

Critiquing Economic Frameworks in Sustainable Development:  
Health Equity, Resource Management and Materialism

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## ABSTRACT

Critiquing Economic Frameworks in Sustainable Development: Health Equity, Resource

Management and Materialism

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This collection examines mainstream economics discourse as it relates to three topics in sustainable development: health equity, sustainable non-renewable resource management and development approaches. The themes of the three papers are as follows:

*Political Dimensions of Health Equity in Mozambique* - In order to promote equity in health, analysis should look beyond the standard economic definitions used to identify underserved and vulnerable populations.

*Human and Social Capital, Compensation or Cost? Reexamining the Hartwick Rule* - In order to achieve sustainable non-renewable resource management, planners must go beyond the current economic theoretical framework and consider the direct impacts of extraction on human and social capital.

*The Materialism Paradigm – Neither Sustainable, nor Development* - The way economists have understood prosperity is materialistic and development is exporting this welfare-reducing paradigm.

*The synthesis of the series* - The frameworks used in economics to address a variety of issues in sustainable development have limited efficacy and would benefit from insights originating outside the discipline.

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<sup>a</sup> Professor Christoffel, you once told me I couldn't, but oh, I just did!

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*At present the light of reconciliation is dimmed in most countries and its radiance extinguished while the fire of strife and disorder hath been kindled and is blazing fiercely...Be ye warned, O men of understanding. It ill beseemeth the station of man to commit tyranny; rather it behoveth him to observe equity and be attired with the raiment of justice under all conditions...The Great Being saith: The man of consummate learning and the sage endowed with penetrating wisdom are the two eyes to the body of mankind. God willing, the earth shall never be deprived of these two greatest gifts...O my friend! In all circumstances one should seize upon every means which will promote security and tranquillity among the peoples of the world. The Great Being saith: In this glorious Day whatever will purge you from corruption and will lead you towards peace and composure, is indeed the Straight Path.*

*Please God, the peoples of the world may be led, as the result of the high endeavours exerted by their rulers and the wise and learned amongst men, to recognize their best interests. How long will humanity persist in its waywardness? How long will injustice continue? How long is chaos and confusion to reign amongst men? How long will discord agitate the face of society?*

*This humble servant is filled with wonder, inasmuch as all men are endowed with the capacity to see and hear, yet we find them deprived of the privilege of using these faculties. This servant hath been prompted to pen these lines by virtue of the tender love he cherisheth for thee. The winds of despair are, alas, blowing from every direction, and the strife that divideth and afflicteth the human race is daily increasing. The signs of impending convulsions and chaos can now be discerned, inasmuch as the prevailing order appeareth to be lamentably defective. I beseech God, exalted be His glory, that He may graciously awaken the peoples of the earth, may grant that the end of their conduct may be profitable unto them, and aid them to accomplish that which beseemeth their station.*

- Bahá'u'lláh, *Lawh-i-Maqsúd*, 1882

## Preface

This collection examines mainstream economics discourse as it relates to three topics in sustainable development: health equity, sustainable non-renewable resource management and development approaches. The themes of the three papers are as follows:

*First Paper-* In order to promote equity in health, analysis should look beyond the standard economic definitions used to identify underserved and vulnerable populations.

*Second Paper-* In order to achieve sustainable non-renewable resource management, planners must go beyond the current economic theoretical framework and consider the direct impacts of extraction on human and social capital.

*Third Paper-* The way economists have understood prosperity is materialistic and development is exporting this welfare-reducing paradigm.

*The synthesis of the series-* The frameworks used in economics to address a variety of issues in sustainable development have limited efficacy and would benefit from insights originating outside the discipline.

The first paper, *Political Dimensions of Health Equity in Mozambique*, is a descriptive “snapshot” and “movie” analysis based on the methodology developed by the World Bank.<sup>1</sup> Here, it serves as an identification exercise to demonstrate that the conventional approach to stratifying populations in health equity analyses according to income or economic sector (rural versus urban) is incomplete in some cases. In Mozambique, an additional potential stratifier presented itself during the course of qualitative analysis – political affiliation. The quantitative analysis in this paper is the first and (to the author’s knowledge) only kind to

adapt existing tools of descriptive equity analysis to a non-economic variable such as political affiliation. Because health equity policy is primarily concerned with the identification of underserved populations in order to target services to those most in need, the descriptive analysis presented here is intended to demonstrate that there are dimensions of inequity originating outside the economist's framework that are useful for health policymakers' purposes. There is some additional analysis provided on the history of politics in Mozambique, and is intended to serve as contextualization of the policy space and public perception of the relationship between politics and development. It is not to imply a causal relationship between political affiliation and health outcomes or distribution of health resources, more to point out the sensitivity of this topic in Mozambique for health equity programmers who may operate in this space.

The second paper, *Human and Social Capital, Compensation or Cost? Reexamining the Hartwick Rule*, revisits the approach in environmental and resource economics to non-declining utility. The assumption at the foundation of this approach is that non-renewable resource extraction can only have a desirable effect on other forms of capital, and this requires investing the resource rents in those other forms of capital. This paper takes a case-study approach to demonstrate that in several countries, extractive activities have had an immediate destructive effect on human and social capital. The sustainability criterion identified by economists would therefore not be achieved by leaving these initial impacts unaccounted for.

The third paper, *The Materialism Paradigm – Neither Sustainable, nor Development*, is a multidisciplinary review of literature on materialism, frameworks in economics, development strategies and incentives, applying a robust body of literature from across several disciplines to the context of development. In drawing insights from multiple scholars across seemingly disparate discourses, this paper makes an attempt at transdisciplinary synthesis: “While the twentieth century was an era of increased disciplinary specialization, the twenty-first may well turn out to be an era of transdisciplinary synthesis. Its motto might be: When different disciplines focus on the same object of knowledge, their models must be mutually reinforcing and consistent where they overlap.”<sup>2</sup> The paper creates a space for literature streams from anthropology, ecology, economics, education, philosophy, political science, psychology and public health to “speak” to each other in order to create “mutually reinforcing and consistent models” on a topic where they all overlap – sustainable development. The coherent insight that has emerged indicates that the current approaches to development, framed in particular by economics, are materialistic – not recognizing the capacity for human beings’ preferences to change – and fail to guarantee human prosperity.

