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Defining Global Health Diplomacy Taxonomy and Tools:
Brazil's use of South-South Cooperation as Global Health
Diplomacy

A dissertation submitted in partial satisfaction
of the requirements for the degree

Doctor of Philosophy

in

Public Health (Global Health)

by

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Committee in charge:

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2016

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Chair

University of California, San Diego

San Diego State University

2016

DEDICATION

To Garcia Garcia,

You have been very patient with this garden(er).

I love you.

Sa nanay,

Tapos na ako.

Sana nandito ka.

Mahal kita

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LIST OF ACRONYMS

ARV	Antiretroviral [medication]
CPLP	Community of Portuguese Speaking Countries
CRIS	Center for International Relations and Health
ENSP	National School of Public Health
FIOCRUZ	Oswaldo Cruz Foundation
G77	Group of 77 Nations
GHD	Global Health Diplomacy
IMF	International Monetary Fund
IBSA	India, Brazil, South Africa Group
MDG	Millennium Development Goals
OAS	Organization of American States
PAHO	Pan American Health Organization
PALOP	Countries in Africa with Official Language as Portuguese
SDG	Sustainable Development Goals
SSC	South-South Cooperation
SSCH	South-South Cooperation for Health
SUSSC	Special Unit on South South Cooperation
UNAIDS	United Nations AIDS
UNDP	United Nations Development Program
WB	World Bank
WHO	World Health Organization

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Coleman, K.J., Shordon, M., Santos, A.T., Castro, C.L., & Pomichowski, M.E. (2009). Using trash as a proxy measure for the public school classroom nutrition environment. Oral presentation at the 7th annual International Conference on Diet and Physical Activity. June 5-7, Washington, D.C.

Fields of Study

Major Field: Public Health (Global Health)
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ABSTRACT OF THE DISSERTATION

Defining Global Health Diplomacy Taxonomy and Tools:
Brazil's use of South-South Cooperation as Global Health Diplomacy

by

AsherLev Taguba Santos

Doctor of Philosophy in Public Health (Global Health)

University of California, San Diego, 2016
San Diego State University, 2016

Professor Thomas Novotny, Chair

Background: Global health diplomacy (GHD) has the potential to advance foreign policy objectives, but how GHD impacts outcomes remains unclear. Interestingly, Brazil has started to play a larger role in foreign policy via South-South cooperation (SSC), and these activities correspond to the current thinking on GHD modalities. This dissertation will focus on Brazil's SSC activities to understand the impacts of GHD.

Objective: The primary objectives of this dissertation are: to refine the taxonomy of GHD, and to develop a framework that can be used to measure how GHD can impact trade (e.g. trade balance) and health outcomes (e.g. antiretroviral [ARV] coverage).

Methods: Paper 1: We reviewed GHD, SSC and Brazil health cooperation using peer-reviewed journal articles, government documents, white papers, and non-governmental reports (2001- 2015) to refine the taxonomy of GHD and align GHD and SSC activities. Paper 2: We evaluated the impact of GHD on trade balance by comparing available data from Countries of Africa with Portuguese as their Official Language (PALOPs) and select non-PALOPs using non-parametric methods. Paper 3: We evaluated the impact of GHD on ARV coverage by comparing available data from PALOPs and select non-PALOPs using non-parametric methods, similar to Paper 2.

Results: Paper 1 refines the definition of GHD and determines how Brazil's SSC represents an expansion of GHD activities. Paper 2 identified that Brazil's SSC with PALOP countries is associated with higher trade balance than with select non-PALOP countries. Paper 3 found that although Brazil's SSC had an impact on trade balance, it did not translate into higher ARV coverage in the PALOP countries, compared to select non-PALOP countries.

Conclusion: This dissertation defined how Brazil's SSC is a form of GHD. These investigations also determined that Brazil's GHD activities have led to a greater trade balance among PALOP countries but has not led to greater ARV coverage, despite this health metric being a stated goal among PALOP countries. Overall, this dissertation aligns GHD and SSC activities and goals, thus expanding the taxonomy of GHD activities and strengthens the empirical methodology that can be used to evaluate impacts of GHD.

Chapter 1: Overview and Background

Overview

The current landscape of global health includes a wide variety of entities working to achieve health objectives. These entities could be nation states such as Brazil, India or China engaging in bilateral projects for health. Other entities involved in global health are multilateral organizations, such as the World Health Organization or nongovernmental organizations like the Bill and Melinda Gates Foundation. How these different entities coordinate and negotiate their efforts toward achieving health objectives is where Global Health Diplomacy plays a role.

Global health diplomacy (GHD) is a burgeoning field of conducting international negotiations that shapes the policy environment for health. This type of diplomacy uses expertise from international affairs, law, economics, and public health to create a relationship between health and foreign policy. Representatives of states currently use many of the tools of GHD, even though the field of GHD is not fully defined and continues to evolve.

In the first paper, this dissertation sought to more clearly refine definitions, objectives and taxonomy of GHD. By providing a comprehensive review of the literature and describing the theoretical framework of GHD activities, this paper demonstrated how current South-South Cooperation (SSC) is a form of GHD, and could be model to understand the impacts GHD can have. In particular, this study focused on Brazil's use of SSC as a function of its GHD to negotiate foreign policy. Building on the refinements provided by the first paper, this dissertation next sought to determine how GHD in the form

of SSC can impact non-health-related and health-related activities. To this end, this dissertation created an analytical framework using a matched case-control longitudinal study design that was able to compare the impact of Brazil's SSC as a function of GHD. Specifically, the framework compared African countries matched to population and geography, which did and did not receive SSC from Brazil. Using this framework and available data, the second paper determined the impact of Brazil's SSC on non-health related activities (i.e. per capita trade balance). The third paper used the study design and analytical framework to examine health-related outcomes of Brazil's SSC (i.e. antiretroviral coverage) activities between countries engaged in SSC. Overall, these investigations found that Brazil's SSC had a measurable impact on per capita trade balance but no measurable impact could be observed with coverage of ARV for HIV-infected individuals. The third paper further explores why such health-related impacts may be difficult to observe even if an impact was achieved via GHD. Finally, this dissertation explored the current political and economic turmoil in Brazil and what implications it may have on Brazil's ability to provide productive GHD.

Background

Global Health Diplomacy (GHD)

Currently, Global Health Diplomacy is defined as a) “multi-level, multi-factor negotiation processes that shape and manage the global policy environment” [1]; b) “winning hearts and minds of people in poor countries by exporting medical care, expertise and personnel to help those who need it most” [2], and; c) “policy shaping processes through which state, non-state and other institutional actors negotiate responses to health challenges, or utilize health concepts or mechanisms in policy-shaping and negotiation strategies to achieve other political economic objectives” [3]. Overall, GHD is the use of policy to address health issues or policy that uses health as a means to address other non-health concerns. A form of GHD is a formal cooperation between developing countries known as SSC.

South-South Cooperation (SSC)

Development assistance has been traditionally thought of as ‘more developed’ countries helping ‘lesser-developed’ ones. However, over the past several decades there has been more effort by developing countries to help each other, including the formal cooperation known as South-South Cooperation (SSC). In general, SSC is defined as countries of the global south working together for mutual benefit, growth and development (Figure 1.1).

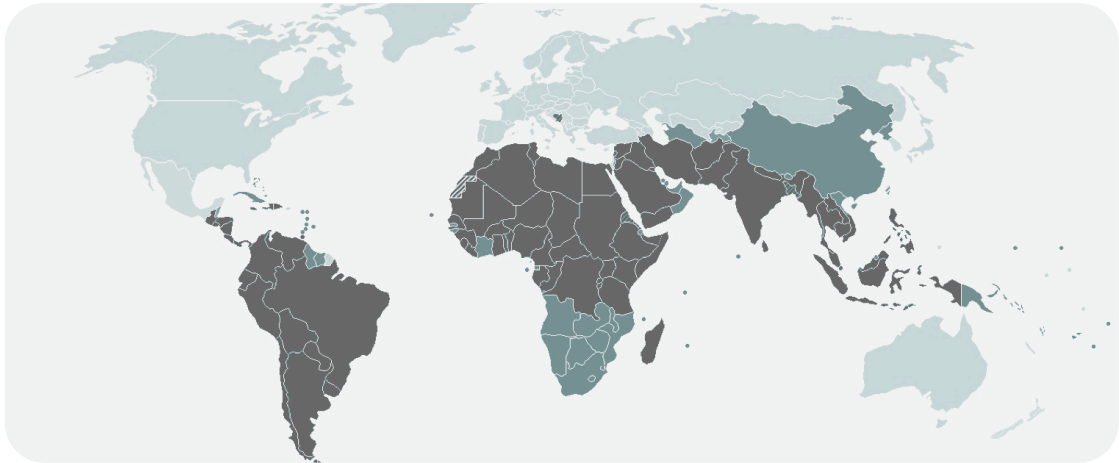


Figure 1.1: Map of G77 Nations of Nations of the Global South

This mode of cooperation between nations is typically expressed as trade agreements, development assistance, and technical cooperation covering a wide range of sectors. In addition, SSC may be a means of securing resources or market access for the emerging economies as part of donor country's development agenda. For instance, the growth of emerging economies like Brazil, China, and India are able to provide more resources to drive more cooperation between developing countries and opening up local markets and resources to these emerging economies. Interestingly, the current growth in SSC activities is in part due to economic decline or stagnation of developed countries, since the financial crisis in 2008 onward.

South-South Cooperation and Health

Since the 1960s the SSC type of global cooperation has grown and coalesced into political relationships, such as the G77 and international

institutions such as the United Nations Development Program – Special Unit for SSC (UNDP-SUSSC). Although SSC has traditionally focused on economic growth as a means to achieve development goals, health has become a priority. Previously, health has been secondary to national security, trade, and finance priorities but it has risen in importance in foreign policy. In an article entitled, “The Copernican Shift”, Alcazar argues that health is now at the center of all foreign policy priorities, and that without health, “a secure and prosperous population is not possible”. Thus, rather than health being used to support foreign policy goals as has been done in the past, health is now at the center of foreign policy processes. The nations of the global South first came together in 1955 to formalize cooperation to achieve objectives seeking to increase trade and economic development among themselves. Subsequent meetings of these nations, or South Summits, have affirmed their commitment to growing economic relationships. Included in these agreements are commitments to achieve the Millennium Development Goals, which focus attention on health specific activities such as to combat HIV, TB and Malaria or other social determinants of health such as education, and poverty eradication.

Theoretical Frameworks

This dissertation is based on the theoretical frameworks in social determinants of health, macroeconomics, and globalization. Since SSC has specific activities in each of these areas, this dissertation will investigate how

each of these aspects may impact population health in the setting of SSC in general, and Brazil SSC in particular. The following will describe how each framework can be related to the objectives of SSC and have an impact on health.

Social Determinants of Health

The social determinants of health form a theoretical framework that focuses on how inputs to health or conditions in the environments in which people are born, live, learn, work, play, worship affect a wide range of health, functioning, and quality-of-life outcomes and risks (Figure 1.2). In particular, resources that enhance quality of life can have a significant influence on population health outcomes. Examples of these resources include safe and affordable housing, access to education, public safety, availability of healthy foods, health services, and environments free of life-threatening toxins [4].

