance and their potential links to cocaine trafficking. The region's WGI estimates, with negative values across all indicators, reflect widespread concerns about Governance Effectiveness ("GE")and Rule of Law ("RL"). However, the low cocaine seizure quantities (26 kilograms) might seem contradictory, prompting a closer look at individual indicators and trends.

Table A.6: World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in South Asia.

Interval	**Seizures (kgs)**	**(CC)**	**(GE)**	**(RQ)**	**(RL)**	**(VA)**	**(PV)**
1996-1998	0.12	−0.61	−0.39	−0.48	−0.24	−0.11	−0.94
1999-2001	0.20	−0.69	−0.42	−0.52	−0.38	−0.36	−1.23
2002-2004	0.67	−0.80	−0.56	−0.59	−0.49	−0.50	−1.48
2005-2007	16	−0.66	−0.45	−0.55	−0.43	−0.40	−1.70
2008-2010	21	−0.81	−0.59	−0.62	−0.59	−0.30	−1.73
2011-2013	95	−0.76	−0.67	−0.74	−0.61	−0.33	−1.53
2014-2016	40	−0.64	−0.48	−0.55	−0.44	−0.26	−1.08
2017-2019	35	−0.62	−0.49	−0.55	−0.37	−0.29	−0.96

The Control of Corruption ("CC") estimate presents a noticeable decline, particularly from −0.81 in 2008 to 2010 down to −0.76 in 2011 to 2013, coinciding with a significant spike in cocaine seizures (from 21 kilograms to 95 kilograms). This suggests a potential correlation and that improved corruption control might lead to reduced trafficking activity.

Government Effectiveness ("GE") displays fluctuations, with a low point of −0.67 from 2011 to 2013, the same period with the highest seizure quantities. However, the subsequent increase in "GE" to −0.49 in 2017 to 2019 corresponds with a decrease in seizures to 35 kilograms. This highlights the complex interplay between "GE" and trafficking, while higher estimates point to potential reductions, other factors might contribute to seizure variations.

Consistently negative Regulatory Quality ("RQ") estimates, dropping from −0.48 in 1996 to 1998 down to −0.55 in 2017 to 2019, raises concerns about vulnerabilities that may be exploited by trafficking networks. Despite low seizures, addressing these "RQ" weaknesses remains crucial to creating a more resilient environment against illicit activities.

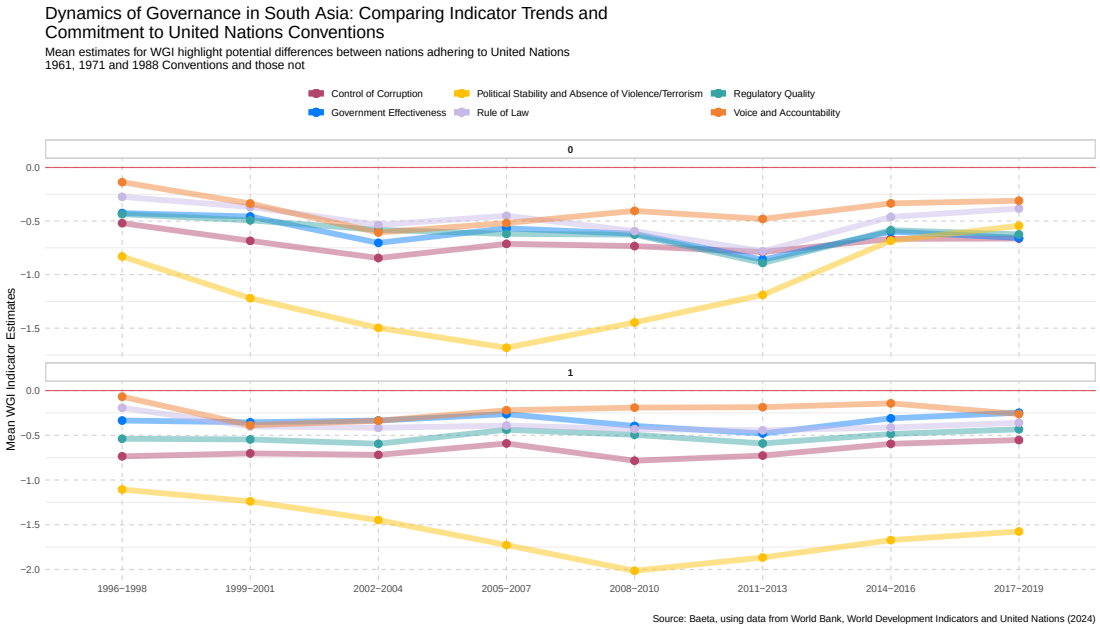


Figure A.2: Line Plot: UN Commitment and WGI Trends in South Asia.

Negative Rule of Law ("RL") estimates, particularly the low point of −0.61 in 2011 to 2013, warrant attention as they suggest potential legal loopholes or enforcement challenges. While its direct connection to seizures remains unclear, strengthening the " RL" is essential for combating trafficking by closing operational gaps and deterring illegal activity.

Finally, fluctuating Voice and Accountability ("VA") and Political Stability/Absence of Violence/Terrorism ("PV") scores, with low points of −0.50 and −1.73, respectively, indicate potential vulnerabilities that may indirectly facilitate trafficking. Although not directly correlated with seizure quantities, improving these aspects of governance could create an environment less conducive to illicit activities by fostering citizen engagement and reducing political instability.

A.3 Europe & Central Asia (ECA)

Trade Ratio as a Percentage of GDP

Europe and Central Asia's trade ratio in *Table* A.7 reveals a region adept at manoeuvring the delicate balance between economic openness and drug control pressures. While the

trade ratio has fluctuated over time, with a mean of 0.02%, its overall trajectory suggests a strategic approach to global market engagement.

Table A.7: Europe & Central Asia Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**TR (%)**	**Exp (%)**	**Imp (%)**
1996-1998	560	9	0.02	39	43
1999-2001	573	9	0.03	45	47
2002-2004	669	9	0.02	46	46
2005-2007	412	10	0.01	48	54
2008-2010	249	10	0.01	48	50
2011-2013	310	10	0.01	53	54
2014-2016	1,358	10	0.01	55	55
2017-2019	2,629	10	0.01	57	57

Despite these adjustments, the region exhibits a consistent upward trajectory in exports and imports as a percentage of GDP, their means 52% and 49% of GDP, respectively This sustained integration into global trade networks underscores economic aspirations beyond mere drug control considerations. Europe and Central Asia's experience highlights the importance of a nuanced approach to trade policy, balancing opportunities with potential risks (Roaf, 2014; van der Hoek, 2001).