A clear theme that emerges from this series is the importance of emphasizing human development, particularly health. The first paper indicates the danger of using economics as the universal starting point for identifying health inequities, and situates the discourse instead in terms of the most underserved populations. The second paper places human and social development, of which health is a critical factor, as a clear priority in the context of industrial development, not an afterthought. The third paper looks at approaches to improve

human development directly, and is based on an analysis that takes health as an intrinsic value.

In some ways, this series is actually a critique from the vantage point of public health. First, there is widespread recognition in the public health community of the multidimensional aspects of human health and its non-economic determinants. Second, there exists an awareness of the complexity and even tension between the pursuit of economic growth and resource exploitation on the one hand, and human well-being and health on the other. Health is widely regarded as requiring its own agenda and cannot be considered a by-product of some other process. Third, there is an unambiguous belief in the intrinsic value of health and other non-explicitly-material pursuits. Moreover, a cornerstone of health intervention rests on the faith that people's knowledge, attitudes and practices can be altered.

Lester Thurow once said: "Economics cannot do without simplifying assumptions, but the trick is to use the right assumptions at the right time. And the judgment has to come from empirical analysis (including those employed by historians, psychologists, sociologists and political scientists) of how the world is, not of how our economics textbooks tell us it ought to be."<sup>3</sup> The ideas presented in this collection are perhaps more obvious and intuitive than they are radical or novel – we have merely lost sight of the reality informing them in the midst of our desire to perfect elegant models and theories intended to give some sense of control over a world which they do not adequately represent. These papers, borrowing

heavily from multiple disciplines, are therefore attempts to articulate those deficiencies in our current ways of thinking so that they may be reconceived, instead of merely refined.



## *References*

1. O'Donnell, O., et al. World Bank (2008)
2. Gintis, H., et al. (2005), pp.3-40
3. Thurow, L., as quoted in H. E. Daly, J. B. Cobb and C. W. Cobb (1994), pp.7

## **Political Dimensions of Health Equity in Mozambique**

(First Paper)

## *Introduction*

The promotion of equity has become a recent focus of development strategies and has had a notable impact on public health policy in particular. It is also considered a priority of development aid in post-conflict settings. As a country noted for its health disparities, Mozambique has adopted a government policy of equity in health programming. The approach of donors and the Mozambican government has been to frame health equity strategies in strictly non-political terms, with a focus on inequality between economic groups. Given the salience of politics in Mozambique, this paper explores health outcomes stratified along lines of political affiliation. The findings use qualitative data to motivate quantitative analysis, and suggest that in the absence of political considerations, the current health equity discourse is insufficient in identifying the most neglected populations in Mozambique. This inadequacy of policy has, in fact, resulted in underserved populations being systematically “missed” by health equity strategies.

Considering political affiliation as a correlate of the distribution of health and development has an *ex ante* grounding in Mozambique’s political history. Although the actual causes of disparity are unclear, this should not present an obstacle to more effective health equity strategies which, ideally, should target the health status of the most needy.

## *Background*

Mozambique is a former Portuguese colony in southeastern Africa, and like other Lusophone (Portuguese-speaking) nations, its history has been characterized by internal

strife and division.<sup>1</sup> Mozambique's conflict is not typically attributed to ethnic tensions, despite the country's highly diverse ethno-linguistic heritage and religious practice. A young democracy, it emerged from almost twenty years of civil war to hold its first elections in 1994.<sup>2</sup>

Mozambique won its independence in 1975 under the leadership of the Mozambique Liberation Front (FRELIMO), formed in 1962 by exiled Mozambican activists. Under the stewardship of FRELIMO, Mozambique became a pawn in the Cold War, adopting a Marxist-Leninist doctrine from the late 1970s through the 1980s. A political entity was formed in 1976 to oppose FRELIMO and protect the interests of whites in southern Africa. The Mozambique National Resistance Movement (RENAMO) was set up by white Rhodesian officers immediately following Mozambican independence, and was later backed by the South African apartheid regime after the collapse of Rhodesia.<sup>3</sup> In all three Mozambican elections, the president has been a member of FRELIMO, and the majority of the parliamentary seats have gone to FRELIMO candidates. Although its popularity has waned, RENAMO is still a substantial political rival, winning more than one-third of the parliamentary seats in the 2004 elections.<sup>4</sup>

Today, Mozambique's population of 22.1 million people experience a 21% unemployment rate, and 81% of Mozambicans work in the agricultural sector. The country suffers from significant natural hazards including severe droughts, cyclones, and floods in the center and south of the country. Also, increased migration to urban and coastal areas has resulted in adverse environmental consequences.<sup>2</sup>

However, the country has made significant strides recently in terms of development, thanks to the interest of countless donors in investing in a successful post-conflict African democracy. Mozambique is a Millennium Challenge Corporation country, has produced the second of its Poverty Reduction Strategy Papers (PARPA), and a National Development Strategy (Agenda 2025). Under the direction of the World Bank and the United Nations, it is also aggressively pursuing the Millennium Development Goals.

### *The Focus on Equity*

Several prominent institutions in the development community have recently taken notice of the importance of promoting equity in development in general, and in health specifically. The World Bank's World Development Report of 2006 (WDR2006) was dedicated to the topic of equity in development. In prioritizing this issue, the report outlines the importance of equity to development endeavors as a whole: "equity has a central place in the interpretation of development experience and in the design of development policy—and [this] place has been inadequately understood and undervalued in much current thinking...When societies become more equitable...the development process itself may become more successful and resilient."<sup>5</sup> This not only signals a new focus for development policy, but also a fundamental acceptance that successful development approaches depend on an equity-based framework.