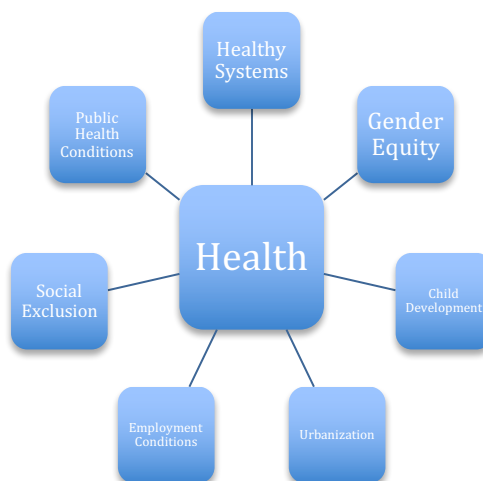


Figure 1.2: Social Determinants of Health

The initial focus of SSC was on economic development through trade, investment and accessing international financing mechanisms at international development banks, such as the World Bank (WB), Asia Development Bank (ABD) or the New Development Bank founded by Brazil, Russia, India, China and South Africa. The theory concerning health is that increased economic development builds wealth, which ameliorates other social problems like access to clean water, hunger, stable housing, access to medicines, etc. In this way, SSC can improve health outcomes through economic development. What is not clear is (i) the extent to which SSC is utilized to achieve health outcomes; (ii) the degree to which different types of SSC (e.g. cash transfers, infrastructure development, technical assistance) impact health, and; (iii) how the focus of SSC (e.g. education, trade, training) improves health outcomes in low to middle income countries (LMICs).

Macroeconomics and Health

Macroeconomics is how the structure, behavior, decision-making and performance of an economy are viewed on the whole. As such, macroeconomics uses aggregated indicators, like gross domestic product (GDP), trade balance, national income, price indices, and these factors can be used to understand how different sectors of the economy are related, including how two national economies are related or how the global economy is related. Overall, there is a reciprocal relationship between economic development and health. The WHO Report by the Commission on Macroeconomics and Health

[5] emphasizes how health impacts the ability of a country to accrue wealth and reduce poverty through a variety of factors, like national policies, human capital, technology and enterprise capital (Figure 1.3). The report primarily focused on LMICs, describing how global health problems can negatively impact economic development at the national level. Looking at the household level, disease can also significantly impact the wage earning capability of individuals, lowering their economic status even further.

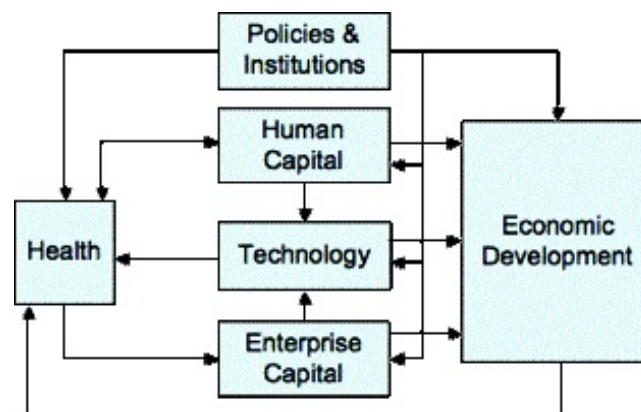


Figure 1.3: Macroeconomics and Health

Since the initial focus of SSC was on economic development, macroeconomic tools may be a way to better quantify how SSC impacts both health-related and non-health-related outcomes. In particular, macroeconomic impacts can be measured through aggregated indicators, like GDP or trade balance between SSC countries. These are common measures that are readily available for other purposes but perhaps can be used as a way to quantify SSC impacts.

Globalization and Health

The interchange of world views, ideas, products and culture results in 'globalization'. Ever increasing global connectivity means that more and more people who live far apart can have increased access to various technological, cultural and ideological advances. Such globalization of institutional, economic, socio-cultural and environmental factors impact a variety of health-related and non-health related outcomes (Figure 1.4), but isolating the effects of globalization in each of these areas can be difficult since they are inter-related and often occur congruently. For example, the advent and use of Facebook during the 'Arab Spring' uprising was congruent with the time that many of the dictators of these countries had waning political control [6].

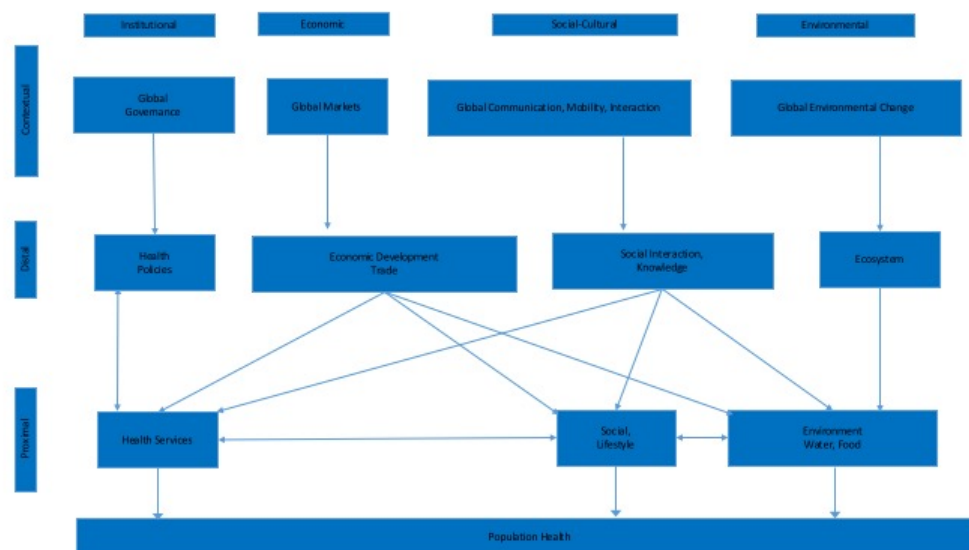


Figure 1.4: Globalization and Health Framework

Assessing the impact SSC has on health is often difficult because obtaining data across all countries engaged in SSC in a consistent manner is

difficult. It is also problematic to assess how activities that are provided from one country to another are impacted by broader global programs provided simultaneously. As such, isolating SSC effects on health can be impacted by globalization. However, the globalization and health literature does provide a theoretical framework that supports the idea that SSC, itself a globalizing force, that may influence health. In particular, Huynen et al. outline how global activities influence a nation's health [7], and propose a model that highlights the relationships of a broad range of determinants that can influence health at the population level. Overall, the framework proposed by Huynen et al. provides pathways of influence that can be analyzed and adapted to guide research in understanding the impact of SSC [7].

Overview of Papers

The overarching theme of this three-paper dissertation is deepening the understanding of GHD characteristics and developing methods to determine the impact GHD activities may have. The first paper reviewed GHD and aligned the characteristics of SSC with GHD, and illustrated these characteristics using Brazil's SSC. For papers two and three, this dissertation collected appropriate data, designed a case-control study to isolate outcomes, and analyzed the data using appropriate methods. Since data needed to associate individual outcomes with global level activities is incomplete, this dissertation studied groups of countries that are engaged with Brazil in cooperative projects. Specifically, the dissertation isolated the impact of

Brazil's SSC on trade balance (non-health-related outcome) and ARV coverage (health-related outcome) in Africa by comparing the Community of Portuguese Speaking Countries (CPLP) versus those that are not engaged with Brazil via cooperative projects (non-CPLP). This study design provided a framework that allowed an assessment of how GHD impacted non-health-related and health-related outcomes in these African countries, as well as how these health projects may influence other aspects of Brazil's relationships with these countries.

Paper 1: Brazil's use of South-South Cooperation (SSC) as Global Health Diplomacy (GHD)

Objective 1: Align characteristics of GHD and SSC

Objective 2: Catalogue Brazil GHD activities

Paper 2: GHD and Mutual Benefit of SSC

Objective 1: Test the association between trade balance and Community of Portuguese Speaking Countries (CPLP)

Objective 2: Test the differences in trade balance between CPLP and non-CPLP in Africa

Paper 3: Connecting GHD to Health Outcomes: Comparison of Mean differences in HIV antiretroviral (ARV) medication coverage.

Objective 1: Test the association between ARV coverage and CPLP inclusion

Objective 2: To test the differences of mean ARV coverage between CPLP and non-CPLP countries

Overall Contribution to the Field

The field of GHD remains in its infancy without clear and consistent definitions, ideal, or goals. The set of papers that comprise this dissertation clarifies the definition of GHD and develops an analytical framework that can measure the impacts of GHD in relation to Brazil's SSC. Paper 1 provides a complete literature review and deconstructs GHD and SSC definitions and characteristics to clearly align GHD and SSC activities. Paper 2 uses the developed framework to evaluate how Brazil's SSC impacts trade balance with CPLP and non-CPLP countries in Africa. Paper 3 uses the developed framework to evaluate how Brazil's SSC impacts ARV coverage in CPLP and non-CPLP countries in Africa. By using Brazil's SSC as a testable model of GHD, this dissertation addresses the GHD research agenda gaps by defining GHD and developing an analytical framework that can be used to measure the impact of GHD.

Chapter 2: Brazil's use of South-South Cooperation as Global Health
Diplomacy

Paper 1: Brazil's use of South-South Cooperation as Global Health Diplomacy

Abstract

Global Health Diplomacy (GHD) is a concept that is rooted where health and foreign policy intersect. Case studies show that GHD can be expressed in different forms- from negotiations to cooperative aid projects. Definitions, ideals and goals of GHD remain ambiguous in the literature and in practice. This study investigated how South-South Cooperation (SSC) aligns with GHD, and how it can be used as a model to understand the impacts of GHD. Overall, this paper reviews the relevant literature and refines the taxonomy of GHD by incorporating concepts of SSC using Brazil as an example. The Brazil example is interesting both due to its history of diplomacy and health, as well as its uncertain future role in diplomacy and health.

Key Words: South-South Cooperation, Global Health Diplomacy, Brazil, CPLP, PALOP, globalization

Introduction

Global health diplomacy (GHD) can take various forms. Guided by open questions outlined by Smith et al. [8] and Novotny & Kevany [9] (Table 2.1), the methodology of this paper is designed to clarify how GHD is defined and is being used, especially among countries participating in South-South Cooperation (SSC). By considering Brazil's use of SSC as a function of GHD,

this paper will review GHD modalities to further the taxonomy of GHD and it will place these activities within a globalization and health context to understand how GHD activities are associated with population health outcomes.

Global Health Diplomacy

According to Fidler, GHD is “policy shaping processes through which state, non-state and other institutional actors negotiate responses to health challenges, or utilize health concepts or mechanisms in policy-shaping and negotiation strategies to achieve other political economic objectives.” [3]

These processes and influences drive or are driven by foreign policy, and Alcazar argues that health is a central component to foreign policy [10].

Together with Buss, Alcazar makes the case that foreign policy is shaped to address health issues, which provides space for GHD [11]. Feldbaum asserts that it is because of health’s connection to core foreign policy objectives (such as security and economic concerns) that health has become a priority, thus defining the role of GHD as a strategic policy tool [12].

Whatever the purpose for engaging in GHD, current GHD definitions indicate that motivation takes different forms, such as negotiation, cooperation, infrastructure building, training, etc. Along these lines, Kickbusch, Drager and Lee conclude that GHD includes the negotiation of health in the international arenas using instruments and skills of negotiation and diplomacy to impact population health. In general, however, GHD may seem to be more tied to a

nation's own foreign policy objectives, which may include "winning hearts and minds" of another country's populace to generate a positive perception of the donor country [13, 14].

Table 2.1: GHD definitions as presented by Novotny & Kevany adapted from Lee & Smith 2011

- *A political change activity that meets the dual goals of improving global health while maintaining and strengthening international relations abroad, particularly in conflict areas and resource poor environments.*
- *Multi-level, multi-factor negotiation processes that shape and manage the global policy environment.*
- *Winning hearts and minds of people in poor countries by exporting medical care, expertise and personnel to help those who need it most.*
- *Health diplomacy is the chosen method of interaction between stakeholders engaged in public health and politics for the purpose of representation, cooperation and resolving disputes, improving health systems, and securing the right to health for vulnerable populations.*
- *Health diplomacy is a means of self-preservation in an increasingly interconnected global community. It also offers a much needed opportunity for building bridges and synergize efforts between the governments and NGO to improve public health.*

Overall, GHD can occur in a variety of contexts requiring a variety of diplomatic instruments. Bertorelli, et al., offer a typology of instruments that can be used in the process of GHD [15]. As described by the authors, instruments available to GHD mirror that of global health governance, and their proposed typology fits these instruments into general categories according to type of interaction- advisory, collaborative, operative and normative. Advisory instruments help identify necessary evidence to address

health problems, but they do not describe procedures with which to translate evidence into action. Collaborative action brings together different stakeholders from different levels to address health issues. Operative groups plan and prescribe specific actions to address health needs. Normative instruments define duties, responsibilities, rights and obligations according to existing legal structures. These types of interactions can vary in degree of formality, soft law to hard law, with the most formal being hard law instruments, such as treaties or consensus agreements. Some of these interactions are binding or hard law, while others are non-binding or soft law [15] (Table 2.2). This paper will use the basic GHD characteristics of this framework to further develop the taxonomy of activities considered as GHD.