Military Expenditure as a Percentage GDP

Europe and Central Asia's narrative surrounding cocaine seizures and military expenditure unfolds in *Table* A.8 following a determined march, where security strides alongside persistent drug control challenges. The region's economic might fuels its commitment to defence, evident in the historical peak of 0.02% military spending from 1996 to 1998 and a subsequent period of relative stability averaging 0.01% from 2008 to 2016. This resolve prioritises defence capabilities, even as the drug landscape fluctuates.

Table A.8: Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Mean Cocaine Seizures in Kilograms (kgs) in Europe & Central Asia.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**Military Expenditure (%)**
1996-1998	560	9	0.02
1999-2001	573	9	0.02
2002-2004	669	9	0.02
2005-2007	412	10	0.02
2008-2010	249	10	0.02
2011-2013	310	10	0.02
2014-2016	1,358	10	0.02
2017-2019	2,629	10	0.02

While the relationship between spending and cocaine seizures remains complex, with periods of high spending not always matching increased interdictions, the ECA's consistent dedication to defence spending stands as a commitment to security and stability. This march underscores Europe and Central Asia's engagement with both economic vitality and security concerns, paving the way for a future where prosperity and safety continue to march in tandem.

World Governance Indicators (WGI)

Europe and Central Asia's governance landscape, as depicted by the Worldwide Governance Indicators in *Table* A.9, exhibits a dynamic interplay of fluctuations. Beyond its inherent estimates, intriguing connections to cocaine seizure patterns offer insights into the ECA's socio-political complexities.

The Control of Corruption ("CC") indicator presents a compelling case. Its recent decline, particularly the drop to 0.495 from 2017 to 2019, coincides with a significant surge in cocaine seizures (2,629 kilograms). While causation cannot be readily established, this potential link suggests that an environment with more effective anti-corruption measures might indeed experience reduced trafficking activity. Conversely, weakened control of corruption could create fertile ground for illicit networks to flourish.

Table A.9: World Governance Indicator Estimates and Mean Cocaine Seizure in Kilograms (kgs) in Europe & Central Asia.

Interval	**Seizures (kgs)**	**(CC)**	**(GE)**	**(RQ)**	**(RL)**	**(VA)**	**(PV)**
1996-1998	560	0.64	0.71	0.67	0.64	0.70	0.59
1999-2001	573	0.52	0.62	0.62	0.50	0.60	0.52
2002-2004	669	0.57	0.67	0.71	0.56	0.67	0.39
2005-2007	412	0.56	0.63	0.75	0.57	0.64	0.45
2008-2010	249	0.51	0.64	0.76	0.60	0.59	0.39
2011-2013	310	0.55	0.70	0.76	0.64	0.60	0.41
2014-2016	1,358	0.52	0.68	0.76	0.61	0.58	0.29
2017-2019	2,629	0.50	0.65	0.77	0.56	0.51	0.31

Government Effectiveness ("GE") presents a complex picture. The highest seizure figures, 1,358 kilograms from 2014 to 2016, occur alongside relatively high "GE" scores (0.68). However, the relationship is not a straightforward one. Periods with lower "GE" scores exhibit varied seizure levels, indicating that multiple factors, beyond "GE", likely influence trafficking patterns. This multifaceted relationship warrants further investigation.

Regulatory Quality ("RQ") reports a downward trend in recent years aligns with the sharp increase in cocaine seizures. This potential connection suggests that strong and improving "RQ" might act as a deterrent to trafficking while weakening regulations could inadvertently create vulnerabilities that criminal networks exploit. Robust regulatory frameworks, therefore, appear crucial in combating illicit activities.

The Rule of Law ("RL"), while exhibiting fluctuations, consistently emphasises the importance of a strong legal system in combating trafficking. Strengthening "RL", even with a yet-to-be-quantified direct connection to seizures, remains critical. It closes legal loopholes, deters criminal activity, and fosters an environment of accountability, all of which are essential prerequisites for effectively curtailing illicit networks.

Voice and Accountability ("VA") presents another intriguing possibility. Its decline from 2017 to 2019 coincides with the highest cocaine seizure quantities. This potential link suggests that increased citizen engagement and a more accountable environment, as reflected by higher "VA" estimates, might hinder trafficking activities. Empowering citizens and fostering responsive governance structures could thus become crucial tools in the fight against illicit goods.

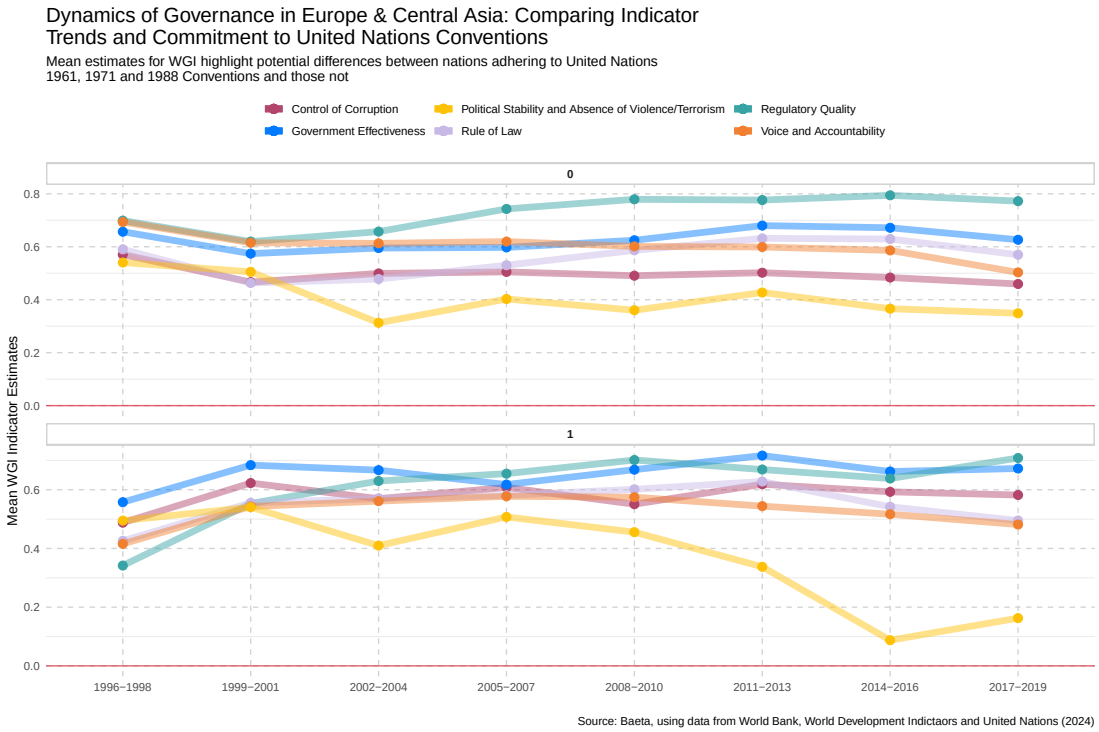


Figure A.3: Line Plot: UN Commitment and WGI Trends in Europe & Central Asia.