In addressing health equity specifically, the World Bank states: "Greater equity in access to health and health remedies, especially for transmittable diseases, would reduce

global health inequalities and be beneficial to poor and rich countries alike,”<sup>5</sup> suggesting that the promotion of equity in health may in fact be a policy imperative beyond development. Similarly, the World Health Organization has said that improving equity in health, both internationally and intra-nationally, “constitutes one of the greatest challenges of the new century. Failure to do so properly will have dire consequences for the global economy, for social order and justice, and for civilization as a whole.”<sup>6</sup>

In fact, promoting health equity may be instrumental in achieving the very purpose of sustainable development: “inequalities in health often translate into inequalities in other dimensions of welfare. And these inequalities are reproduced over time,”<sup>5</sup> In other words, health disparities have implications for the ability of not only the present generation to meet its needs, but they also “compromis[e] the ability of future generations to meet their own needs.”<sup>7</sup>

### *The Role of Aid*

Understanding the role of aid in addressing equity is important for policy-making, particularly in a post-conflict setting. In Mozambique, the presence of external resources has already been linked to internal strife: “The generous scale of aid in itself presents a valuable resource to those in power. The ruling elite can plunder aid, or more exactly use aid in order to achieve and maintain power through patronage. Thus, aid itself could be something to fight over...The dilemma is that a sudden withdrawal or reduction of donor aid is itself one of the potential shocks that could trigger conflict but maintaining the flow of aid uncritically

will compound the underlying problems of governance.”<sup>8</sup> In this context, aid should support equality-enhancing development policies, which have significant, far-reaching effects: “How to prevent and end conflict, deal with its humanitarian debris, and help countries recover, is now *the* most important set of issues facing the donor countries and their development, foreign policy, and military institutions...[one way] in which aid can contribute to preventing conflict [is to] focus aid on reducing inequality...as a means to dampen social tension and violence...the reduction of inequality itself must be a goal for aid.”<sup>9</sup> This suggests that equity-based aid plays a dual role in Mozambique. It promotes development, but it is also an investment in conflict prevention, and hence, sustainability.

Using aid to reduce health disparities is not only desirable; it is actually feasible in Mozambique. In 2004, the net ODA to Mozambique was approximately USD\$1.2 billion, which amounts to 23% of GNI <sup>10</sup>, and more than half of the national budget.<sup>8</sup> This makes Mozambique the world’s eighth most aid-dependent country with a national income to aid ratio four times that of the average for sub-Saharan Africa.<sup>10</sup> This tremendous influence of aid in Mozambique’s development implies that development policies supported by donors can have an acute effect on overall equity. Health policies should not merely avoid exacerbating current disparities, they should actively be equity-promoting: “In the absence of a concerted effort to ensure that health systems reach disadvantaged groups more effectively, such inequities are likely to continue.”<sup>11</sup>

### *The Discourse on Health Equity in Mozambique*

Mozambique's health disparities have been widely documented. Despite spending the highest percent of GDP on health (4%) in the region, improvements in public health “are uneven across the country, and the health status of citizens is among the lowest in the world.”<sup>12</sup> This has been reflected in current policy as an attribution primarily to an economic reality—that it is the poor and rural who are disproportionately sick and efforts to improve equity should therefore target these groups. However, In a study of 50 developing countries (from which Demographic and Health Survey data had been collected), Mozambique had the highest total health inequality, second only to Liberia.<sup>13</sup> That means that “Mozambique stands out with a high level of both between- and within-[income] group inequality.”<sup>14</sup> Furthermore, quantitative analysis shows that even after controlling for poverty incidence and population density (as a proxy for rural-ness), degree of political affiliation with the ruling party is still a significant positive predictor of health outcomes.

Mozambique's major policy strategies consistently demonstrate an acute awareness of the disparities in the country's health outcomes. In fact, the framework for health equity had been laid from the beginning of Mozambique's poverty reduction strategy formulation: “Expanded and improved quality and equity in access to health care will be an important component in the global strategy to fight poverty among the most vulnerable sectors of population [sic].”<sup>15</sup> The programming that followed has been dominated by economic definitions, whether in terms of rich-poor or urban-rural dichotomies in Mozambique. The Ministry of Health's *Strategic Plan for the Health Sector* highlights “an emphasis on



improving quality and creating more equitable access to health care,” and states that “expansion should only take place for reasons of equity.”<sup>16</sup> The two principal documents providing the basis for this agenda are the World Bank’s *Better Health Spending to Reach the Millennium Development Goals* and the Government-wide Poverty Reduction Strategy Paper, PARPA. The PARPA is “broadly endorsed by the Bank and Fund Boards as the basis of concessional assistance from the two institutions”<sup>17</sup>, and “is the key policy document on the basis of which donor support has been forthcoming.”<sup>10</sup> This makes it the most significant power-locating document of development policy produced in Mozambique.

The PARPA I (2001) states that of the programs paying “special attention to the needs of underprivileged segments of the population,” the key axis for the sector targets “the population of rural areas, and those who live in absolute poverty.” It also frames the purpose of the health sector as “playing a role in the redistribution of income and wealth,” “contribut[ing] to the creation and preservation of human capital, as a key element in a strategy for accelerated economic growth and poverty reduction,” and “contribut[ing] also to higher productivity.”<sup>18</sup> This locates health equity policy in an almost exclusively economic framework. <sup>b</sup> The PARPA II (2006) maintains this rhetoric: “Therefore, the central objective of the health component of PARPA II is improvement of the state of health of the general public, particularly the poor...That means, first, that siting of facilities must be done on the basis of equity, which makes it possible to channel funds directly to the poorest”.<sup>19</sup> The

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<sup>b</sup> Women of childbearing age and children are also mentioned.

World Bank's report on *Better Health Spending to Reach the Millennium Development Goals* in Mozambique does not mention equity directly, but does identify what the Bank sees as the country's spending challenges: "(i) the poor, while suffering from worse health problems, benefited less from the health spending; (ii) the rural families have suffered from the declining financial support to primary health care services."<sup>20</sup> Again, the policy focus is primarily economic in nature.

Even documents with minimal donor input, not linked to aid, whose primary purpose is to articulate the consensus-based perceptions of the state of Mozambican development, are consistent with the policy discourse on the importance of equity. As in the externally-reviewed strategies, the theme of equity pervades the country's internally-produced National Development Strategy, but again, only in economic terms: "consequent increase of social inequity – between the few rich and the many poor - and regional asymmetries - between the few cities and the many rural areas forgotten in both time and history."<sup>21</sup> The 2005 National Human Development Report on achieving the Millennium Development Goals also states: "The provision of quality health care in an equitable manner is a powerful weapon in the fight against poverty. In order that it may be more effective, it should be directed to the most vulnerable population groups, which in the case of Mozambique includes...those who are below the poverty threshold, most of whom are to be found in the rural and peri-urban areas."<sup>22</sup> This statement specifically defines economic classifications as the more meaningful in identifying those who have been systematically neglected in the provision of health care.