Table 2.2: GHD Modalities by Bertorelli et al.

	<i>Soft Law / Least Formal</i>	→	<i>Hard Law / Most Formal</i>
<u>Advisory</u>	Technical Advisory Group	Expert Advisory Panels	Commissions
<u>Operative</u>	Guidelines	Endorsed Strategies	Negotiated Strategies
<u>Collaborative</u>	Structured Dialogue	Networks	Public-Private Partnerships
<u>Normative</u>	Resolutions	Codes / Regulations	Conventions, Treaties, Agreements

South-South Cooperation

South-South Cooperation (SSC) is a cooperation framework among countries of the global south. Beginning with the *Bandung Conference* in 1955

[16] Southern nations have agreed to work together to achieve economic growth and development goals in the spirit of solidarity, respect of national sovereignty, non-conditionality, and mutual benefit [17] with subsequent meetings of southern nations reaffirming this [1, 18-21]. This Southern movement grew out of feelings of alienation in the bi-polar, global Cold War environment, and from feeling marginalized from the benefits of economic development and the global financial system. The *Group of 77 Nations (G77)* [22] grew out of this solidarity and set up mechanisms to help grow trade and learning among southern nations like the *Global System of Trade Preference* and the *Consortium on Science Technology and Innovation for the South* [23-25].

Over this time, the role of health in development became better recognized, and the HIV/AIDS epidemic starting in the 1980s highlighted how health and health resources can impact a population and its economic development. Then in 2000 the United Nations General Assembly declared the Millennium Development Goals (MDGs) [26, 27], which addressed both health and the socioeconomic determinants of health. As development goals, they reflected the importance that health has to the development process. Importantly for SSC, the MDGs, and now the Sustainable Development Goals (SDGs), provide common targets, which can help harmonize and focus SSC development efforts [28, 29].

Harmonized behind common goals, the majority of which are health related, SSC efforts for health (SSCH) can change the foreign policy

environment [30], and Buss and Ferreira have outlined SSCH objectives (Table 2.3) [31]. In this work, the authors suggest that by engaging in SSCH, the process of aid cooperation can change health-related outcomes. Additionally, these objectives put an emphasis on outcomes at the systemic level of institutions and infrastructure. Utilizing SSCH in this way changes how individual entities provide SSCH and the thinking of how best to offer SSCH [32].

Table 2.3: SSC in Health Objectives

<ul style="list-style-type: none"> • <i>A move away from vertical (disease-focused interventions) to the comprehensive development and thus strengthening of the health system.</i>
<ul style="list-style-type: none"> • <i>An emphasis on long-term instead of short-term needs, i.e. by strengthening key institutions to acquire true leadership, promoting the development of a future-oriented agenda and balancing specific actions with the generation of knowledge.</i>
<ul style="list-style-type: none"> • <i>A move away from programs based on a single global orientation towards strategic planning centered on the reality of the “recipient” country by broadly incorporating the social determinants of health.</i>
<ul style="list-style-type: none"> • <i>A prioritization of population-based (public health-oriented) programs and activities strictly focused on individuals.</i>

South-South Cooperation and Emerging Economies

Recently, more interest has been paid to the transformative potential of SSC because of the economic growth of countries like Brazil, Russia, China, India and South Africa (BRICS) [33]. The growth of these middle-income countries has provided more impetus for SSC engagement. Individually, each has their own preferred mode of engaging countries in the South. Brazil’s

engagement is typically characterized as cooperative in nature focusing on health and socio-economic determinants of health. China has been characterized as more extractive, providing large infrastructure projects throughout Africa in order to access resources throughout the continent [34]. However, Brazil is also characterized as engaging nations in this way for its own self-interest [35, 36]. As a group, the BRICS have provided more emphasis on the needs of the South as well as what the BRICS can do for the South [33, 37-41]. The BRICS sponsor an annual conference, as well as having just inaugurated the New Development Bank, also known as “The BRICS Development Bank” [42]. The interest in the BRICS nations’ role in global health and development has led to another cooperation modality, Trilateral Cooperation. This brings together a developed nation partner, a developing recipient country, and includes a middle-income country as a facilitator country. This leverages resources from a Northern partner and the recent development experience of the facilitator country for the benefit of the recipient [43-45].

South-South Cooperation and Global Health Diplomacy

We have presented both GHD and SSC in brief, and will next connect the SSCH objectives to GHD and SSC modalities. Sinha outlines what forms SSC may take [46]. These general modalities are financial, knowledge sharing, training, technology transfer and in-kind contributions. How, for what sector, and to what degree these different modalities are implemented vary by

country [47]. The economic growth of the BRICS saw these countries put more resources towards SSC cooperation, including health-specific engagement [34, 47]. The non-monetary modes of cooperation in Shinha's model are considered Technical Cooperation for Developing Countries (TCDC) [48]. Although, these SSC TCDC modalities align with GHD diplomacy forms, how these different instruments are used for what objectives can vary. As an example, an *Operative* form of GHD might be to train physicians, and contributing to the number of available health professionals helps to strengthen the health system. Another example, would be *Technology Transfer*, where the technology used to manufacture generic drugs is transferred, which would then increase availability of medications in the country.

Table 2.4: GHD and SSC Modalities with Objectives

<i>GHD</i>	<i>SSC</i>	<i>Objectives</i>
<u>Advisory</u>	Knowledge Sharing	<ul style="list-style-type: none"> ➤ Health System Strengthening ➤ Long-term institution strengthening ➤ Recipient based ➤ Population Based
<u>Operative</u>	Training	
<u>Collaborative</u>	Technology Transfer	
<u>Normative</u>	In-Kind Contributions	

Theoretical Frameworks for Global Health Diplomacy

There are existing frameworks by which we can understand GHD, but none that connect to health impacts. Frameworks by Woodward, Labonte or Fidler are able to illustrate where health is in relation to other priorities or other

actors, but does not focus on how these global interactions translate into health outcomes [49-51]. Blouin, et al., conducted a systematic review of the literature in an effort to understand what conceptual frameworks informed these authors, and to help shape a conceptual framework for GHD [52]. Their review found that much of the literature on GHD does not rely on a singular framework; various disciplines, such as political science, foreign policy, law, or political economy, use their own frameworks to explain how GHD is used, but Blouin et al. note that, “These authors, however, do not go further to propose a theoretical framework to explain outcomes of global health diplomacy.”[52].

As proposed by Huynen, et al., a globalization and health framework may be a better way to conceptualize how to connect GHD to health outcomes. [7] Huynen, et al., shape a theoretical framework of how health is impacted by the increased inter-connectivity between people and places across the globe. This global activity happens along 12 main pathways of influence that impact population health. These pathways operate at proximal, distal and contextual levels within broad institutional, economic, social-cultural and environmental categories (Figure 2.1). The authors incorporate institutional and policy factors, as well as various determinants of health in their framework [7], and these pathways of activity can be incorporated into the modalities model adapted from Bertorelli [15]. Generally, one can think of a trade treaty that increases economic activity and stability, while more specifically, trade and trade agreements can impact access to medication; thus, providing an impact on health.

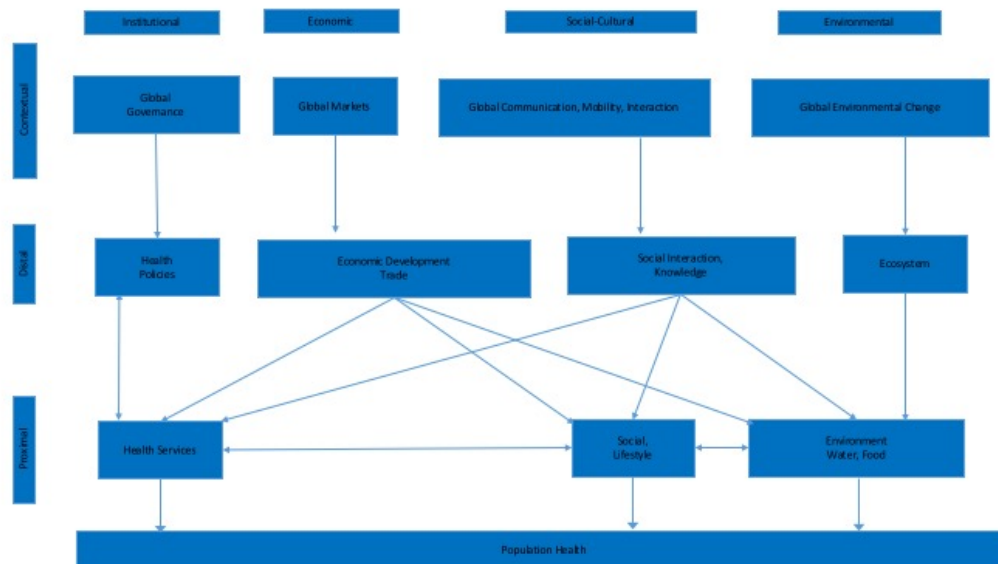


Figure 2.1: Globalization and Health Framework

Brazil

Brazil is a geographically large country, whose economy is ranked 7th largest in the world with a GDP of US\$ 2.4 trillion [53]. The country's population of 206 million in 2014 [53] is diverse with ethnic heritage that includes indigenous peoples, European, African, and Japanese [54]. Brazil is not the only developing country engaging in SSC, but Brazil's internal motivations to work toward health development and equity, its use of "structural cooperation for health", and its history of engaging international cooperation for health make it of particular interest when evaluating how GHD can impact health outcomes.

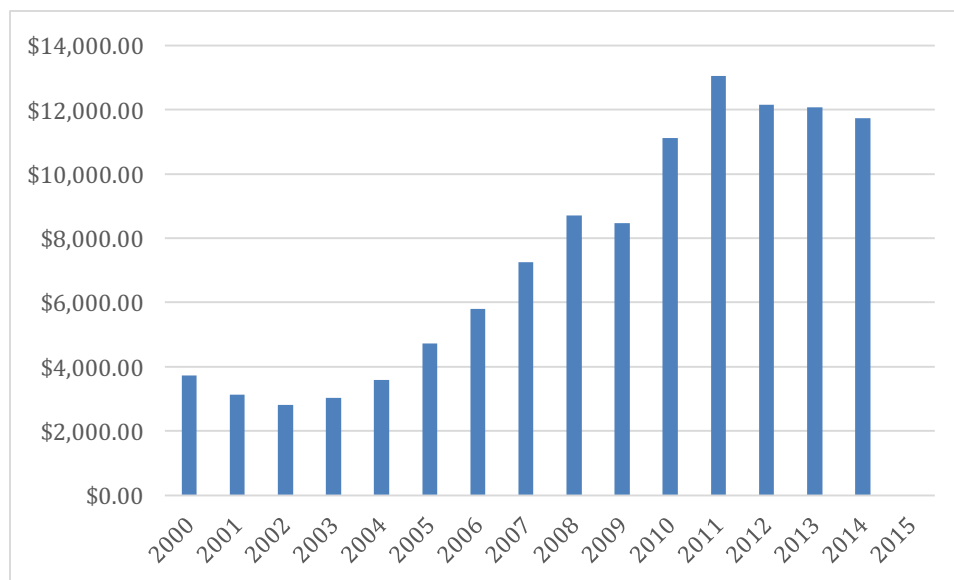


Figure 2.2: Brazil GDP per Capita in Current US Dollars (\$)

Motivation

The 1988 Brazilian Constitution codifies health as a human right, and that the government is responsible to provide resources to maintain that right for its citizens [55]. This requirement has led to the creation of the Universal Health System (SUS) under President Lula [56]. After a history of income, health and other socioeconomic disparities, these were popular reforms. This domestic commitment to address disparities is also reflected outward in their bilateral and multilateral agreements [56-59].