Political Stability/Absence of Violence/Terrorism ("PV"), though indirectly linked to seizures, cannot be discounted. Its peaks, such as the one observed in 2005 to 2007, likely signify environments conducive to effective law enforcement and governance interventions. While the precise nature of this relationship requires further exploration, "PV" appears to play a role in creating conditions less favourable to illicit activities.

A.4 Latin America & the Caribbean (LAC)

Trade Ratio as a Percentage of GDP

Latin America and the Caribbean's trade engagement in *Table* A.10 presents a fascinating narrative of strategic re-calibration. The declining trade ratio, from a high of 0.03% in 1999 to 2001 to 0.01% in 2017 to 2019, hints at a deliberate shift from exuberant openness to a more measured approach.

Table A.10: Latin America & the Caribbean Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as % of GDP.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**TR (%)**	**Exp (%)**	**Imp (%)**
1996-1998	3,885	8	0.02	29	33
1999-2001	29,020	8	0.03	31	36
2002-2004	3,995	8	0.03	34	37
2005-2007	59,258	9	0.02	33	38
2008-2010	93,926	9	0.02	30	34
2011-2013	46,399	9	0.02	30	35
2014-2016	27,608	9	0.01	26	32
2017-2019	6,394	9	0.02	28	33

This reorientation likely stems from a complex interplay of economic considerations, evolving global dynamics, and a balancing act between economic aspirations and security concerns, particularly drug trafficking. While export and import percentages fluctuate around 30% and 34%, respectively, highlighting ongoing adjustments to priorities, the relationship between the trade ratio and cocaine seizures remains nuanced.

Periods of higher trade openness do not always translate to proportional increases in cocaine seizures, suggesting the influence of factors beyond trade policy, such as law enforcement effectiveness or regional drug dynamics (Hernandez-Roy and Bledsoe, 2023; McKinley, 2023). Understanding this interplay may inform targeted drug control strategies and regional cooperation, enabling LAC to navigate the delicate nexus of trade and security towards sustainable development and strengthened security (Pietschmann and Walker, 2011).

Military Expenditure as a Percentage of GDP

Latin America and the Caribbean's narrative surrounding cocaine seizures and military expenditure unfolds in *Table* A.11. While the average military spending of 0.01% of GDP hints at a strategic approach to security, the region's history reveals a nuanced and dynamic response to evolving challenges.

The upward trend in military spending from 1996 to 2001, coinciding with increased

cocaine seizures (Hernandez-Roy and Bledsoe, 2023), suggests a deliberate focus on bolstering security capabilities in response to internal threats such as gang violence and perhaps regional conflicts. Yet, the subsequent decline back to its initial level from 2017 to 2019 underscores the region's adaptability, possibly indicating a shift in tactics or a perceived decrease in threats.

Table A.11: Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Mean Cocaine Seizures in Kilograms (kgs) in Latin America & the Caribbean.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**Military Expenditure (%)**
1996-1998	3,885	8	0.02
1999-2001	29,020	8	0.01
2002-2004	3,995	8	0.01
2005-2007	59,258	9	0.01
2008-2010	93,926	9	0.01
2011-2013	46,399	9	0.01
2014-2016	27,608	9	0.01
2017-2019	6,394	9	0.01

This fluid allocation of resources further resonates with the observed correlation between military spending and cocaine seizures. Periods of higher spending, (e.g. 2005 to 2007), seem to coincide with surges in interdictions, highlighting the potential efficacy of increased resources in counter-narcotics operations. However, the complex interplay is evident in periods (e.g. 2014 to 2016), where lower spending doesn't translate to a drastic drop in seizures, suggesting factors beyond the military might play a significant role Durán-Martínez (2017).

LAC's security narrative echoes the dynamic interplay between fluctuating military expenditures and cocaine seizures. This complex interlude suggests a nuanced response to evolving internal threats, such as gang violence and regional conflicts.

World Governance Indicators (WGI)

The intricacies of governance in Latin America and the Caribbean, captured in *Table* A.12, reveal intriguing connections with the region's fluctuating cocaine seizure patterns.

While definitive causal relationships demand further investigation, a multifaceted dance of potential correlations emerges upon closer examination.

The Control of Corruption ("CC") indicator presents a compelling case. Its consistent and concerning decline, from −0.319 in 1996 to 1998 down to −0.434 in 2017 to 2019, coincides with periods of elevated cocaine seizures, exceeding 29,000 kilograms from 1999 to 2001. This potential connection suggests that weaker control of corruption might create fertile ground for the illicit operations of narcotics networks. Conversely, stronger anti-corruption measures could potentially act as a deterrent, disrupting trafficking activities.

Table A.12: World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in Latin America & Caribbean.

Interval	**Seizures (kgs)**	**(CC)**	**(GE)**	**(RQ)**	**(RL)**	**(VA)**	**(PV)**
1996-1998	3,885	−0.32	−0.11	0.16	−0.35	0.15	−0.30
1999-2001	29,02	−0.36	−0.26	−0.04	−0.46	0.19	−0.28
2002-2004	3,995	−0.38	−0.32	−0.19	−0.50	0.11	−0.46
2005-2007	59,259	−0.34	−0.33	−0.18	−0.55	0.16	−0.43
2008-2010	93,926	−0.27	−0.28	−0.21	−0.55	0.02	−0.34
2011-2013	46,399	−0.38	−0.32	−0.21	−0.57	−0.01	−0.23
2014-2016	27,608	−0.42	−0.33	−0.23	−0.51	0.05	−0.11
2017-2019	6,394	−0.43	−0.34	−0.21	−0.54	0.07	−0.24

Government Effectiveness ("GE") presents a downward trend, from −0.11 in 1996-1998 to −0.34 in 2017 to 2019, which aligns with generally increasing cocaine seizure quantities, and the relationship appears multifaceted. Notably, periods with higher "GE" scores also witnessed significant cocaine seizures, reaching over 59,000 kilograms in 2005-2007. This may suggest that "GE" influences seizures indirectly and potentially influenced by a complex interplay of factors beyond government efficiency.

Regulatory Quality ("RQ") declined from −0.347 in 1996 to 1998 to −0.508 from 2014 to 2016, which coincides with the highest number of recorded seizures, exceeding 93,000 kilograms from 2008 to 2010. This potential connection reinforces the notion that strong and adaptable "RQ" act as a deterrent to trafficking, while weakened ones could create vulnerabilities that criminal networks exploit. "RQ", therefore, appear crucial in combating illicit activities.

The Rule of Law ("RL"), similar to "RQ", experiences a significant decline, from −0.347 in 1996 to 1998 to −0.566 in 2011 to 2013, with the highest cocaine seizures occurring during its weakest period. This further strengthens the argument that "RL" plays a crucial role in combating trafficking by closing legal loopholes and deterring criminal activity. Upholding "RL", coupled with effective legal frameworks, becomes fundamental in disrupting the operations of illicit networks.