Health and development policies in Mozambique are firmly grounded in the equity discourse, but are dominated by non-political considerations. This is the case in both donor and government strategies. World Bank health sector assessments assert that “Equity is one of the guiding principles in the Mozambican health sector. However, current policy documents do not define operationally useful targets and norms for assessing whether equity objectives are met, either in terms of health outcomes, outputs, or allocation of resources.”<sup>23</sup> The Bank’s response in its health equity reports to this perceived void are indicators that are exclusively economic<sup>24</sup>, which is evidently the sole framework being used to understand and address this issue in Mozambique.

The dominant preoccupation with economic disparities in Mozambique’s health equity strategy is also articulated as the individual focus of policy-makers themselves: “we are spending more money in hospitals in urban areas instead of community health...we need to adapt the health system to serve the poor...It is a structural problem. Places are less-developed economically. There is less basic infrastructure.”<sup>25</sup> This opinion reflected in an interview with a health policy-maker—who has operated in both national and donor institutions—illustrates that these policy documents are not merely symbolic; they indicate a real potential of non-economically-defined needy populations to be overlooked.

### *The Importance of Political Dimensions in Achieving Equity*

In the context of Mozambique, these economic factors, considered in isolation, are insufficient in identifying target populations for health equity policy. In fact, economic measures of development in Mozambique have often been found misleading: “In the case of Mozambique, GDP is particularly unreliable as a measure of satisfaction among the people”<sup>8</sup>, and “You can see infrastructure, but it doesn’t mean his life is getting any better. It depends how you evaluate growth.”<sup>26</sup> Political affiliation in Mozambique, on the other hand, has been a historic driver of conflict, and continues to be a meaningful framework for contextualizing Mozambique’s current disparities.

The World Bank’s WDR2006 discusses this phenomenon in development in general: “inequities are usually associated with differences in an individual’s ‘agency’—the socioeconomically, culturally, and politically determined ability to shape the world around oneself. Such differences create biases in the institutions and rules in favor of more powerful and privileged groups.”<sup>5</sup> So although donor institutions are cognizant of the political dimensions of development disparities, this is not reflected in their country-level policy prescriptions. Other researchers have considered the role of political parties as important “in determining the level of equalities or inequalities in a society and in explaining the level of health in its population.”<sup>27</sup> In this way, political factors have been found to have relevant associations with health equity specifically.

In Mozambique, all rural and income-poor places are not alike in terms of their development status. Recognizing that health outcomes are stratified along political lines helps to identify populations that are systematically underserved or otherwise being missed by current attempts of policy to address equity<sup>c</sup>:

Community 1 is a small village that sits on the Beira Corridor—that major transportation artery that cuts through Mozambique connecting Zimbabwe to the coast. It is in the heart of the opposition party stronghold, and lies a few hours outside Beira’s major economic center and port. There are high-tension electric wires that run up and down the corridor, but no one in this village has access to the electricity. The quality of the pavement is among the better in Mozambique—although everyone knows there are no more potholes on the corridor once you get out of Sofala—but infrastructure is oddly otherwise conspicuously absent.

Community 2 similarly has access to substantial transportation infrastructure and is located three hours outside the capital city, but stands at the birthplace of the ruling party. In Village 1 people say, “There is constant food insecurity and times of hunger.”<sup>28</sup> In Community 2, the floods from a few years ago were the “only thing that could interrupt food production in those soils.”<sup>29</sup> Community 1 is overwhelmed by AIDS: “Our village is filled with orphans.”<sup>28</sup> In Community 2, there are many young parents alive and thriving. Community 1 exhibits the all-too-common signs of neglect by the public health system: “There are no latrines, and the health post is six kilometers away. You need a car to get there...there was a cholera outbreak and we tried to take a baby to the health post but it died before we arrived...The government did distribute bednets, but a government representative came to ask what was needed. We told them [water] pumps. And they were never provided despite assurances. The one pump is always full of people.”<sup>28</sup> Community 2, on the other hand, just received several superior interventions, including insecticide-treated bednets, even though it is in a more temperate part of Mozambique where most tropical diseases cannot even thrive, people are generally well-clothed and well-fed, and a startling majority of adolescents have cell phones (and access to the electricity necessary to charge them).<sup>29</sup>

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<sup>c</sup> See Appendix for geographic orientation.

Residents of Community 1 are aware of their neglect by public officials, and many people in the region attribute this to a historic lack of consideration by the State closely tied to the history of political affiliation. Based on current policy, these two communities, with their very different development realities, have been placed in the same economic category in terms of equity promotion, and the donors essentially see them as identical.<sup>d</sup>

### *Qualitative Data and Quantitative Analysis*

Based on key informant interviews, a perceptible disparity in health exists that is stratified by political affiliation. This qualitative perception motivates the proceeding quantitative analysis and grounds the qualitative data in a statistical reality. The quantitative analysis demonstrates that by only accounting for non-political factors in health equity policies, substantial swathes of the Mozambican population are not being served, and have systematically worse health outcomes, regardless of their income or the economic niche they occupy. This statistically significant quantitative association between political affiliation and health is dramatic enough that it has proven perceptible to Mozambicans, reinforcing notions of exclusion. In order to capture the totality of health inequity in Mozambique, both the distribution of health outcomes and allocation of health sector resources are examined.

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<sup>d</sup> In an effort to target aid to reach those most in need, Millennium Promise launched Community 2 as a Millennium Village.

### *Description of Data*

The qualitative framework upon which the following quantitative analysis rests is based on a series of key informant interviews—the findings of which are cited throughout. Residents of two “poor” and “rural” villages, comparable in their geographic endowment yet distinct in their political histories, were interviewed and the findings are discussed in the previous section. Other key informants were employed by donor, national government agencies or foreign NGOs, or were university affiliates studying development-related issues. Key informant interviews took place between June and August 2006. Once the salience of political affiliation as a health stratifier emerged in local-level qualitative investigation, country-level quantitative health and political data were analyzed to assess the statistical relevance of this qualitatively-perceived stratifier on a national scale.