Although not part of the official reasons to pursue a health cooperation agenda, these cooperative activities may be in Brazil's own self-interest. Developing healthy populations in partner countries allows the relationship between the two countries to be more productive- helping both achieve economic development goals. Additionally, Brazil may use this cooperation to

cultivate support for its initiatives in different international settings. In particular, soft power influence is also part of GHD, and it serves as a force to shape the normative process of health at the World Health Organization (WHO), for example. Another example is how it can be used to address issues at World Trade Organization (WTO) regarding access to pharmaceutical products [60, 61].

Structural Cooperation

Structural cooperation has become a part of cooperative declarations at meetings of organs of the United Nations in Paris, Accra, and Busan [29, 62, 63]. It is cooperation that requires a partnership with recipient countries to identify and implement appropriate solutions. Structural cooperation for health promotes advanced education in health related professions and utilizes national actors of the recipient country to implement programs. Structural cooperation programs also promote initiatives to form the networks that permit horizontal exchange between partners [64-67]. As this type of cooperation takes time to implement as well as to see any outcomes, the impacts of the structural cooperation approach to SSC may not yet be fully realized [64, 68].

Brazil's particular perspective of SSC as a means to achieve structural cooperation objectives has the potential to influence expectations of how assistance is provided. Brazil has actively engaged its cooperation partners to strengthen infrastructure and capacity. Information sharing information through the development of electronic networks; developing schools of public health

for the training of public health professionals; and developing capacity to manufacture pharmaceutical products take more time than administering vaccines. Education and large capital projects lengthen the timeframe during which one expects results. The community of Southern Nations has already adopted the use of structural cooperation for health as one of the preferred means of development engagement among countries of the South. This may continue to shift the focus on longer term goals instead of single-focus projects and interventions.

History of Brazil SSC

The history of Brazil's use of SSC goes back to the beginnings of SSC at the 1955 Bandung Conference; however, its focus was not on bilateral relationships or bilateral assistance, but rather focused on building communities and coalitions in the international environment to meet health and development objectives. The next section will highlight Brazil's multilateral as well as bilateral engagement activities.

Negotiations

Brazil SSC has a history of international involvement both in and out of the health sector. Nations of the South have called for reform of many international governance organizations, such as the United Nations Security Council. Brazil along with India and South Africa (IBSA) has advocated expanding the number of permanent council seats. The reasons to expand the number of permanent seats would be to allow space for developing country

representation and to include representation for other regions of the globe [69, 70]. If the IBSA countries were to gain seats on the UN Security Council, almost 42% of the world's population would be represented. [42]

Another example of how Brazil has sought to negotiate for change within international cooperative bodies is when Brazil brought their case to the WTO against the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which requires minimum standards for intellectual property standards across member nations, including the prohibition of producing generic drugs before the patent on such drugs expired. Due to rising HIV prevalence rates in Brazil, and the need to supply medication to its citizens, Brazil declared a public health emergency. In order to combat this rise, it sought an exemption from the TRIPS agreement to produce cheaper, generic medication for its population. The exemption was granted. Although in this case Brazil used this to negotiate lower prices from the pharmaceutical companies, it raised the issue of access to essential medicines in times of emergency. Thus in 2005, a compromise was brokered resulting in a permanent amendment to the TRIPS agreement. This allowed countries to produce generic medication for their own use, but also to export the generic of patented medication to countries with insufficient or no manufacturing capacity in the pharmaceutical sector [71-76].

Brazil also has been an active leader among the nations of the South advocating for World Bank (WB) reform. The WB funds large, infrastructure projects that can have significant impacts on health and access to health. The

voting structure within the WB favors the wealthier, developed nations of the North, which may mean the wishes and preferences of recipient nations are overlooked [77-79]. Brazil and the other BRICS nations have moved to circumvent the WB by creating an alternative funding institution, the New Development Bank (NDB), also known as “The BRICS Development Bank”. After being approved and ratified, the NDB headquarters recently opened in Shanghai March 2016. The NDB currently has US \$50bn in capital and runs a system of one country, one vote with no veto power [42]. Furthermore, Brazil was instrumental to the adoption of the Framework Convention on Tobacco Control (FCTC) [80] in 2003 that sets measures of what signatories must do to reduce the estimated 5 million deaths attributed to tobacco. Through negotiations, Brazilians were appointed to key positions by the WHO to accomplish the task, and although Brazil is a leading tobacco producer, high visibility in the fight against tobacco contributed to the legitimacy of the Brazil FCTC leadership [81].

Multilateral Engagement

Working with a group of nations toward a common goal has historically been a strength of Brazil’s diplomatic activities. Its sponsorship of initiatives and resolutions in various international fora is depicted in Figure 2.4. Although there has been some variation in Brazil’s multilateral engagement, the reported number of resolutions and initiatives that Brazil has signed has been relatively stable over the past several years. It has not been until its recent

economic growth has it been able to increase its bilateral portfolio. For the most part, these cooperative projects focus on system development, and Brazil has used its influence to build collaborative networks to address a variety of health issues. Examples of this network building are the Community of Portuguese Language Countries (CPLP), Institutes of South American Governments in Health (ISAGS), Network of National Institutes of Health (RINS), International Network of Technical Education in Health (RETS), and the International Network of Human Milk Banks [82]. All of these networks could be considered as examples of GHD.

The CPLP officially began in 1996 [83]. The member countries range in size and population; they are culturally diverse and geographically disparate.

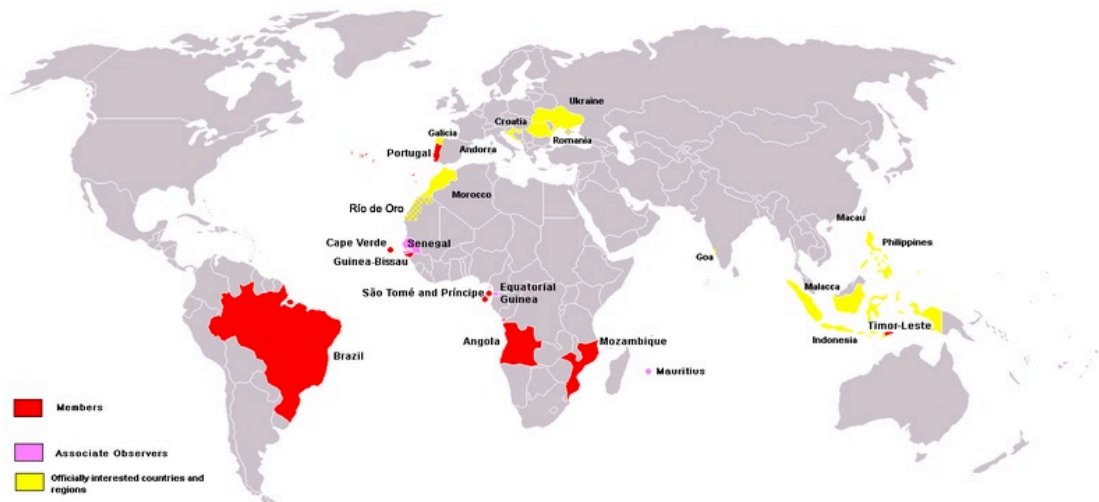


Figure 2.3: Map of CPLP Countries and Observers [84]

However, they have come together to strengthen their common cultural-linguistic heritage that makes these countries unique. In their cooperation, they have prioritized education and health. In particular, the Strategic Health

Cooperation Plan of 2009-2012 (PECS) stated “For health specific issues, the CPLP has agreements among its members on HIV/AIDS, malaria, illegal drug use, and temporary medical visas.” [85, 86] The agreements made for health via PECS was continued in the next iteration of the plan 2012-2015, but continued leadership by Brazil may be in question due to current economic and political instability.

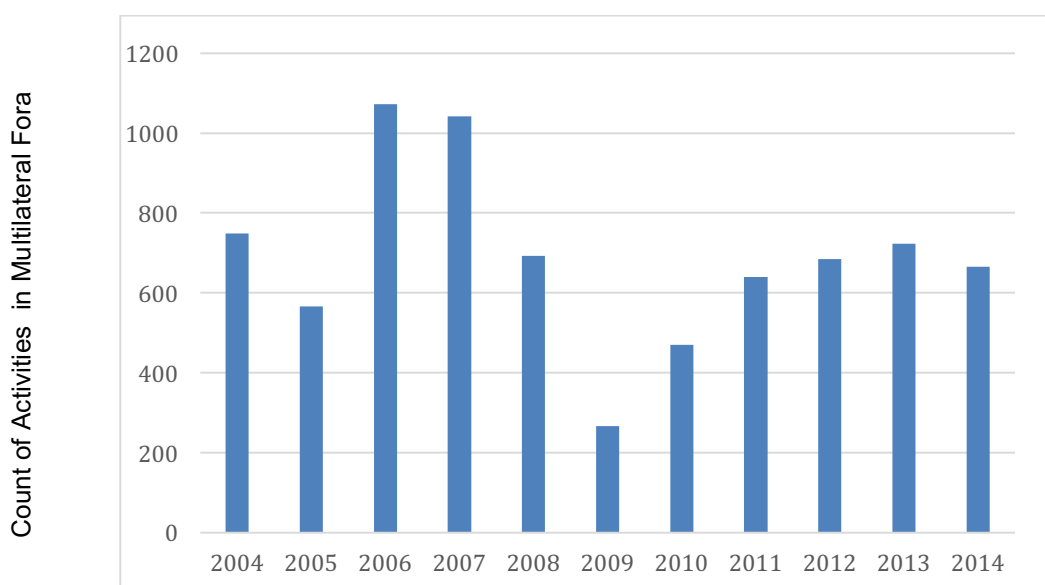


Figure 2.4: Brazil Multilateral Engagement [87]

Bilateral Agreements

The Brazilian government has cooperative agreements with many nations throughout the globe. These cooperative agreements are between nations in South America, but also in Africa and Asia as well. Although there is not a singular strategy, the primary motivation of health as a right, and its commitment to advancing its SSC goals, provide us with examples of how

Brazil conducts cooperative projects. This section will provide an overview of Brazil's SSC portfolio and what portion of its projects is health related.