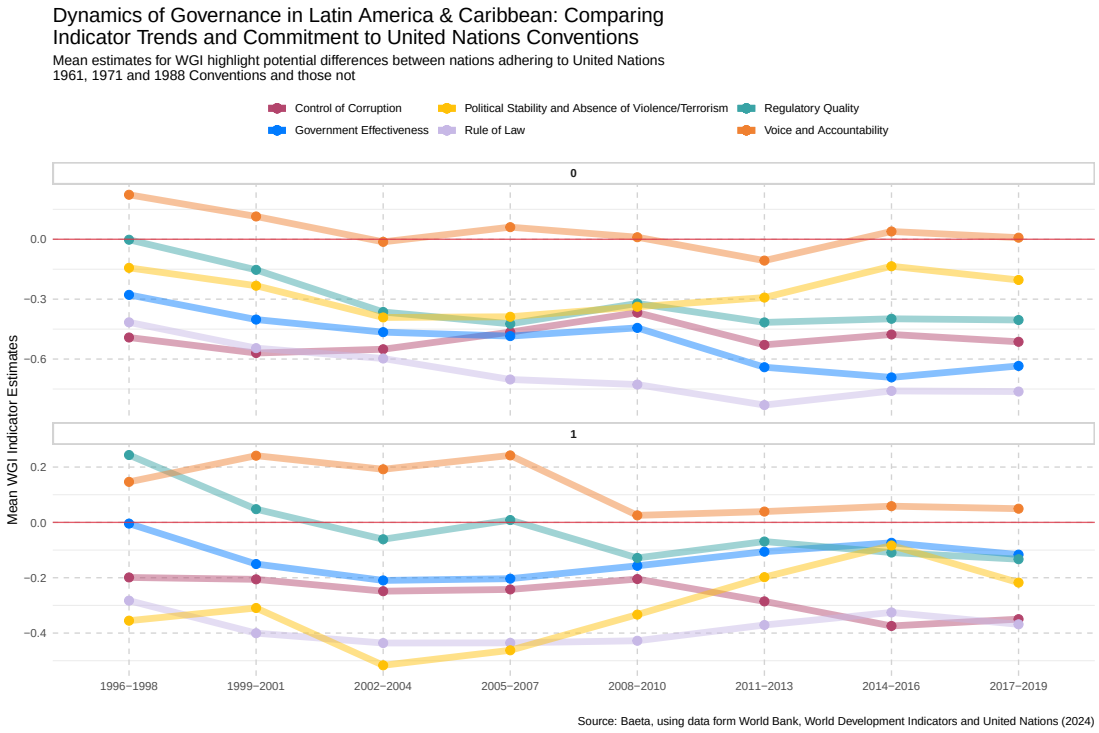


Figure A.4: Line Plot: UN Commitment and WGI Trends in Latin America & the Caribbean.

Voice and Accountability ("VA") exhibits fluctuations, but its positive shift from 2017 to 2019 coincides with a notable decrease in seizures. This potential connection suggests that increased citizen engagement and a more accountable environment might hinder trafficking activities. Empowering communities and fostering responsive governance structures could, therefore, become crucial tools in the fight against illicit goods.

Political Stability/Absence of Violence/Terrorism ("PV"), though indirectly linked to cocaine seizures, cannot be discounted. Its fluctuations reflect changes in the region's political landscape. While a direct connection to seizures remains unclear, "PV" likely fosters an environment conducive to effective law enforcement and governance interventions,

indirectly impacting trafficking levels. Stable political environments might, therefore, contribute to a more robust security apparatus and effective counter-trafficking measures.

A.5 North America (NA)

Trade Ratio as a Percentage of GDP

North America's economic engagement in *Table* A.13 suggests a strategic balance between trade and drug control. The region's trade ratio, with a remarkably low mean of 0%, reveals a nuanced approach. This coincided with intensified law enforcement and substantial cocaine seizures, and subsequent years showcased continued economic dynamism through adaptable trade strategies. Despite fluctuations in export percentages, NA consistently maintains a trade surplus, a testament to its economic strength. This strategic trade management is further balanced by import figures, exhibiting a well-calibrated approach that contributes to overall economic stability.

Table A.13: North America Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as % of GDP.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**TR (%)**	**Exp (%)**	**Imp (%)**
1996-1998	33,103	11	0.00	25	24
1999-2001	26,119	11	0.00	26	25
2002-2004	20,049	11	0.00	23	24
2005-2007	47,632	11	0.00	23	25
2008-2010	41,435	11	0.00	21	23
2011-2013	28,717	11	0.00	22	24
2014-2016	411	11	0.00	22	24
2017-2019	256	11	0.00	22	24

While periods of higher trade openness do not always translate to proportionate increases in seizures, understanding this intricate interplay is crucial for informing targeted drug control efforts (Gantz, 2018; Swanson, 2006). NA's story offers valuable insights: a commitment to both economic engagement and proactive drug control, exemplified by a persistent trade surplus and carefully managed trade balances.

Military Expenditure as a Percentage of GDP

North America's relationship with cocaine seizures and military expenditure unfolds in *Table* A.14, where calculated steps navigate the intricate terrain of security concerns. While the mean military expenditure of 0.02% GDP hints at a strategic approach, the observed range from 0.02% to 0.03% reveals a nuanced and dynamic resource allocation.

Table A.14: Military Expenditure as a % of GDP, Log-Adjusted GDP, and Mean Cocaine Seizures in Kilograms (kgs) in North America.

Interval	**Seizures (kgs)**	**GDP(*captia*)**	**Military Expenditure (%)**
1996-1998	33,103	11	0.02
1999-2001	26,119	11	0.02
2002-2004	20,049	11	0.03
2005-2007	47,632	11	0.03
2008-2010	41,435	11	0.03
2011-2013	28,717	11	0.03
2014-2016	411	11	0.02
2017-2019	256	11	0.02

However, the relationship between military spending and cocaine seizures remains a multifaceted enigma. While periods of higher military expenditure, (e.g. 2005 to 2007), coincide with increased interdictions, others, (e.g. 2014 to 2016), reveal drastic drops in cocaine seizures despite consistent spending. This suggests factors beyond military might, such as law enforcement effectiveness, regional drug dynamics, and international cooperation, play a crucial role in shaping seizure patterns (Serrano, 2006).

The strategic response from 2008 to 2010, with a peak of 0.03% military spending coinciding with the global shift of the War on Terror (McKinley, 2023), exemplifies this adaptability. North America recognised the altered geopolitical landscape and proactively bolstered its defence capabilities. Subsequently, the gradual decline to 0.02% from 2017 to 2019 suggests a reevaluation of priorities based on changing circumstances. This dynamic allocation of resources signifies a flexible approach to security, ensuring resources are optimally deployed against evolving threats.