Quantitative health data come from five sources: Statistical Yearbooks<sup>30</sup>, Survey of Basic Indicators of Well-Being<sup>31</sup>, Socio-Demographic Indicators by Districts<sup>32</sup> (all produced by the National Statistics Institute of Mozambique), District Profiles<sup>33</sup>, and the two Demographic and Health Surveys (DHS) for Mozambique.<sup>34</sup> The Statistical Yearbooks are published every three years and include yearly province-level data by sector from 1994 through 2004. The Survey of Basic Indicators of Well-Being consists of a multi-stage cluster sample of 14,500 households conducted between 2000 and 2001, and includes socio-economic and infrastructure data reported at the provincial level. The Socio-Demographic Indicators by Districts is 1997 census data reported at the district-level. The District Profiles were produced by the provincial governments in 2005 and contain summaries of socio-

economic, geographical and investment data from the last ten years. The Mozambique DHS data come from two surveys conducted in 1997 and 2003. DHS is a project of USAID that emerged from the World Fertility Survey (WFS), and therefore has a women's and reproductive health orientation. In the 1997 data, there were 11,114 respondents, of which 8,779 were women, and 2,335 were men, constituting a nationally representative, multistage, clustered sample of 9,282 households. In the 2003 data, there were 15,042 respondents, of which 12,193 were women, and 2,849 were men, constituting a nationally representative, multistage, clustered sample of 12,087 households.

All population data come from projections provided by the National Statistics Institute of Mozambique, and are available for the years 1997-2010. Any data which require population estimates—particularly those reported in the Statistical Yearbooks—for years prior to 1997 have been excluded. District and provincial population densities (people per square kilometer) are calculated using the population projections of the National Statistics Institute and land area estimates (in km.<sup>2</sup>) reported in the District Profiles.<sup>32, 33</sup> Poverty incidence and per capita district budget data are also reported in the District Profiles, while province-level sector budget data is as reported by the Mozambican federal government.<sup>33, 35</sup>

Political data come from reports of voting outputs provided by the National Election Commission.<sup>4</sup> These election outputs are used in the district-level analyses and are aggregated to the provincial level where necessary. Percentages of votes for FRELIMO in the 1994, 1999 and 2004 legislative elections are used as an indicator of political affiliation throughout.



### *Quantitative Methodology*

The World Bank's Poverty and Health group has produced a thorough quantitative methodology for examining health inequities across a variety of (primarily outcome) indicators.<sup>36</sup> Here, the use of concentration curves and indices has been adapted from the Bank's economic model to accommodate political variables in the case of health outcomes. As an extension, the allocations of health goods are measured as a form of distribution of wealth, and use the same methods. Concentration analyses involve a ranking of individuals or groups according to some measure of privilege, usually income. To assess the concentration of health goods or outcomes according to political affiliation, the ranking variable of privilege used is the proportion of votes for the ruling party in the legislative elections of 1994, 1999 and 2004.

Concentration analyses measure the degree to which a distribution deviates from perfect equality. In concentration curves, the x-axis represents some cumulative proportion of the total subjects represented (e.g. total population, total births, total children, etc.), and the y-axis represents the cumulative proportion of the outcome or resource distributed (e.g. vaccinations, incidence of disease, etc.). A 45-degree line is plotted to mark an equitable distribution (also known as the "line of equality"). The concentration index is twice the area between the curve and this 45-degree line, and values range from 0 (perfectly equal) to  $|1|$  (perfectly unequal). If the majority of the area under the curve lies above (below) the 45-degree line, the concentration index will be negative (positive). A negative concentration index implies a concentration among those lower ranked (in this case, less affiliation with

FRELIMO), and a positive index implies a concentration among those higher ranked (i.e. stronger affiliation with FRELIMO).

Cross-sectional (OLS) regressions are also used to assess the significance of political affiliation as a predictor of health at the district level, and fixed-effects panel regressions are used for province-level data available over several time periods.<sup>e</sup> Where available, poverty incidence and population density data are used as indicators of economic status and ruralness. The inclusion of these variables demonstrates the significance of political affiliation as a stratifier for health even once these economic factors emphasized in Mozambique's health equity policy are accounted for. This indicates the inadequacy of economic variables used in isolation to identify underserved populations in Mozambique.

### *Distribution of Health Outcomes*

Health outcomes have a direct impact on one's quality of life and future well-being, and constitute a meaningful driver of individuals' perceptions of their health status. Consistent disparities in health outcomes may be discernable to the people experiencing them, and can exacerbate tensions arising from inequity in a population. Across indicators of mortality and morbidity and over several years, positive health outcomes are either associated with or have been concentrated among regions more affiliated with FRELIMO.

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<sup>e</sup> Concentration curve tables and regression scatter plots are included in the Appendix. All p-values are reported in parentheses.

Mortality data provide a definitive overview of a population's health status, and are among the more reliably measured health outcomes. The chart below shows the outputs of regression models using life expectancy and under-5 mortality rates.

Figure 1: Life Expectancy and U5MR OLS Regression (by district) and Degree of FRELIMO

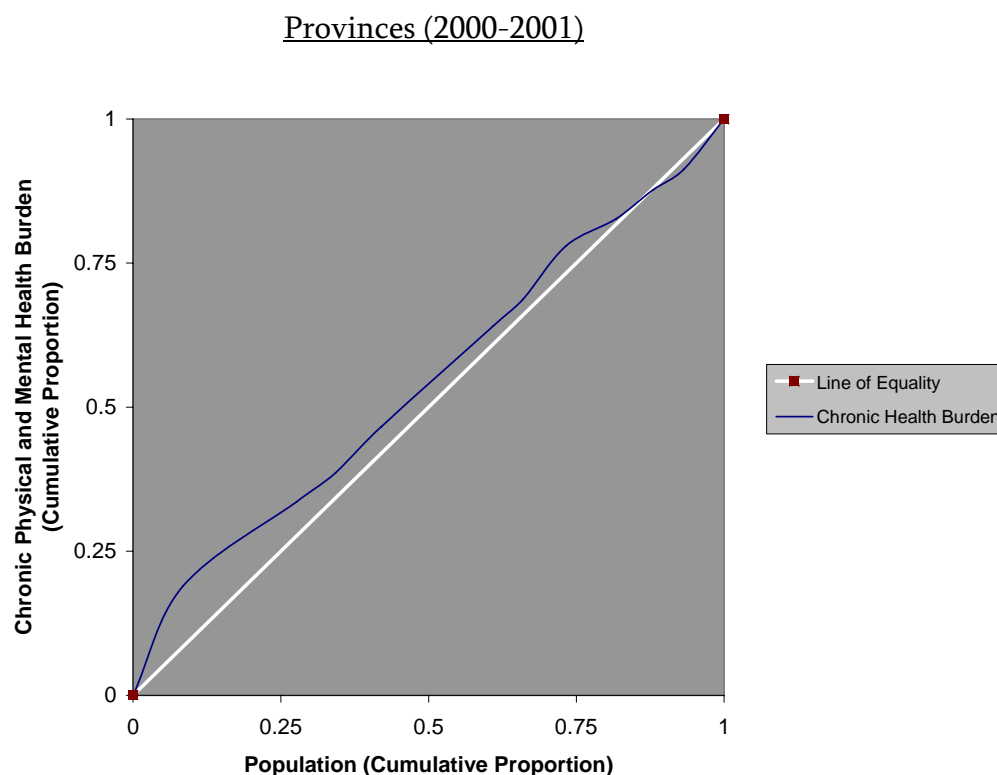
Affiliation (1997)