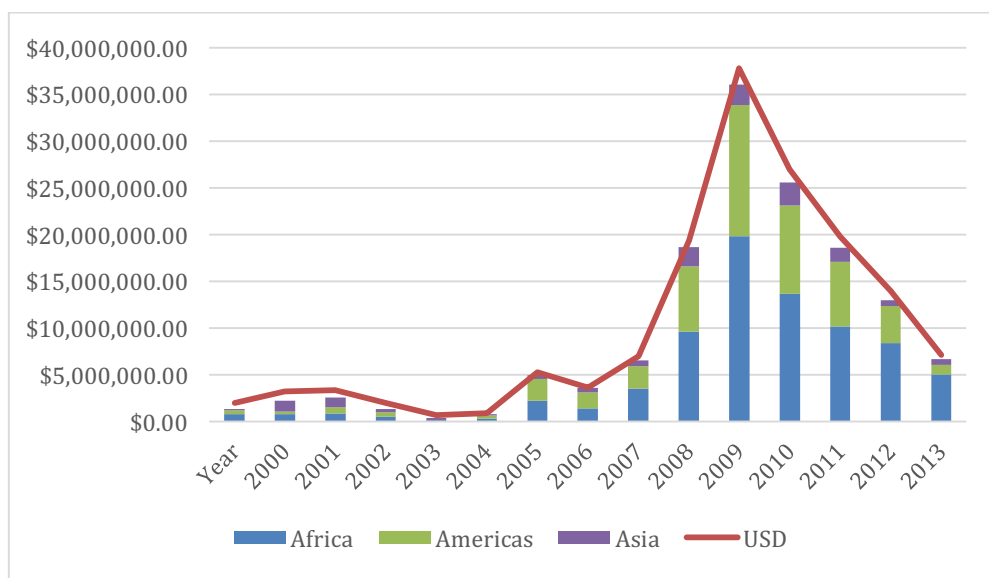


Figure 2.5: ABC Spending per Region in 2013

Figure 2.4 illustrates the amount of US\$ spent over time in main regions of the world. The actual count of individual projects conducted in the different geographical regions is listed in Table 2.5. The diagram adapted from Agência Brasileira de Cooperação (ABC), the Brazilian Cooperation Agency, information indicates that the number of SSC projects increased from less than 100 projects in 2004 to 783 projects at its peak in 2013. These projects range in type of sector [87],

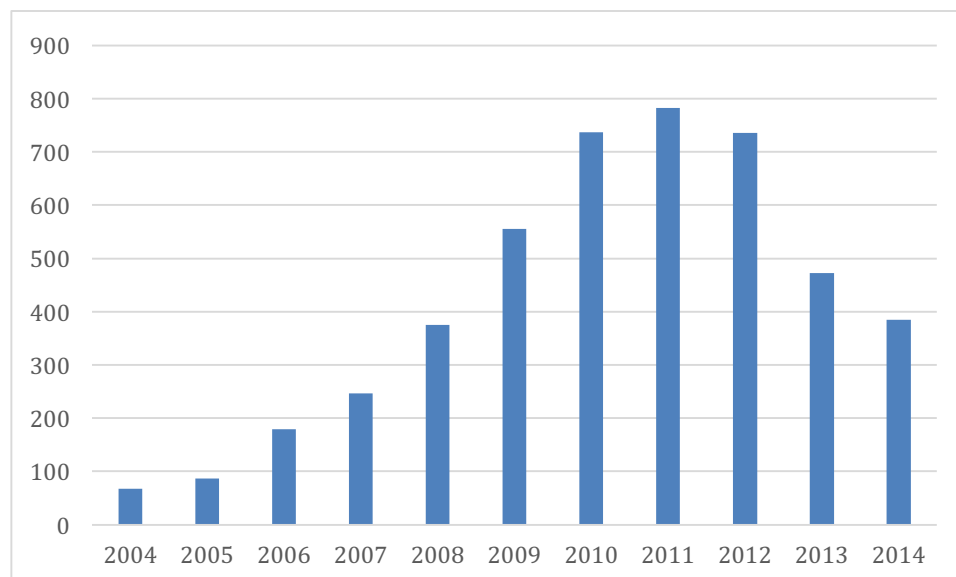


Figure 2.6: Bilateral Project Count Over Time

The majority of the cooperative activities sponsored by Brazil cover agriculture (19%), health (16%), public insurance (11%), education (11%), environmental (6%), public administration (6%) and social development (5%). These cover health or other determinants of health.[87]

Conclusion

Global Health Diplomacy and SSC share the same basic characteristics. Using the existing descriptions of GHD and SSC characteristics outlined in the literature, the dissertation was able to highlight commonalities between GHD and SSC. The dissertation was able to align these characteristics to show that SSC could be considered a type of GHD or at least a subset of GHD activities. The specific activities vary from country to country; however, looking at how Brazil uses SSC as GHD added greater detail to the GHD and SSC definition. Additionally, looking at how Brazil

conducts GHD through SSC highlights the potential for Brazil's use of SSC through structural cooperation to be a transformative influence on GHD. This is done by changing the goals of development assistance to focus on infrastructure and systems instead of stove-piped, stand-alone interventions focused on a specific health issue or geographic location. This not only changes how assistance is offered, but also the expectation of when returns on the assistance could be seen, particularly with long term goals such as educating doctors.

The basis for connecting SSC to GHD has been set. Subsequent papers in the dissertation will take this connection between GHD and SSC and will seek to understand the nature of this relationship by looking at both health and non-health factors. These factors, trade and health, seek to understand the impact that this type of engagement has on the relationship between countries.

Chapter 3: Global Health Diplomacy and Mutual Benefit of South-South
Cooperation

Paper 2: Global Health Diplomacy and Mutual Benefit of South-South Cooperation

Abstract

The connection between GHD and SSC has been made by examining the characteristics of each and showing how commonalities make SSC a type of GHD. Taking the established relationship, this paper attempts to assess the GHD relationship between Brazil and countries with whom it is highly engaged versus countries with whom it is not highly engaged. Looking at net trade as an indicator of this relationship, the paper seeks to understand whether or not GHD impacts other aspects of the relationship between these countries. Using trade, two cohorts of countries were compared. A significant relationship between Brazil and Portuguese speaking countries was found compared to non-Portuguese speaking countries.

Key Words

Global Health Diplomacy, CPLP, PALOP, trade balance

Introduction

Global health diplomacy (GHD) is both the negotiated response to health challenges, as well as the utilization of health to shape policy or strategies to achieve political or economic objectives. Generally, GHD is also a means to advance social or economic objectives instead of responding to a particular health problem. Table 3.1 lists working definitions of GHD, which

indicate a variety of GHD forms and functions [3], including the case that foreign policy can be shaped to address health issues [10, 11].

Table 3.1: GHD Definitions as presented by Novotny & Kevany
<ul style="list-style-type: none"> • A political change activity that meets the dual goals of improving global health while maintaining and strengthening international relations abroad, particularly in conflict areas and resource poor environments. • Multi-level, multi-factor negotiation processes that shape and manage the global policy environment. • Winning hearts and minds of people in poor countries by exporting medical care, expertise and personnel to help those who need it most. • Health diplomacy is the chosen method of interaction between stakeholders engaged in public health and politics for the purpose of representation, cooperation and resolving disputes, improving health systems, and securing the right to health for vulnerable populations. • Health diplomacy is a means of self-preservation in an increasingly interconnected global community. It also offers a much needed opportunity for building bridges and synergize efforts between the governments and nongovernmental organizations (NGOs) to improve public health.

Previous work [88] aligned South-South Cooperation (SSC) and GHD characteristics to clarify how SSC can be a form of GHD to influence health or utilize health to achieve other goals. In brief, SSC is a cooperation framework among countries of the global south, where Southern nations agree to work together to achieve economic growth and development goals in the spirit of solidarity, respect or national sovereignty, non-conditionality, and mutual benefit [17]. General modalities SSC may take are financial, knowledge sharing, training, technology transfer and in-kind contributions [46]. Increased

attention has been paid to this form of cooperation, as well as being made part of cooperative declarations at meetings of organizations of the United Nations in Paris, Accra, and Busan [29, 62, 63]. Structural cooperation programs also promote initiatives to form the networks that permit horizontal exchange between partners [64-67]. These partnerships in cooperation seek to implement country appropriate solutions. In health related fields, structural cooperation may work to support advanced education in health related professions, and utilize national actors of the recipient country to implement programs. As this type of cooperation takes time to implement and produce outcomes, the impact of the structural cooperation approach to SSC may not yet be fully realized [64, 68]. This work will develop a framework for investigating how SSC impacts non-health-related quantities. Specifically, this study will investigate the impacts of Brazil's SSC on trade.

Brazil is a geographically large country, whose economy is ranked 7th largest in the world. It depends on its many natural resources available to it such as oil, as well as the large population base. The country's population of 206 million in 2014 is diverse with ethnic heritage that include indigenous peoples, European, African, and Japanese [54]. Although Brazil is not the only developing country engaging in SSC, Brazil's internal motivations to work toward health development and equity, its use of "structural cooperation for health", and its engagement with other nations in groups and alliances make it of particular interest when investigating SSC and its relation to GHD and the outcomes of these activities. Brazil has been using SSC to situations across

the globe, but has been particularly involved with the Community of Portuguese Speaking Countries (CPLP) [83, 89, 90]. This study sought to determine the impacts of Brazil's SSC by isolating and comparing the trade balance between CPLP and non-CPLP countries (Table 3.2).

Methods

Data for this analysis came from publicly reported data. Reports from Agência Brasileira de Cooperação (ABC), Fundação Oswaldo Cruz (FIOCRUZ) and Instituto de Pesquisa Econômica Aplicada (IPEA) were used to contextualize the Brazilian data, but the most current disaggregated data needed for analysis were not available. Therefore, additional information about Brazil's activities was retrieved from AidData, a repository of officially reported aid flows [91]. Other data used in the analysis came from aggregated data sources: the World Bank Development Indicators, [53] Millennium Development Goal indicators, [27] World Trade Indicators [92]. Data collected included annual information at the country level from 2001 – 2013.

To assess the impact of GHD, the analysis used an established cohort group of African CPLP countries, also known as the Countries of Africa with Official Language as Portuguese (PALOP). A comparison group was assembled based on the levels of little to no Brazil development involvement. Trade was used as an indicator of benefit as it covers all goods and services. Data on trade flows between Brazil and each nation in the analysis were collected, and annual net trade gains and losses were calculated as an

indicator of benefit to Brazil. The numbers reported for the analysis were Brazil net trade in \$US with each individual country (Table 3.2).

Table 3.2: Comparison Groups	
<u>High Engagement CPLP Group</u>	<u>Low Engagement non-CPLP Group</u>
Angola, Cape Verde, Guinea-Bissau, Mozambique, Sao Tome & Principe	Cote d'Ivoire, Guinea, Namibia, Togo, Zimbabwe

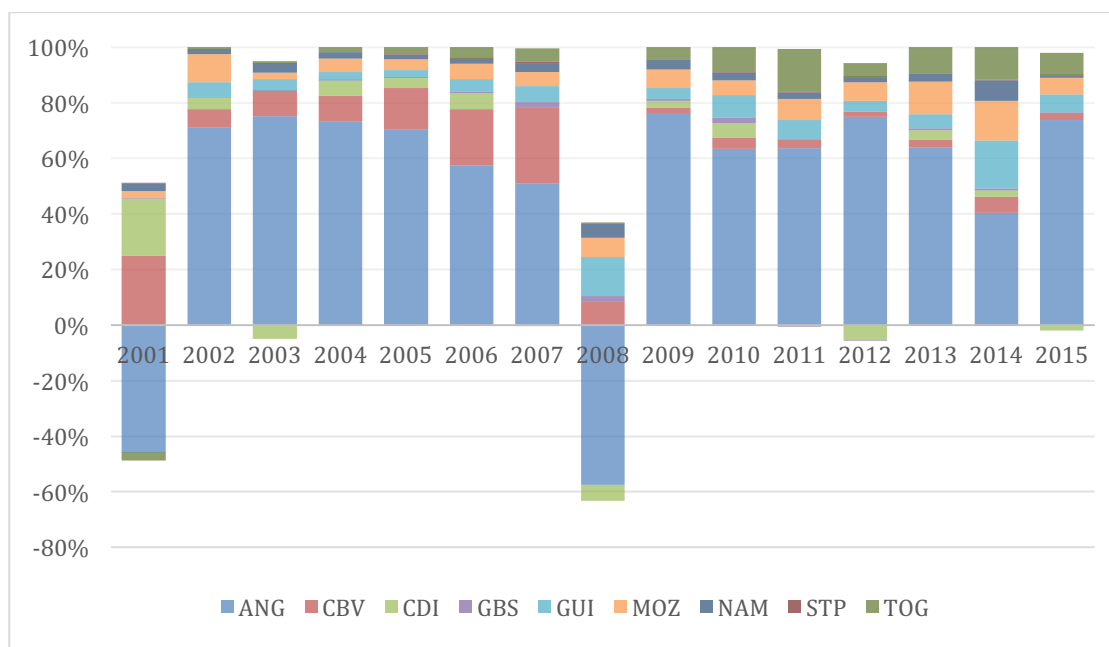


Figure 3.1: Brazil Trade Balance with PALOP and select African non-PALOP Countries

The net per capita trade balance data with Brazil were analyzed using SPSS 22.0 [93] using a Chi-square correlation between CPLP and non CPLP countries. Next, an independent sample t-test was run to compare CPLP and non-CPLP groups. To account for population differences between countries,

we used a two-tailed Wilcoxon Sum Rank Test, comparing per capita trade balance with Brazil CPLP and non-CPLP countries over time. A Spearman Rank correlation was used to test the correlations over time between CPLP and non-CPLP countries.