World Governance Indicators (WGI)

While definitively attributing causality remains elusive, North America's cocaine seizure patterns reveal intriguing potential connections with fluctuations in governance illustrated in *Table* A.15.

Despite consistently high scores in Control of Corruption ("CC") reporting a mean of 1.69, a seemingly minor dip in CC from 1.80 in 1996 to 1998 to 1.50 in 2017 to 2019 coincides with a notable decrease in seizures. This potential connection suggests that robust control of corruption mechanisms not only acts as a potent deterrent, but even minor weakening could create exploitable vulnerabilities for trafficking networks.

Table A.15: World Governance Indicators Estimates and Mean Cocaine Seizures in Kilograms (kgs) in North America.

Interval	**Seizures (kgs)**	**(CC)**	**(GE)**	**(RQ)**	**(RL)**	**(VA)**	**(PV)**
1996-1998	33,103	1.80	1.71	1.56	1.61	1.45	1
1999-2001	26,119	1.88	1.76	1.56	1.60	1.42	0.94
2002-2004	20,049	1.78	1.75	1.57	1.59	1.45	0.42
2005-2007	47,632	1.68	1.71	1.58	1.71	1.26	0.76
2008-2010	41,435	1.65	1.64	1.56	1.69	1.25	0.78
2011-2013	28,717	1.62	1.63	1.52	1.69	1.27	0.87
2014-2016	411	1.62	1.61	1.61	1.69	1.27	0.82
2017-2019	256	1.50	1.59	1.59	1.58	1.21	0.62

Similar to CC, Governance Effectiveness ("GE") maintains consistently high scores reporting a mean of 1.68 throughout the study. However, a marginal decline from 1.64 in 2008 to 2010 to 1.59 from 2017 to 2019 aligns with the sharpest drop in seizures. This potential correlation, while tentative, underscores the importance of maintaining an optimal level of government effectiveness to ensure seamless service delivery and effective governance interventions against trafficking.

Unlike the previous indicators, Regulatory Quality ("RQ") exhibits distinct fluctuations, including a temporary dip from 1.56 in 1996 to 1998 down to 1.52 from 2011 to 2013 coinciding with a decrease in cocaine seizures. While the decline in RQ is not as pronounced as those in CC and GE, it reinforces the notion that adaptable RQ plays a

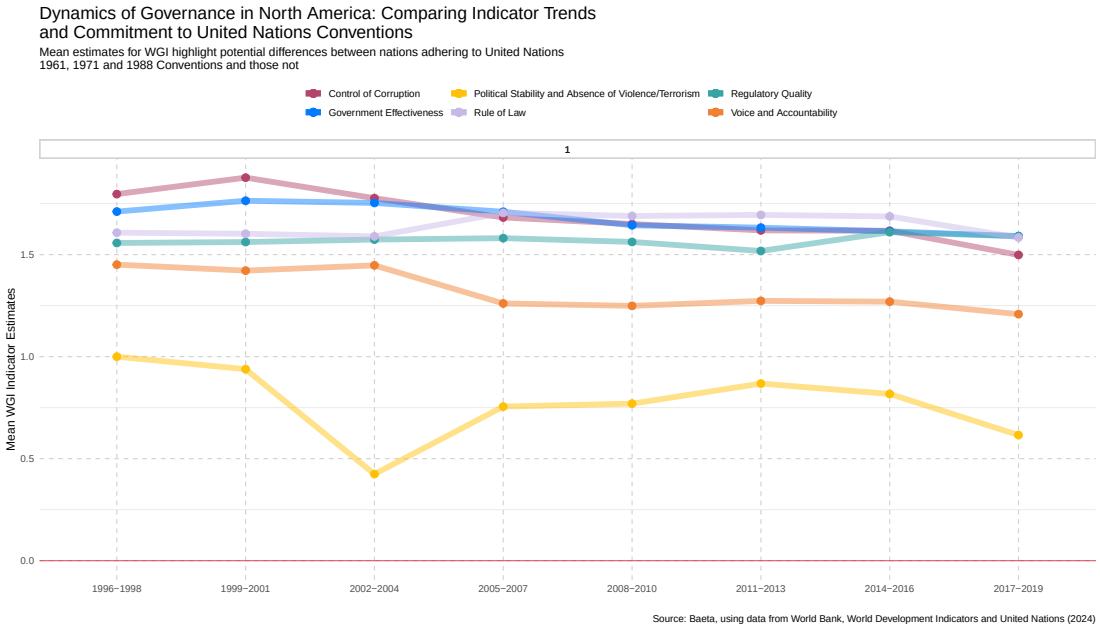


Figure A.5: Line Plot: UN Commitment and WGI Trends in North America.

crucial role in deterring trafficking, while weakened ones could create exploitable loopholes for illicit networks to navigate.

Working with other indicators, the Rule of Law ("RL") maintains consistently high scores. However, understanding the factors contributing to the temporary dip from 1.56 in 1996 to 1998 down to 1.52 in 2011 to 2013 may offer valuable insights into maintaining a strong legal framework and effective law enforcement against trafficking activities.

Voice and Accountability ("VA") presents a concerning downward trend, reporting a mean of 1.32, with the most significant decrease from 1.45 in 1996 to 1998 down to 1.21 from 2017 to 2019. This noteworthy decline coincides with the lowest recorded cocaine seizures, possibly suggesting that increased citizen engagement and a more accountable environment might hinder trafficking activities. Furthermore, policies impacting freedom of expression and democratic processes require scrutiny in this context.

Fluctuations in Political Stability/Absence of Violence/Terrorism ("PV") reporting a of mean 0.77 warrant further investigation. The substantial drop, 1 from 1996 to 1998 down to 0.61 from 2017 to 2019 coincides with the sharpest decrease in seizures. While definitive causation remains elusive, exploring the factors contributing to changes in PV may potentially reveal connections to trafficking dynamics.

A.6 Middle East & North Africa (MENA)

Trade Ratio as a Percentage of GDP

Middle East and North Africa's economic identity unfolds in *Table* A.16. The region's trade ratio, averaging a cautious 0.01%, speaks to a strategic integration into global markets, avoiding the exuberant openness of Latin America or the closed-door approach of some other regions. This adaptability is further evident in the fluctuations of exports and imports, ranging from 35% to 53% and 36% to 44%, respectively.