Life Expectancy			U5MR	
Regression 1	Regression 2	Model Specifications	Regression 1	Regression 2
.2060116 (0.000)	0.1697846 (0.000)	% voting for FRELIMO in most recent election	-2.064767 (0.000)	-1.750612 (0.000)
	.0148786 (0.590)	Population Density (pop./km <sup>2</sup> as a measure of rural-ness)		.0159973 (0.957)
31.94533 (0.000)	31.96627 (0.000)	Constant	352.7489 (0.000)	349.4621 (0.000)
0.2982	0.2356	R <sup>2</sup>	0.2782	0.2154

Life Expectancy is significantly positively correlated with the degree of affiliation with the ruling party, and under-five mortality rates are significantly negatively correlated, even when controlling for “rural-ness,” a factor emphasized as a target for health equity policy. A one-percent increase in a district's voting output for FRELIMO is associated with a 0.21 year increase in life expectancy. Likewise, a one-percent increase in a district's voting output for the ruling party is associated with a decrease in the under-5 mortality rate by two deaths per every 1,000 live births. Furthermore, political affiliation alone explains between one-quarter and one-third of the variation in life expectancy and under-5 mortality outcomes.

Morbidity is another important measure of a population's status, and captures the impact of health on an individual's general well-being. The following figure provides an indication of the distribution of morbidity across Mozambique's provinces:

Figure 2: Chronic Health Burden Concentration Curve Ranked by Frelimo Affiliation,



In the above measure of total chronic health burden (both mental and physical), the majority of the curve lies above the 45-degree line, and corresponds to a concentration index of -0.1, demonstrating that the persistent health problems reported are concentrated amongst those having a weaker affiliation with FRELIMO.

Stunting (Figure 3) is an anthropometric measure of height-for-age that occurs below at least two standard deviations from the population mean. Stunting is indicative of chronic

nutrition inadequacies, and better captures persistent inequities in nutrition status than other anthropometric measures.

Figure 3: 2003 Stunting OLS Regression (by district) and FRELIMO Affiliation

Model Specifications	Regression 1	Regression 2
% voting for FRELIMO in most recent election	-.0269892 (0.027)	-.0272868 (0.025)
Population Density (pop./km <sup>2</sup> as a measure of rural-ness)		-.0002014 (0.045)
Constant	.087243 (0.000)	.0936716 (0.000)

The above regression output demonstrates a slight, yet statistically significant negative association between FRELIMO affiliation and incidence of stunting, even when controlling for population density. A one percent increase in voting output for FRELIMO is correlated with a .03% decrease in the incidence of stunting in a population. While the practical significance of this association may be limited, its statistical significance indicates a systematic nature of the concentration of chronic malnutrition according to political affiliation.

Low birth weight is an important measure of nutritional status and early childhood health, and may be indicative of longer-term problems such as impaired cognitive development. The panel analysis that follows includes province data over ten years, and

unlike OLS regressions, controls for unobserved heterogeneity that exists between the provinces.

Figure 4: Low Birth Weight Fixed-Effects Panel Regression (by province) and FRELIMO

Affiliation (1994-2004)

Model Specifications	Regression 1	Regression 2
% voting for FRELIMO in most recent election	-.0966726 (0.000)	-.0770644 (0.000)
Population Density (pop./km <sup>2</sup> as a measure of rural-ness)		-8.09e-06 (0.644)
Constant	.1681514 (0.000)	.1573407 (0.000)
R <sup>2</sup> (within provinces)	0.1726	0.1766
R <sup>2</sup> (between provinces)	0.2663	0.1444
R <sup>2</sup> (overall)	0.2410	0.1406

The above panel regression output demonstrates a statistically significant negative association between a province's FRELIMO affiliation and rates of low birth weight, even when controlling for population density. Over the ten years included in the analysis, a one percent increase in a province's voting output for FRELIMO is predictive of a .1% decrease in the incidence of low birth weight in that province. This suggests that degrees of political affiliation are correlated with morbidity across provinces and within them. The degree of

affiliation with the ruling party alone explains approximately one-fifth of the variation in low birth weight within each province over the ten years, and one-fourth of the variation between them.


The low birth weight concentration curves for each of the ten years  corresponds to the following concentration indices:

Figure 5: Low Birth Weight Concentration Indices, by Province (1994-2004)

Year	Concentration Index
1994	-0.015064462
1995	-0.089623388
1996	-0.065871166
1997	-0.0487516
1998	-0.049082787
1999	-0.065708019
2000	-0.077194443
2001	-0.063747729
2002	-0.061794114
2003	-0.063357146
2004	-0.057642976

As the above chart demonstrates, the incidence of low birth weight has been consistently disproportionately concentrated among those with a weaker affiliation with the ruling party.