Results

Analysis of net trade balance

Annual net trade balance was collected for each country and separated by group, between 2001 to 2015 (Figure 3.2). A Chi-square correlation was run between CPLP group and net trade balance with Brazil. All expected cell frequencies were greater than five. There was a statistically significant association between CPLP group and high levels of trade, $X^2(1) = 14.841$, $p = 0.005$ (Table 3.1). In independent sample t-test to compare CPLP and non-CPLP groups, net trade data was analyzed for each country between 2001 and 2013. This analysis found a mean trade of CPLP countries ($\$104,147 \pm \$232,475$) was greater than mean trade of non-CPLP countries ($\$21,877 \pm \$30,726$). This difference in means was statistically significant, $\$82270 \pm \$27,077$, $t(76.59)=3.038$, $p=0.005$, $d=0.478$ (Table 3.2).

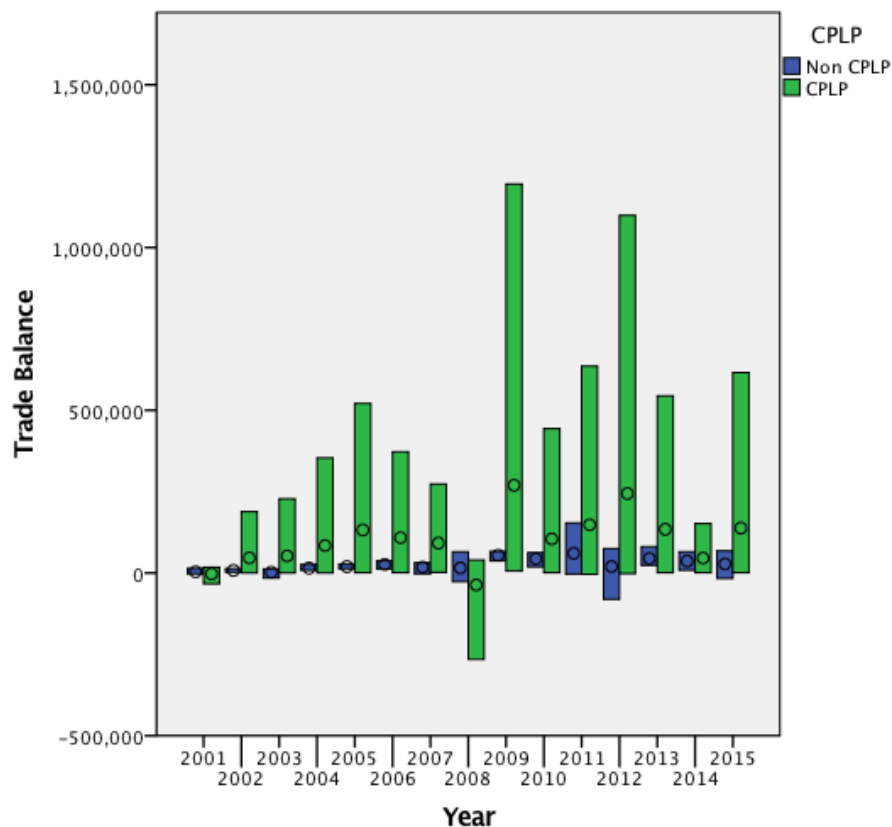


Figure 3.2: Annual Net Trade Balance by CPLP Grouping (in thousands of US\$2011)

Table 3.3: Chi-Square Tests for High Net Trade and CPLP Grouping

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14.841 ^a	1	.001		
Continuity Correction ^b	13.146	1	.001		
Likelihood Ratio	16.355	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	14.742	1	.001		
N of Valid Cases	150				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.50.

b. Computed only for a 2x2 table

Table 3.4: Independent Samples T-Test for Trade and CPLP

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Trade Balance	Equal variances assumed	32.02	.005	-3.038	148	.003	-82269.920
	Equal variances not assumed			-3.038	76.585	.003	-82269.920

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
			Lower	Upper
Trade Balance	Equal variances assumed	27077.314	-135778.009	-28761.831
	Equal variances not assumed	27077.314	-136192.407	-28347.433

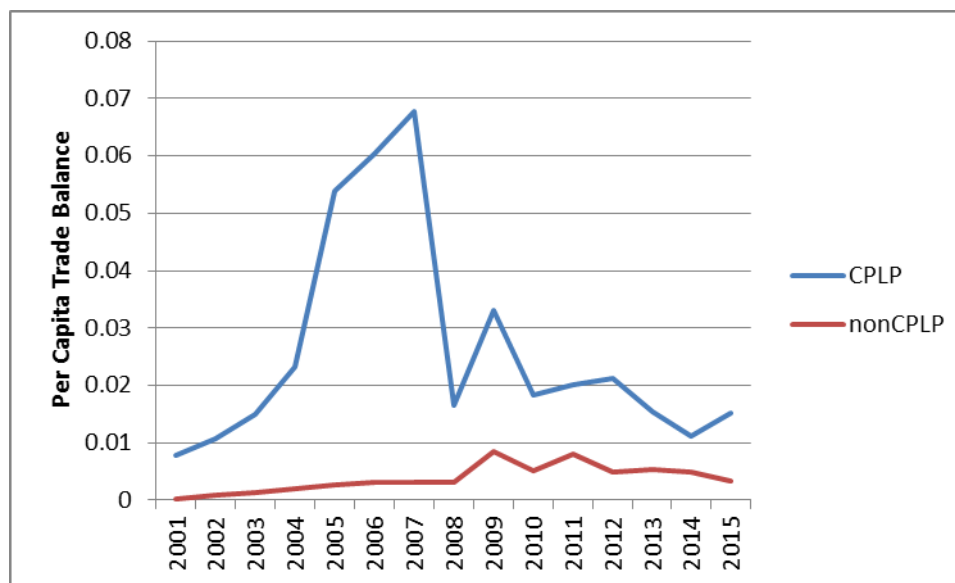


Figure 3.3: Per Capita Trade Balance

Analysis of per capita trade balance

Although the CPLP and non-CPLP countries were similar in population generally, individual differences in population could skew the trade balance between countries and in the analysis presented above. To isolate such effects, we next weighted the trade balance figures by the population size of each recipient country by the year of the reported trade balance. In this analysis, we conservatively used non-parametric measures- two-tailed Wilcoxon Rank for year-by-year comparisons and Spearman Rank tests to evaluate for trends. In these analyses, we found that CPLP countries had a higher per capita trade balance with Brazil than non-CPLP countries (**Figure 3.3**, $p < 0.001$). We also found that mean trade of CPLP countries with Brazil did not demonstrate a linear trend over time (Spearman rho 0.05, $p = \text{NS}$), while the mean trade of non-CPLP countries demonstrated a positive increasing association over time (Spearman rho 0.8, $p < 0.001$).

Discussion

The objective of the paper was to use the CPLP group as an indicator of Brazil's global cooperative efforts, i.e. GHD, and the potential influence such cooperation efforts may have on other aspects of the relationship between the countries. The main innovation of the presented study is the development and validation of a framework that can measure the impact of Brazil's SSC, as an indicator of GHD. The results of these analyses found a strong association between trade and Brazil's SSC, both in net trade and per capita trade

balance with Brazil.

Since it is often difficult to measure the effects of GHD, we performed a comparison of two cohorts of countries that can be divided into recipient and non-recipient countries of Brazil aid. This comparison used the natural group of the CPLP and PALOP as one group with a similar group of countries that will act as the comparison group. The natural group of PALOP captures Brazil's efforts even if discreet, disaggregated data cannot be used. The non-PALOP group may not necessarily have any Brazil cooperation but of the nations in Africa had the smallest amount of Brazil interaction.

Trade was used as an indicator of benefit as it covers both goods and services. Due to SSC goals of increasing trade among the southern nations and its idea of mutual benefit, we hypothesized that we could measure this influence, and trade was an obvious target. Further, Brazil's SSC concerning health objectives was toward a common set of countries (PALOP), which provided an obvious target to evaluate Brazil's influence.

Although the finding of increased trade balance between Brazil and CPLP countries was significantly greater than among non-CPLP countries, the finding needs to be placed in context of the overall trade environment. Brazil's overall trade with Africa represents only US\$ 11.9 billion or about 5% of their 2013 trade profile [92], and trade with CPLP nations represents less than 2% of Brazil global trade activity. In particular, the overall amount of trade with Angola was 0.5% of all Brazil trade [92], while Brazil's trade ties are closer to China (19%) and the United States (10%) [92].

This study has a number of limitations. The largest limitation is the lack of reliable and consistent data concerning trade and population size over time. It is also not clear if the data used were collected in a consistent and objective way. It is also not clear how to isolate the effect of outside influences, like GHD and aid from other countries that were not incorporated into the analysis. Future studies should develop multivariate methods to account for possible confounding effects. Further, the use of a case control study design of CPLP versus non-CPLP countries was a convenient way to isolate impacts of SSC and thus GHD, but it is not clear how this framework can be applied to other situations where GHD does not have natural dichotomies between countries.

Conclusion

Although the analysis does not specifically identify what drove the difference in trade between the CPLP and non-CPLP countries studied, there was some indication at least that the grouping had some bearing on the level of net trade with Brazil. This gives support to the idea that these cooperative efforts, like SSC, have tangible influence that can be measured.

Chapter 4: Connecting GHD to Health Outcomes: Comparison of Mean HIV
Antiretroviral Coverage

Paper 3: Connecting GHD to Health Outcomes: Comparison of Mean differences in HIV Antiretroviral medication coverage.

Abstract

Earlier papers connected South-South Cooperation (SSC) characteristics with Global Health Diplomacy (GHD), which includes the idea of mutual benefit of SSC. Using net trade as a measure of this mutual benefit a significant difference in net trade per capita was found between the Países Africano do Língua Oficial Portuguesa (PALOPs) and non-PALOP countries. Seeing a significant relationship with trade, the same methodology was applied to health by looking at HIV antiretroviral (ARV) medication coverage. The assumption being that the PALOP countries would have better health outcomes or higher ARV coverage. Mean ARV coverage was compared and showed that PALOP countries had lower coverage compared to non-PALOP countries.

Key Words

CPLP, global health diplomacy, south south cooperation, antiretroviral

Introduction

Work done in earlier sections of this dissertation has aligned South-South Cooperation (SSC) activities with Global health diplomacy (GHD). Additional investigations by us have identified that the impact of SSC in terms of trade can be measured when using a case-control study design. If

objectives of GHD include health policy and outcomes, then a similar impact of SSC might be able to also be measured.

Background

Global Health Diplomacy

Global health diplomacy (GHD) is “policy shaping processes through which state, non-state and other institutional actors negotiate responses to health challenges, or utilize health concepts or mechanisms in policy-shaping and negotiation strategies to achieve other political economic objectives.” [3]. These processes and influences drive or are driven by foreign policy, and Alcazar argues that health is a central component to foreign policy [10]. Together with Buss, Alcazar makes the case that foreign policy is shaped to address health issues, which provides space for GHD [11]. Whatever the motivation for engaging in GHD, the forms it takes vary from negotiations that influence the global health landscape to projects meant to influence the recipients’ perception of the donor [13, 14]. Taken together, one measure of the impact of GHD could be tangible health outcomes.

South-South Cooperation

South-South Cooperation (SSC) is a cooperation framework among countries of the global south. Southern nations agree to work together to achieve economic growth and development goals in the spirit of solidarity, respect or national sovereignty, non-conditionality, and mutual benefit [17].