Table A.16: Middle East & North Africa Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**TR (%)**	**Exp (%)**	**Imp (%)**
1996-1998	7	9	0.02	35	39
1999-2001	6	9	0.02	40	36
2002-2004	3	9	0.02	48	40
2005-2007	11	9	0.01	53	43
2008-2010	8	9	0.01	47	42
2011-2013	20	9	0.01	49	44
2014-2016	26	9	0.01	35	40
2017-2019	103	9	0.01	39	40

MENA's ability to navigate these shifting balances and adjust its economic sails in response to global winds is crucial for stability in a world of interconnected markets. While periods of higher trade openness haven't necessarily translated to proportional increases in cocaine seizures, suggesting factors beyond trade policy at play, understanding the complexities of this interplay is vital for informed drug control strategies (Jihane Ben Yahia, 2019).

MENA's story is one of cautious engagement, strategic recalibration, and a constant balancing act between economic opportunity and security concerns. By deciphering the intricate language of trade ratios, export and import fluctuations, and their relationship to drug trafficking, valuable insights may be drawn into shaping a more secure and prosperous future for the region (Crabtree, 2016; Mthuli Ncube, 2013).

Military Expenditure as a Percentage of GDP

The Middle East and North Africa (MENA) region presents a complex saga of cocaine seizures and military expenditure in *Table* A.17. Unlike North America or Latin America, MENA's history pronounces bursts of military spending punctuate a landscape of fluctuating cocaine interdictions.

The mean military expenditure of 0.05% of GDP, with a significant range from 0.04% to 0.06%, speaks volumes about the region's dynamic approach to security. Prominent peaks, particularly from 2011 to 2013 and 2014 to 2016, suggest a deliberate focus on bolstering defence capabilities in response to evolving threats. The Arab Spring uprisings of 2011, for instance, undoubtedly played a role in this surge, highlighting the complex interplay between internal instability and security priorities (Mthuli Ncube, 2013).

Table A.17: Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Mean Cocaine Seizures in Kilograms (kgs) in Middle East & North Africa.

Interval	**Seizures (kgs)**	**GDP(*captia*)**	**Military Expenditure (%)**
1996-1998	7	9	0.02
1999-2001	6	9	0.01
2002-2004	3	9	0.01
2005-2007	11	9	0.01
2008-2010	8	9	0.01
2011-2013	20	9	0.01
2014-2016	26	9	0.01
2017-2019	103	9	0.01

However, the relationship between military spending and cocaine seizures remains shrouded in an enigma. While periods of increased spending, including 2005 to 2007 and 2008 to 2010, coincide with surges in interdictions, periods such as 2014 to 2016 and 2017 to 2019 reveal significant drops in cocaine seizures despite consistent defence investments. This relationship underscores the limitations of military might in curbing drug trafficking, suggesting factors like regional dynamics, international cooperation, and law enforcement effectiveness hold vital roles in shaping seizure patterns (Mthuli Ncube, 2013).

World Governance Indicators (WGI)

The illicit cocaine trade casts a long shadow across the Middle East and North Africa shown in *Table* A.18.

Fluctuations in Corruption Control ("CC") estimates, with a mean of −0.116, reveal variations in corruption levels. The temporary peak of 0.091 from 1999 to 2001 offers a glimpse of potential, however, the subsequent plunge to −0.290 from 2005 to 2007 underscores the region's vulnerability to backsliding. This suggests robust anti-corruption measures remain crucial for disrupting trafficking networks.

Table A.18: World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in Middle East & North Africa.

Interval	**Seizures (kgs)**	**(CC)**	**(GE)**	**(RQ)**	**(RL)**	**(VA)**	**(PV)**
1996-1998	7	−0.02	0.02	−0.08	0.02	−0.63	−0.27
1999-2001	6	0.09	0.03	−0.06	0.05	−0.74	−0.14
2002-2004	3	−0.01	−0.04	−0.09	−0.02	−0.79	−0.23
2005-2007	11	−0.12	−0.04	−0.08	−0.12	−0.97	−0.39
2008-2010	8	−0.09	0.07	−0.04	−0.07	−0.89	−0.55
2011-2013	20	−0.23	−0.08	−0.23	−0.20	−0.84	−0.84
2014-2016	26	−0.26	−0.11	−0.23	−0.20	−0.79	−0.85
2017-2019	103	−0.29	−0.13	−0.26	−0.15	−0.79	−0.80

Similar to CC, Government Effectiveness ("GE") exhibits fluctuations, averaging at −0.036. The highest estimate of 0.073 from 2008 to 2010 points to periods of relatively effective governance, while the low of −0.227 from 2011 to 2013 highlights periods of struggle. Strengthening GE, particularly in areas with a weaker track record, could prove valuable in combating trafficking activities.

Estimating a mean of −0.133, Regulatory Quality ("RQ") indicates a need for improvements in RQ. The lowest estimate of −0.255 from 2002 to 2004 reveals areas with particularly weak RQ, while the highest estimate of −0.039 from 2008 to 2010 showcases strides towards better practices. Prioritising regulatory reforms, particularly in vulnerable areas, could enhance the region's capacity to deter trafficking.

Rule of Law ("RL") challenges in establishing a robust legal framework are evident in RL estimates, averaging at −0.087 and with a median of −0.093. While the highest

estimate of 0.045 from 2017 to 2019 suggests progress, the low of −0.203 from 2011 to 2013 highlights areas facing significant hurdles. Upholding RL and ensuring effective law enforcement remain critical for effectively tackling trafficking networks.