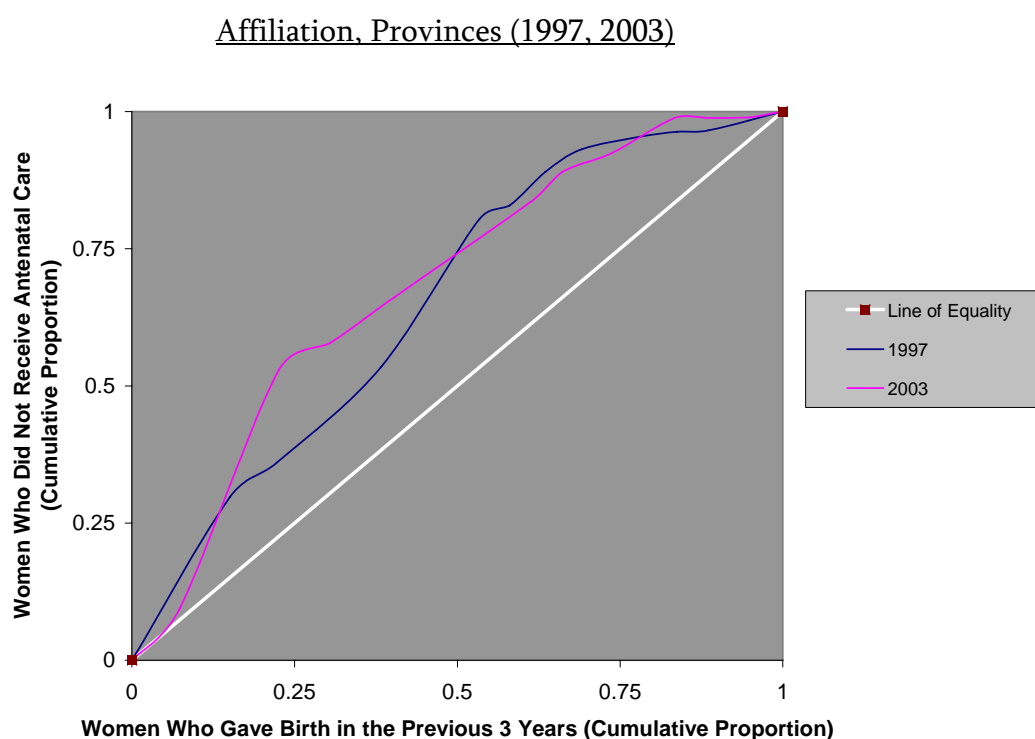
### *Distribution of Health Resources*

The distribution of infrastructure, personnel, supplies and budgetary support in the health sector are significant determinants of future health outcomes. Disparity in the allocation of these resources translates into health inequity in populations. When the distribution of ill-health is already inequitable, as illustrated above, equality in access to

health resources will serve to sustain these existing inequalities, whereas an unequal distribution of health goods that is regressive—in terms of need—will merely serve to exacerbate the health gap. This regressive inequality would further indicate an inadequacy in the operating frameworks used to address health inequity.

Access to antenatal care is an important component of maternal and neonatal health. The following curves compare the concentration of women who did not receive antenatal care for births in the three years prior to the two surveys (1997 and 2003):

Figure 6: Women Who Received no Antenatal Care Concentration Curve Ranked by Frelimo



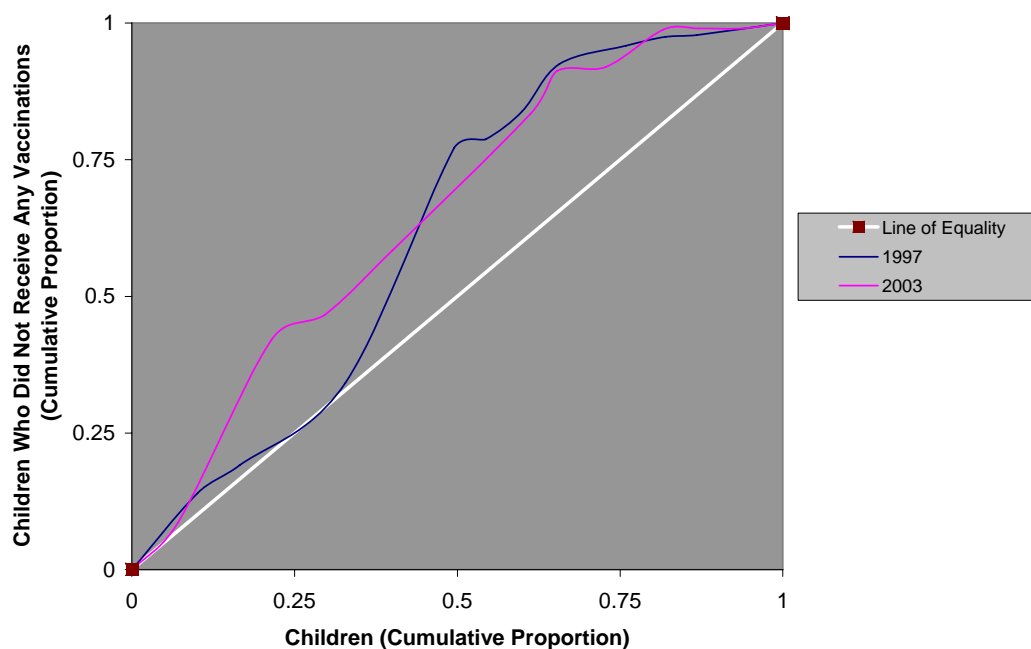
The above curves correspond to a  $-0.31$  concentration index for 1997 and a  $-0.36$  concentration index for 2003, indicating worsening inequity along lines of political affiliation between the two years.



Similarly, inequity has persisted in child health which has experienced an increase in the concentration among those provinces less affiliated with FRELIMO of children who have not received any vaccinations:

Figure 7: Children Who Did Not Receive Any Vaccinations Concentration Curve Ranked by

Frelimo Affiliation, Provinces (1997, 2003)



The concentration index for children without vaccinations went from  $-.24$  in 1997 to  $-.30$  in 2003. Since vaccinations require little infrastructure or investment, they are among the easiest of interventions to deliver equitably, making this increased inequity particularly striking.

The analyses that follow illustrate the allocation of various health sector goods—health units, personnel and beds—across a population (either by district or province). The higher the ratio, the lower the per capita health investment (i.e. a larger population has to

share the good). The regression output below demonstrates that at the district level, the ratio of population to health units is significantly negatively associated with FRELIMO political affiliation, even once controlling for poverty incidence and rural-ness.