Over time, the role of health in development became better recognized. The HIV/AIDS epidemic in the 1980s and 1990s highlighted how health (or the lack of health) and health resources can impact a population and its economic development. By 2000 the UNGA [94] declared the MDGs [26]. These goals addressed both health and socioeconomic determinants of health. As development goals, however, they reflect the importance that health has to the development process. Importantly for SSC the MDGs, and now the Sustainable Development Goals, provide common goals under which development efforts could be harmonized [28, 29].

Brazil and SSC

In our previous analysis, we used Brazil's SSC efforts in Africa as a case study to measure impact of SSC. Brazil's economy is ranked 7th largest in the world, and has considerable internal motivations to work toward health development and equity. Its engagement with other nations in groups and alliances make it of particular interest when investigating SSC and its relation to GHD and the outcomes of these activities. Brazil has used SSC to influence situations across the globe, but has been particularly involved with the Community of Portuguese Speaking Countries (CPLP) [83, 89, 90], and Countries of Africa with Portuguese as their Official Language (PALOP) countries in particular. This study sought to determine the impacts of Brazil's SSC by isolating and comparing health outcomes between CPLP and non-CPLP countries in Africa.

Antiretroviral coverage as a measure of health

Since the beginning of the epidemic, Human Immunodeficiency Virus (HIV) has infected over 60 million people and has killed 30 million of them. The vast majority of these infections and deaths have been in Africa [95]. As such in 2000, the MDG listed the reduction of the burden of HIV/AIDS as one of its goals [27]. Further, SSC has engaged its members, especially Brazil, in the coordinated efforts to help reduce the burden of HIV/AIDS, including a key list of objectives starting in 2000 (Table 4.1) [96] These cooperative efforts soon encompassed the care and treatment of HIV-infected individuals and the goal to increase the availability of antiretroviral (ARV) medication. [97] Since the data on ARV coverage for HIV-infected individuals is closely monitored by UNAIDS and the Global Fund, and is publically available, we sought to determine if we could measure the impact of Brazil's SSC on ARV coverage among CPLP versus non-CPLP countries.

Table 4.1: Modalities for South-South Cooperation for HIV/AIDS in Africa
<p><i>- Human resources development and institution building in African countries. In this connection, reference was made to the potential of assistance by donors.</i></p> <p><i>- Placement of experts, including volunteers.</i></p> <p><i>- Participation of African officials and/or experts in various meetings convened and/or projects implemented in other regions of the world.</i></p> <p><i>- Exchange of information on prevention and care of HIV/AIDS.</i></p> <p><i>- Networking among all those working in the area of HIV/AIDS, some work of which has already been started by UNAIDS.</i></p> <p><i>- Cooperation in the area of research and survey on HIV/AIDS.</i></p> <p><i>- Development of strategic plans at sub-regional levels.</i></p> <p><i>- Sub-regional approach to address HIV/AIDS in high transmission areas, such as transport corridors, focusing on vulnerable groups.</i></p> <p><i>- Cooperation in an effort to seek support in a variety of ways from the private sector to expand the horizon of South-South cooperation, in addition to government-to-government assistance and assistance from NGOs.</i></p>

Methods

Similar to previous analyses, data for this analysis came from publicly reported data at the country level from 2001 – 2013 including: Agência Brasileira de Cooperação (ABC), Fundação Oswaldo Cruz (FIOCRUZ) and Instituto de Pesquisa Econômica Aplicada (IPEA), which were used to contextualize the Brazilian data. Since most current disaggregated data needed for analysis were not available, additional information about Brazil's

activities was retrieved from AidData [91]. Data were also collected from aggregated data sources: the World Bank Development Indicators, [53] Millennium Development Goal (MDG) indicators, [27] and World Trade Indicators [92]. Basic demographic information was also collected, and data were collected on overall aid information, reported technical cooperation type aid, HIV prevalence and the percent of HIV-infected individuals that were able to access ARVs.

To assess the impact of Brazil's SSC on ARV coverage, we analyzed an established cohort group of African CPLP countries, also known PALOP. Based on our previous investigations, a comparison non-CPLP group was assembled based on the levels of little to no Brazil development involvement. As described above, ARV coverage was used as an outcome of health, since reasonable data were available, it was a stated MDG (#6) and an expressed objective of SSC, especially Brazil. Thus, data on ARV coverage were collected over the periods of investigation.

Mean ARV coverage data for both groups (CPLP vs. non-CPLP) were analyzed using SPSS 22.0 using a Chi-square correlation. For the significantly correlated variables, an independent-samples t-test was run to determine if there were differences in means between country groups. We also used a two-tailed Wilcoxon Sum Rank Test to comparing ARV coverage longitudinally between CPLP and non-CPLP countries over time. A Spearman Rank correlation was used to test the correlations of ARV coverage over time

and a covariance test was used to evaluate if there were any differences in slopes.

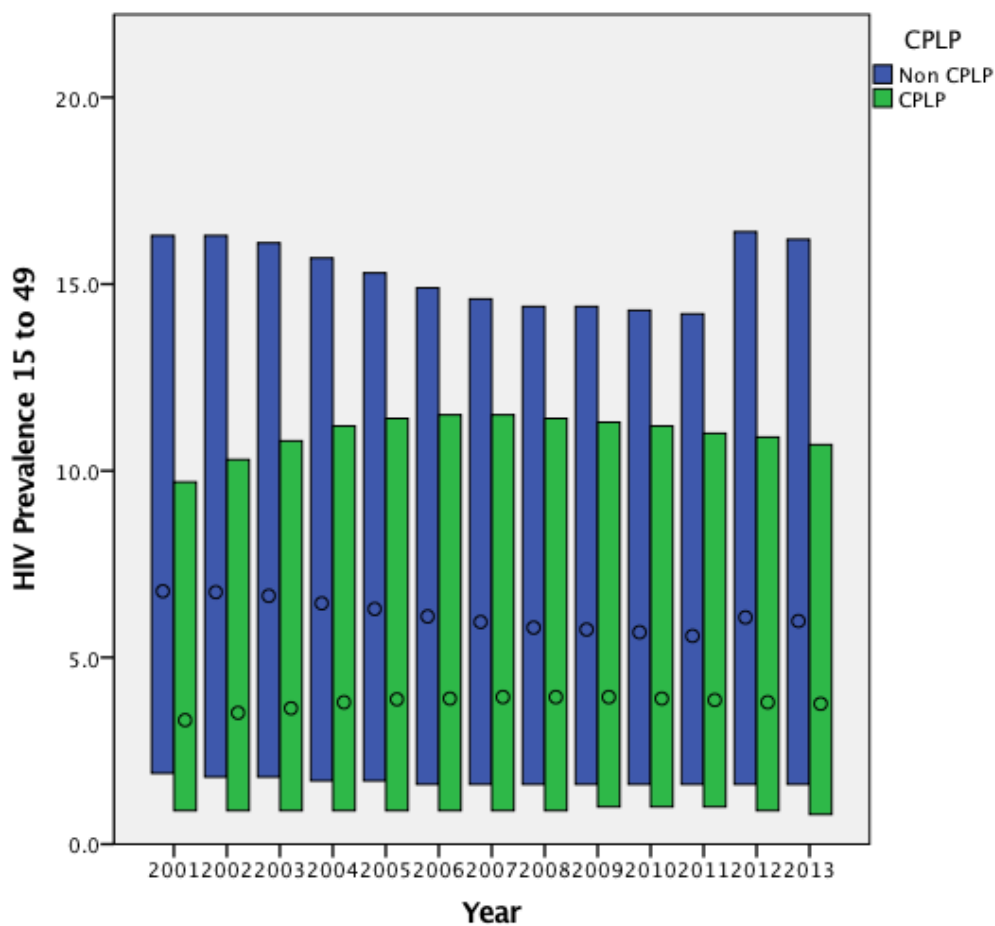


Figure 4.1: HIV Prevalence 15-49 Rate

Results

We first assessed if there was a relationship between CPLP vs. non-CPLP groups and ARV coverage in countries in Africa between 2001 – 2013. Overall, there was a statistically significant association between belonging to the CPLP group and levels of ARV coverage, $X^2(1) = 5.715$, $p = 0.017$; however, this was a negative association with belonging to the CPLP group

having lower levels of ARV coverage than non-CPLP countries (Figure 4.1 and Table 4.2.). In particular, the mean ARV coverage of non-PALOP countries was 13.73 ± 13.96 and the mean ARV coverage of PALOP countries 9.12 ± 9.640 .

Table 4.2: Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.715 ^a	1	.017		
Continuity Correction ^b	4.784	1	.029		
Likelihood Ratio	5.829	1	.016		
Fisher's Exact Test				.025	.014
Linear-by-Linear Association	5.671	1	.017		
N of Valid Cases	131				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.88.

b. Computed only for a 2x2 table

Table 4.3: Independent Samples T-Test ARV Coverage and CPLP Grouping

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
ARV coverage	Equal variances assumed	13.453	.000	-2.389	129	.018	-5.241
	Equal variances not assumed			-2.396	111.621	.018	-5.241
t-test for Equality of Means							
				Std. Error Difference	95% Confidence Interval of the Difference		
					Lower	Upper	
ARV Coverage	Equal variances assumed			2.194	-9.582	-9.900	
	Equal variances not assumed			2.187	-9.574	-9.907	
Group Statistics							
		CPLP	N	Mean	Std. Deviation	Std. Error Mean	
ARV Coverage	CPLP		65	9.12	9.640	1.196	
	Non CPLP		66	14.36	14.879	1.831	

Since the collected data were not independent samples within each country over times, and this dependency can bias analyses, we further evaluate the associations between ARV coverage and belonging to the CPLP group using a Wilcoxon non-parametric test. In this conservative analysis, the CPLP countries still had a lower ARV coverage than non-PALOP countries (Wilcoxon , $p < 0.001$). Both groups of countries increased ARV coverage every year (Spearman $\rho = .98$ and 1.0) with no differences in slopes, (Covariance analysis, $p = \text{NS}$.)

To account for the influence of the US President's Emergency Plan for AIDS Relief (PEPFAR) support, we separately analyzed ARV coverage data among the select countries in Africa. Of the countries included in this analysis of CPLP grouping differences on ARV coverage, Mozambique, Namibia, Cote d'Ivoire and Angola have PEPFAR support, so the annual US\$ amounts received by these countries were added to the database. Tests of variance that included PEPFAR support as a covariate (ANCOVA) was conducted, but no statistically significant result was returned. This may be due in part to the low power given the small number of countries with even a smaller number of countries receiving PEPFAR support.

Discussion

A stated goal of SSC and the MDGs is the increase of ARV coverage for HIV-infected individuals, and Brazil has stated multiple times in foreign policy forums that they are interested in helping PALOP countries to increase

their ARV coverage [86, 87]. In general, this study finds no evidence that Brazil's SSC had any positive impact on the ARV coverage in PALOP countries, especially as compared to non-PALOP countries. If anything the non-PALOP countries had a higher ARV coverage rate for HIV-infected individuals than the PALOP group.

It may be that Brazil's SSC efforts had no impact on this measure of health, but other explanations may also play a role. In particular, while the framework comparing PALOP versus non-PALOP countries was able to identify an impact in terms of trade balance, as described previously, the framework was not able to see a difference in ARV coverage, as a surrogate of health-related impacts of GHD. A likely explanation is that the PALOP and non-PALOP countries included in this study are also PEPFAR countries, in addition to receiving other aid, but the distribution of PEPFAR funds was not uniform across these countries [98]. Analyses to account for these differences were conducted using ANCOVA procedures, and no significant trend could be identified. This is likely because of the reduction in our sample size and the considerable loss in power using this method. Thus, PEPFAR support likely obscured any impact that Brazil's SSC might have had. For example, Mozambique is a country that has high Brazilian involvement and is also a PEPFAR country; however, it still has a high HIV prevalence rate and a relatively low ARV coverage rate. Such differences in PEPFAR support likely reflects US objectives concerning GHD in Africa, and clearly identifies how much bigger US GHD efforts outweigh Brazil's efforts in Africa, despite the

stated goals of SSC.