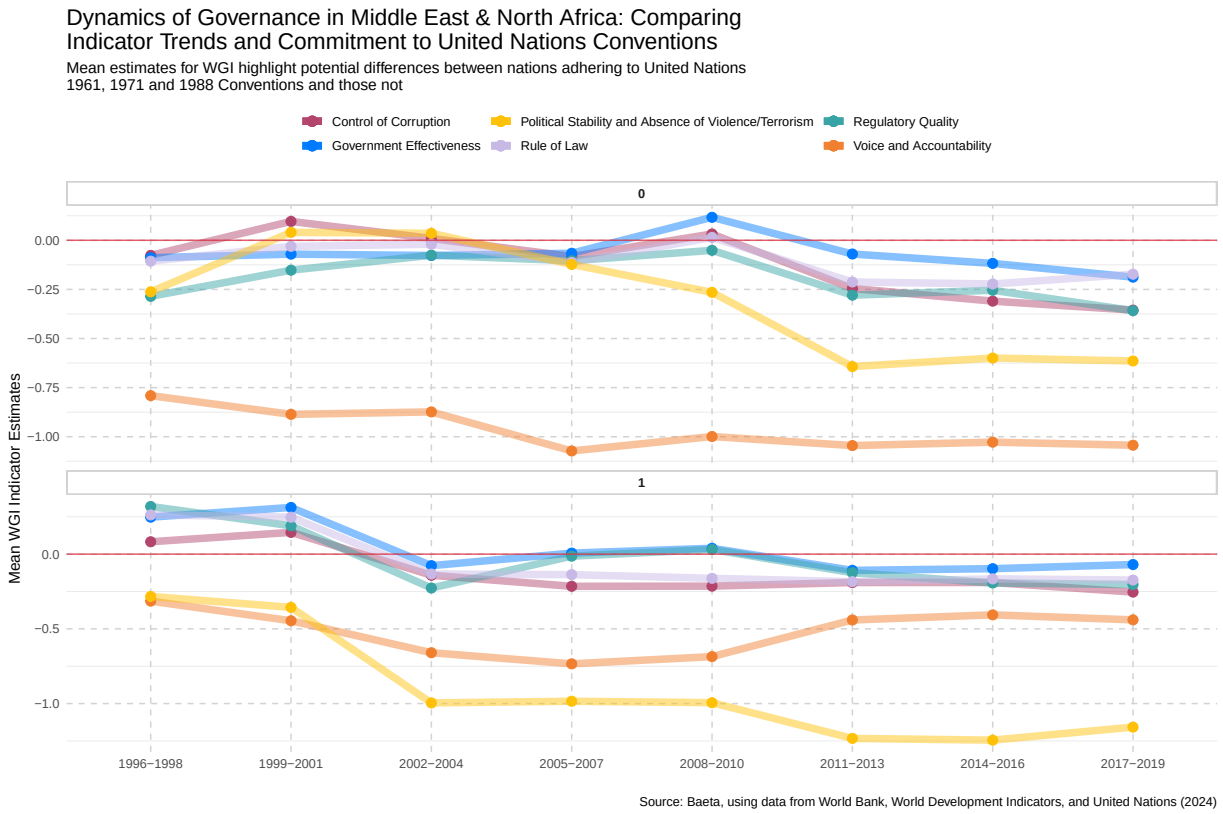


Figure A.6: Line Plot: UN Commitment and WGI Trends in Middle East & North Africa.

Voice and Accountability ("VA") in the region faces a considerable deficit in citizen engagement and accountability, as reflected in VA estimates, averaging at −0.805 and with a median of −0.791. The lowest estimate of −0.967 from 2014 to 2016 paints a picture of severely limited civic participation, while the highest estimate of −0.631 suggests pockets of greater citizen involvement. Empowering citizens to voice concerns and hold authorities accountable could prove instrumental in tackling corruption and fostering transparency, ultimately making it more difficult for trafficking networks to operate.

Political Stability/Absence of Violence/Terrorism ("PV") challenges in MENA are related to stability and violence, which are evident in PV estimates, averaging at −0.508 and with a median of −0.469. The low of −0.848 from 2008 to 2010 underscores periods

of heightened instability, while the highest estimate of -0.134 from 2017 to 2019 suggests progress towards greater stability. Addressing the root causes of PV remains crucial for creating a secure environment that hinders trafficking activities.

A.7 Sub-Saharan Africa (SSA)

Trade Ratio as a Percentage of GDP

Sub-Saharan Africa's trade ratios in *Table* A.19 show evolving economic strategies and their intricate interrelationship with counter-narcotics efforts. The region's trade ratio, with a mean of 0.08%, masks a significant downward trend. The decline, 0.09% from 1996 to 1998 to 0.07% from 2005 to 2007 coincides with a peak in cocaine seizures (43 kilograms), hinting at a potential shift in priorities. This intriguing correlation suggests a possible redirection of resources towards domestic issues or intensified law enforcement, highlighting the delicate balance between promoting international trade and combating illicit drugs.

The subsequent years witnessed a further downward trend, with the trade ratio reaching 0.06% from 2014 to 2016, where it stabilised from 2017 to 2019. Delving deeper into trade dynamics during this period (2014 to 2016) unveils a captivating synchronicity. The decrease in both exports and imports as a percentage of GDP aligns with a conspicuous drop in cocaine seizures. This interplay underscores the intricate relationship between economic conditions, trade patterns, and the dynamics of drug trafficking.

Table A.19: Sub-Saharan Africa Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP.

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**TR (%)**	**Exp (%)**	**Imp (%)**
1996-1998	4	7	0.09	25	32
1999-2001	5	7	0.10	29	35
2002-2004	10	7	0.09	30	34
2005-2007	43	7	0.07	33	39
2008-2010	26	7	0.06	31	41
2011-2013	18	7	0.06	30	41

Table A.19: Sub-Saharan Africa Statistics on UN Commitment, Mean Cocaine Seizures in Kilograms (kgs), GDP *per capita* in Billion USD and Trade Ratio as a % of GDP (continued).

Interval	**Seizures (kgs)**	**GDP(*capita*)**	**TR (%)**	**Exp (%)**	**Imp (%)**
2014-2016	7	7	0.06	28	37
2017-2019	8	7	0.06	30	36

Sub-Saharan Africa's export structure, with a mean of 30% and median of 30% of GDP, also reveals dynamism. The range spanning from 25% to 33% emphasises the region's ability to adapt its export strategies to changing circumstances. Similarly, imports, with a mean of 37% and median of 37% of GDP, exhibit a range of 32% to 41%, highlighting the region's engagement in international trade while maintaining a persistent trade deficit (Asfaw, 2015).

Military Expenditure as a Percentage of GDP

Sub-Saharan Africa's narrative surrounding cocaine seizures and military expenditure in *Table* A.20 reveals resilience and complex inter-connectedness.

Table A.20: Military Expenditure as a % of GDP, Log-Adjusted GDP *per capita* in Billion USD, and Mean Cocaine Seizures in Kilograms (kgs) in Sub-Saharan Africa.

Interval	**Seizures (kgs)**	**GDP(*captia*)**	**Military Expenditure (%)**
1996-1998	4	6	0.03
1999-2001	5	6	0.03
2002-2004	10	7	0.03
2005-2007	43	7	0.02
2008-2010	26	7	0.02
2011-2013	18	7	0.02
2014-2016	7	7	0.02
2017-2019	8	7	0.02

The modest fluctuations in military spending, ranging from 0.02% to 0.03%, showcase a consistent commitment to maintaining security measures. The initial phase (1996 to 1998) with an expenditure of 0.03% suggests a focus on solidifying regional stability, perhaps in response to internal conflicts or emerging security threats. The subsequent slight decrease to 0.03% from 2005 to 2007 may indicate a potential shift in emphasis towards domestic issues or an increased reliance on law enforcement efforts. However, attributing these variations solely to internal factors would be incomplete. External influences including geopolitical shifts or evolving security priorities also play a crucial role in shaping resource allocation decisions.

The relationship between military spending and cocaine seizures adds another layer of complexity to this relationship. While a clear correlation is elusive, the data hints at a nuanced interplay. Periods of relatively higher military expenditure, (e.g. 2005 to 2007), coincide with an increase in seizures (43 kilograms), while others, including 2017 to 2019 (8 kilograms), show significant interdictions despite consistent spending levels. This suggests that factors beyond military might, such as law enforcement effectiveness, regional dynamics like porous borders, and international cooperation, significantly influence seizure patterns.