Other limitations of this study include the lack of reliable and consistent data concerning ARV coverage, HIV prevalence rates and population size over time. It is also not clear if the data used were collected in a consistent and objective way. Future studies may consider other health related measures, like infant mortality or vaccine coverage rates, although these also are heavily dominated by global health philanthropy from large donor countries or entities. Future studies should also develop multivariate methods to account for possible confounding effects, like influence from outside groups, like PEPFAR or WHO or foundations.

Chapter 5: General Discussion of Papers

Understanding how GHD can be further classified using SSC for health characteristics is valuable to the field of GHD research, and to GHD practitioners in government, multilateral organizations and other non-governmental organizations. This dissertation provides the field with a better understanding of GHD, but also opens the field to more GHD definitions and methodological discovery. Specifically, this three-paper dissertation explored how SSC is a form of GHD with a focused look at the description of each concept, and aligns the described characteristics to show similarities and commonalities between GHD and SSC.

Summary of the Three Studies:

Overall, this dissertation focused on Brazilian SSC activity and how that can be viewed as GHD. A central goal was to expand the definition of GHD using SSC and Brazil, and to build an empirical toolkit to measure the impact of GHD. Much of the current research has focused on process outcomes of the individual projects or cases without looking at the overall impact of this type of Official Development Assistance (ODA). However, it is extremely difficult to capture the appropriate outcome data, and thus it is not in this scope of work to conduct a thorough quantitative evaluation. More specifically, this dissertation evaluated GHD by looking at Brazil's use of SSC, and by exploring statistical methods that can meaningfully connect GHD to population health and non-health outcomes.

A potential limitation of this research is the small group of countries that participate in CPLP activities. Also, the amount of aid, as measured in USD, was small compared to absolute amounts that were provided by other donors (such as the United States) to the LMICs. However, this research is necessary to understand the quality and effect of SSC inputs in light of the other large outlays by the Global North. Although a small step in empirical research, this dissertation will serve as a starting point to expand analyses of GHD outcomes.

Implications for GHD

- Aligned GHD and SSC characteristics to refine the definition of GHD:
This dissertation has contributed to the definition of GHD by connecting characteristics of SSC and GHD. These characteristics were outlined by the respective fields, and various case studies were conducted from either a GHD or SSC perspective. This is one of the few papers that not only outlines the situation in which GHD was conducted, but also focuses on the general characteristics of these activities to further refine the definition of GHD.
- Utilized globalization and health framework to help explain GHD impact:
As Blouin et al. [52] pointed out, the connections between GHD activities and outcomes has yet to be established. A framework such as the globalization and health framework seems to be better at capturing

the multifaceted nature of GHD, as well as providing clearer pathways through which GHD can exert influence.

- Provided statistical analysis to contribute to GHD statistical tools:
Although not extremely precise, the process of applying empirical methods to evaluate the impact and association of GHD activities is a necessary exploration. One that has been consistently called for in the GHD field, the SSC field and in fields that study globalizing activity.
- Answered SSC criticism that there is no empirical evidence to support SSC: Although the primary concern was to expand and refine the taxonomy of GHD, the same expansion was beneficial to further defining SSC definitions as well. Contributed to the globalization and health framework: This dissertation also supports Huynen et al. by [7] adding to the empirical tests that support the globalization and health framework.

Implications for Brazil's GHD

The future of Brazil's SSC interaction with other nations is on unstable ground given the economic downturn and political upheaval that Brazil is currently experiencing. Additionally, other concerns such as the Olympic games and Zika virus have only added to the list of issues that may constrain Brazil's international involvement.

Brazil's economy rapidly grew starting in 2000 to make it the 6th largest economy in the world in 2012 growing past the United Kingdom. Since

then, Brazil's economy has contracted losing almost 8% of GDP since 2011 [53]. This economic decline is in part due to the 2008 economic recession that was first felt by the developed nations, impacting their demand for goods and services. With Brazil's two largest trading partners being China and the United States, Brazil felt the economic slowdown directly from the United States as well as from a weaker China whose economic growth has slowed to 6.9% [53]. The economic growth that moved Brazil into middle-income status is contracting. This has the potential to also contract Brazil's influence among the CPLP countries as well as in other international fora. Although Brazil's influence was not necessarily based on financial support, its ability to conduct activities was made easier due to the increase of financial resources available.

In addition to macroeconomic forces, suspect, internal, financial dealings have spurred on corruption investigations of many leading politicians. The most recent, notable scandal involves contracts and money involving the state run company, Petrobras. It is alleged that politicians accepted bribe money in exchange for lucrative, inflated contracts. The financing of these contracts used profits from Petrobras that were supposed to be applied to Brazil's Sistema Universal de Saude (SUS), their universal health care system.

The political instability is also related to the economic contraction. There is tremendous discontent with the state of the Brazilian economy among its citizens. As her predecessor's popularity soared as he presided over the republic's economic boom, President Dilma Rouseff's popularity, a member of

the same Partido Trabalhador (PT), has tanked. Seizing the opportunity to potentially remove an unpopular President and take power for themselves, Eduardo Cunha, the Speaker of the lower chamber of the legislature, Camara, and a member of the Partido do Movimento Democrático Brasileiro (PMDB), initiated impeachment proceedings against Rouseff. President Rouseff was accused of hiding the true state of the Brazilian economy when she was running for her second term in office.

The impeachment proceedings (Figure 5.1.) moved through the lower house, the Câmara do Deputados, and on to the Senate. While being debated in the Senate, the Speaker of the Câmara, Eduardo Cunha, was dismissed due to abuse of power and pending corruption investigations over the US\$40 million he has in Swiss accounts. Without the Speaker in office the impeachment proceedings may not proceed if the person who called for them is no longer in the Câmara.

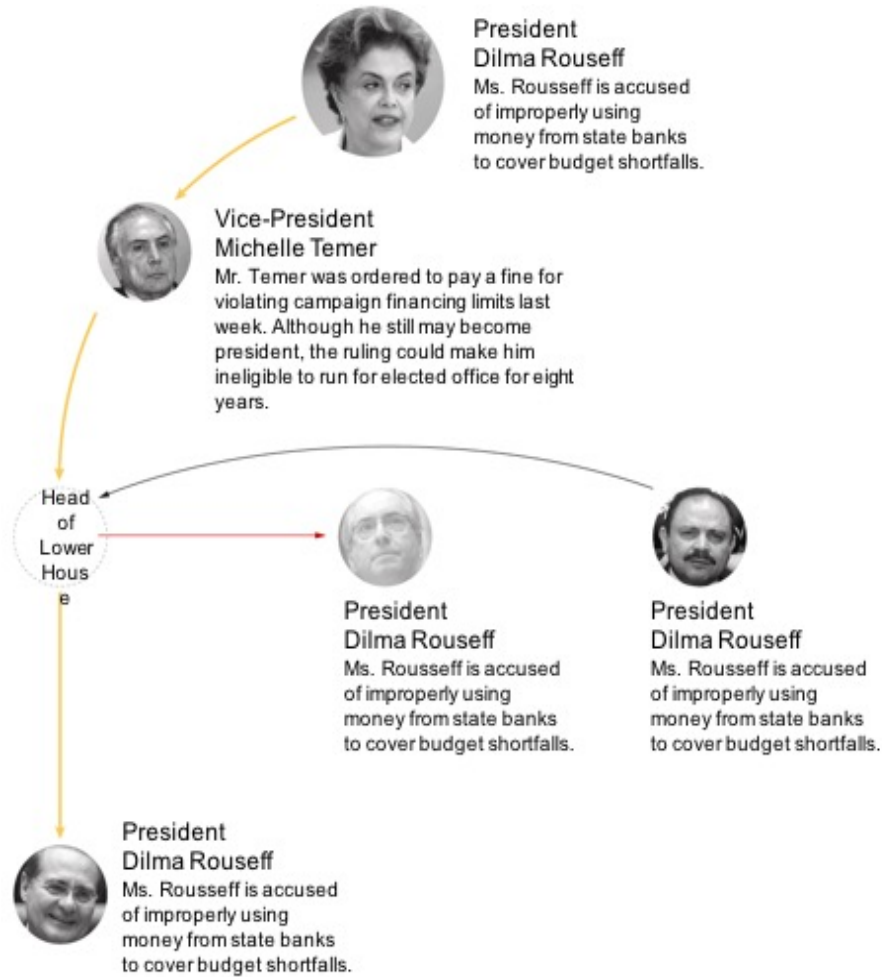


Figure 5.1: Key Players in Brazil's Political Crisis from the NYT [99]

The global perception of Brazil's domestic politics was similar: a coup was attempted by the PMDP. [100-102] Headlines from different countries echoed the perception that President Rouseff was being run out of office in an attempt by the PMDB to capture the Presidency, which has been held by PT since Lula was elected in 2003. Although there were concerns for Brazil's fragile democracy, which was revived with its 1988 constitution, there were

some indications that confidence in the Brazil economy would rise as indicated by the increase in the value of the Brazilian Real. [103] This boost in confidence was seen in the potential to have more market friendly policies enacted in Brazil instead of state involvement in major industries such as Petrobras or devoting money to entitlement programs such as Bolsa Familia.

As of this writing, proceedings to impeach President Rouseff have been approved by the Senate. Former Vice-President, now Interim President, Michelle Temer has taken office as Dilma Rouseff's term has been suspended. Repercussions of this change in government can be seen in the reaction by members of the economic and political blocks of the Mercado Comum do Sul (MERCOSUL) and the União de Nações Sul-Americanas (UNASUL), of which Brazil is a member calling for a boycott of Brazilian merchandise over what is being perceived as a coup d'état [104].. The Uruguayan government has already stated that they will not communicate with the new executive in Brazil [105]. The political changes in Brazil, particularly the resulting power shift away from a socialist party, is beginning to alienate Brazil from its neighbors and partners. How this impacts Brazil's ability to act as a leader among the BRICS nations and among the CPLP nations has yet to be seen. It would appear that international relationships fostered through SSC as GHD may wane while the country is focused on economic reform and stimulation.

Aside from domestic politics and economics, other environmental concerns, Olympic Games, indigenous people discontent and Zika have contributed to the list of troubles for Brazil.

With the Olympic games to be held in Rio de Janeiro June 2016 there are concerns that the facilities to house athletes and the games themselves will not be ready in time. Related to the games, but also a long term concern, are the environmental issues, particularly the waterways where Olympic events will take place. They have been a point of concern for the amount of garbage in the waterways but also other contaminants such as bacteria and pollutants. Encroachment into less populated areas of the country for mineral exploration, or special venue construction have brought indigenous rights into the spotlight. Zika, although not a Brazil-specific concern, has received a lot of attention because of the association that Zika has with its microcephaly outbreak. The fear that Zika instills in tourists may prevent potential income in the form of tourism..With the Olympic games to be held in Rio de Janeiro August 2016 there are concerns that the facilities to house athletes and the games themselves will not be ready in time [106]. Related to the games, but also a long term concern, are the environmental issues, particularly the waterways where Olympic events will take place. They have been a point of concern for the amount of garbage in the waterways but also other contaminants such as bacteria and pollutants[107]. Encroachment into less populated areas of the country for mineral exploration, or special venue construction have brought indigenous rights into the spotlight [108]. Zika,

although not a Brazil specific concern, has received a lot of attention because of the association that Zika has with its microcephaly outbreak [109, 110]. The fear that Zika instills in tourists may prevent potential income in the form of tourism.

All of these domestic factors could play a role in how the Brazil is able to engage outward in the form of SSC Structural Cooperation. Financial growth and stability has provided Brazil with the resources and clout to engage nations of the South for trade and economic development, a contracting economy restricts these resources and could potentially return Brazil to cooperation levels of 2001. This may force Brazil to reduce its broad geographic engagement and focus on specific groups or countries. Political will to continue SSC Structural Cooperation may wane as attention is devoted to domestic issues and elections.

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