World Governance Indicators (WGI)

Sub-Saharan Africa governance estimates are presented in Table A.21.

Fluctuations in Corruption Control ("CC") estimates, averaging −0.587, reveal persistent challenges in combating corruption. The concerning decline from 2002 to 2004 (−0.648) and 2011 to 2013 (−0.608) suggests a potential worsening of corruption control, making it a critical area for intervention. Between 2017 and 2019, the estimate, −0.641 further emphasises the need for robust anti-corruption measures, as it could significantly hinder trafficking networks.

Table A.21: World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in Sub-Saharan Africa.

Interval	**Seizures (kgs)**	**(CC)**	**(GE)**	**(RQ)**	**(RL)**	**(VA)**	**(PV)**
1996-1998	4	−0.51	−0.58	−0.56	−0.63	−0.57	−0.50

Table A.21: World Governance Indicator Estimates and Mean Cocaine Seizures in Kilograms (kgs) in Sub-Saharan Africa (continued).

Interval	**Seizures (kgs)**	**(CC)**	**(GE)**	**(RQ)**	**(RL)**	**(VA)**	**(PV)**
1999-2001	5	−0.57	−0.60	−0.51	−0.63	−0.52	−0.53
2002-2004	10	−0.65	−0.70	−0.60	−0.72	−0.56	−0.53
2005-2007	43	−0.55	−0.66	−0.55	−0.61	−0.46	−0.39
2008-2010	26	−0.52	−0.67	−0.50	−0.59	−0.48	−0.40
2011-2013	18	−0.61	−0.69	−0.52	−0.60	−0.51	−0.52
2014-2016	7	−0.65	−0.76	−0.63	−0.63	−0.52	−0.60
2017-2019	8	−0.64	−0.76	−0.65	−0.65	−0.54	−0.64

Government Effectiveness ("GE") exhibits fluctuations, averaging at −0.676. Periods of notable increases, such as 1999 to 2001 reporting −0.604 and 2014 to 2016 reporting −0.675, coincide with increased cocaine seizures, hinting at a potential link between GE and successful interdiction efforts. Conversely, declines in GE, from 2011 to 2013 reporting -0.712, align with lower seizure levels, suggesting challenges in service delivery and policy execution can hamper counter-trafficking initiatives.

Averaging with −0.567, Regulatory Quality ("RQ") indicates room for improvement in regulatory frameworks. The significant decrease from 2011 to 2013 (−0.742) coincides with a rise in seizures, suggesting that strengthening RQ may potentially increase seizure rates. However, further research is needed to understand the nuances of this relationship.

The region faces substantial challenges in establishing the Rule of Law ("RL"), averaging at −0.634 and with a median of −0.630. The continuous decline of RL scores over time suggests a persistent problem. Notable decreases in 2002-2004 (−0.724) and observed small fluctuations from 2005 to 2019 highlight potential weaknesses in law enforcement and access to justice, which could create vulnerabilities for trafficking networks to exploit.

While a declining trend with a mean of −0.519 in Voice and Accountability ("VA"), suggests limitations in civic engagement and government accountability, the relative stability in VA scores since 2005 offers a glimmer of hope. Improvements from 2005 to 2007 (−0.459) and 2008 to 2010 (−0.482) align with increased seizures, hinting at a potential connection between empowered citizens and successful interdiction efforts. However, the subsequent decline from 2017 to 2019 (−0.544) underscores the need for sustained efforts to promote civic participation and hold authorities accountable.

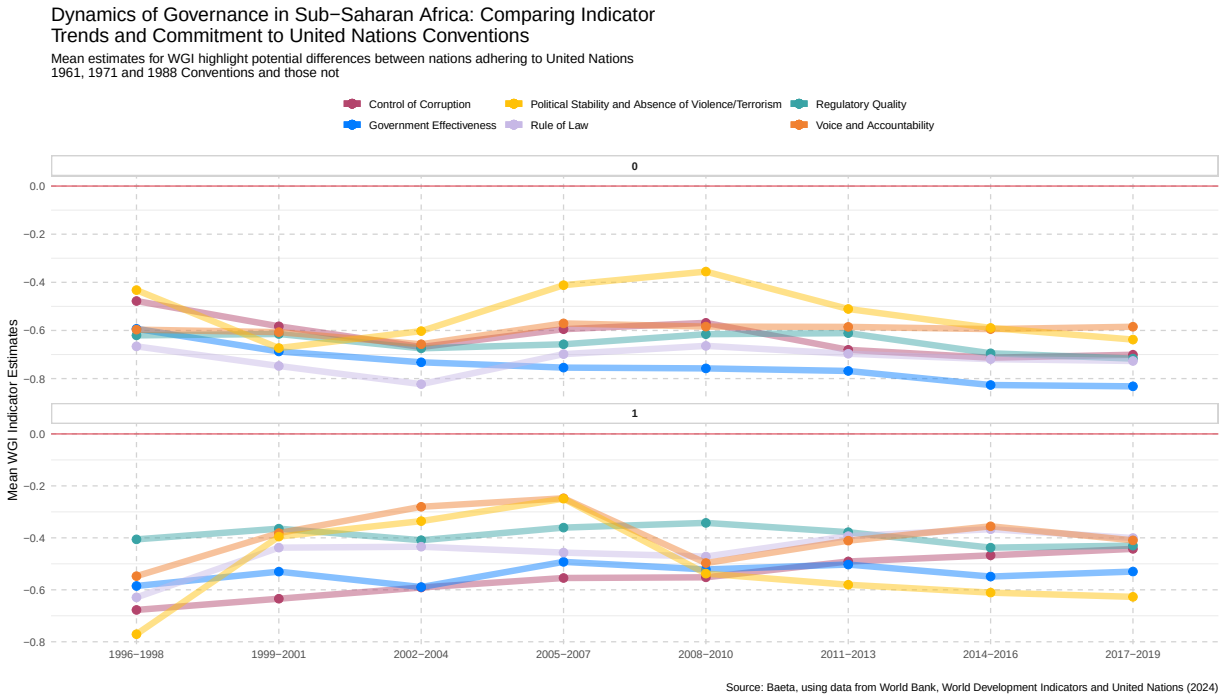


Figure A.7: Line Plot: UN Commitment and WGI Trends in Sub-Saharan Africa.

Fluctuations in Political Stability/Absence of Violence/Terrorism ("PV") estimates, averaging at -0.515 and with a median of -0.529, reveal varying levels of stability within the region. Notably, the spike in instability from 2011 to 2013 (-0.635) coincides with a rise in seizures, suggesting that periods of political unrest and violence might indirectly contribute to increased trafficking activities. Addressing the root causes of instability could potentially reduce susceptibility to the cocaine trade.