Figure 8: Population : Health Units Ratio OLS Regression (by district) and FRELIMO

Affiliation (2003)

Model Specifications	Regression 1	Regression 2	Regression 3	Regression 4
% voting for FRELIMO in most recent election	-62.71176 (0.023)	-116.6059 (0.001)	-69.58929 (0.007)	-122.5458 (0.000)
Poverty Incidence Index		27135.63 (0.006)		26695.34 (0.004)
Population Density (pop./km <sup>2</sup> as a measure of rural-ness)			91.30273 (0.000)	89.94498 (0.000)
Constant	16015.64 (0.000)	2244.141 (0.660)	13667.31 (0.000)	162.7591 (0.973)


A one percent increase in voting for FRELIMO is significantly correlated with a 62.7 drop in the number of people to which a health unit is allocated at the district level. This negative association is significant regardless of the model's inclusion of economic stratifiers. At the provincial level, this inequality in the allocation of health units is less observable , yet over the last four years for which data is available (2000-2004), inequality is rising:

Figure 9: Concentration Indices of Health Unit Allocation, by Province (1997-2004)

Year	Concentration Index
1997	-0.000288207
1998	-0.001027608
1999	0.017749631
2000	0.007533545
2001	-0.00300247
2002	0.031263937
2003	0.031488016
2004	0.048525573

These concentration indices of health units over the Mozambican population appear relatively equal at the provincial level, with recent marginal increases in inequality. However, in the absence of an explicitly progressive distribution, targeting those with a concentration of worse health outcomes, this allocation implies a persistence of existing health inequity into the future.

The distribution of physical infrastructure provides a general notion of a population's access to health resources. The degree to which these health units are staffed and supplied, however, remains as meaningful a question in the equitable allocation of health goods. It also directly addresses the ability of the health system to effectively manage its population's health needs.

Without health personnel, a public health system is effectively unable to reach and serve a population. The following is a regression of the allocation of health workers to districts by FRELIMO affiliation:

Figure 10: Population : Total Health Personnel Ratio OLS Regression (by district) and FRELIMO Affiliation (2003)

Model Specifications	Regression 1	Regression 2	Regression 3	Regression 4
% voting for FRELIMO in most recent election	-14.62362 (0.001)	-22.12957 (0.000)	-15.45147 (0.000)	-22.8474 (0.000)
Poverty Incidence Index		3783.666 (0.012)		3736.214 (0.010)
Population Density (pop./km <sup>2</sup> as a measure of rural-ness)			11.19357 (0.001)	10.91981 (0.001)
Constant	2825.637 (0.000)	895.8298 (0.250)	2537.595 (0.000)	639.9767 (0.394)

As with health units, the allocation of health personnel is significantly associated with a district's FRELIMO affiliation, and a one percent increase in voting output for the ruling party accounts for 15 fewer people per health worker. This inequity is also evident in political changes over time within provinces:

Figure 11: Population : Health Care Personnel Ratio Fixed-Effects Panel Regression (by province) and FRELIMO Affiliation (1997-2004)

Model Specifications	Regression 1	Regression 2
% voting for FRELIMO in most recent election	-30.90249 (0.001)	-30.49822 (0.001)
Population Density (pop./km <sup>2</sup> as a measure of rural-ness)		-.5646075 (0.493)
Constant	3323.546 (0.000)	3499.92 (0.000)
R <sup>2</sup> (within provinces)	0.1314	0.1369
R <sup>2</sup> (between provinces)	0.1318	0.3932
R <sup>2</sup> (overall)	0.1032	0.2483

The above regression output demonstrates that within a province, a one percent increase in voting output corresponds to over a 30-person drop in the ratio of population to health care personnel, even when controlling for population density. Political affiliation alone also explains over 13% of the variation in the population : health care personnel ratio within a province and between provinces over time. Not only are variations in political affiliation within a province a significant predictor of an individual's share of health resources, but the

concentration of health personnel has also been consistently unequal over this period of time



Figure 12: Concentration Indices of Total Health Worker Allocation, by Province (1997-  
2004)

Year	Concentration Index
1997	0.132222781
1998	0.095370937
1999	0.137832484
2000	0.127965909
2001	0.147410663
2002	0.073926491
2003	0.126207906
2004	0.166457682

The distribution of health workers has been concentrated among those with a stronger affiliation with the ruling party, resulting in all positive concentration indices. This is despite the larger health burden borne by the provinces with a weaker ruling party affiliation, the remedying of which would require a larger share of the health sector's resources. This inequitable distribution is regressive in terms of need, and can only serve to exacerbate existing health inequity. The regressivity of the distribution of health care workers becomes even more pronounced when skilled health workers are considered separately:

Figure 13: Population : Skilled Health Personnel Ratio OLS Regression (by district) and

FRELIMO Affiliation (2003)

Model Specifications	Regression 1	Regression 2	Regression 3	Regression 4
% voting for FRELIMO in most recent election	-19.21539 (0.001)	-24.68097 (0.000)	-20.56227 (0.000)	-25.86322 (0.000)
Poverty Incidence Index		2765.309 (0.171)		2687.165 (0.156)
Population Density (pop./km <sup>2</sup> as a measure of rural-ness)			18.2115 (0.000)	17.98281 (0.000)
Constant	3724.218 (0.000)	2309.523 (0.030)	3255.584 (0.000)	1888.182 (0.059)

As the above regression outputs show, stronger affiliation with FRELIMO is consistently associated—at a 99.9% level of significance—with an even lower population : health worker ratio when skilled personnel are considered in isolation. Despite controlling for the economic parameters that have been emphasized in Mozambique’s policies on health equity, this relationship holds. At the provincial level, and over the period 1997-2004, this inequality in the allocation of skilled health personnel has also been persistent 📄:

Figure 14: Concentration Indices of Skilled Health Worker Allocation, by Province (1997-2004)

Year	Concentration Index
1997	0.215640204
1998	0.061454962
1999	0.21656404
2000	0.142780734
2001	0.229021476
2002	0.182709365
2003	0.194660253
2004	0.201087953

Like the concentration indices for total health workers (Figure 12), these skilled health workers concentration indices are consistently regressively unequal, but indicate an even more severe deviation from an equitable distribution. These health worker regressions and concentration indices suggest that among regions with a weaker affiliation with the ruling party, a concentration of worse health outcomes coincides with a health system less equipped to deal with them—and increasingly more so as the ill health requires the expertise of skilled personnel.

The number of beds used in a healthcare setting is often reported as a proxy measure for how well health units are supplied with goods necessary to accommodate a patient population. This offers a complementary physical capital measure to the human capital necessary to equip a health system. The regression below considers the number of people per bed allocated at the district level:



Figure 15: Population : Beds Ratio OLS Regression (by district) and FRELIMO Affiliation

(2003)

Model Specifications	Regression 1	Regression 2	Regression 3	Regression 4
% voting for FRELIMO in most recent election	-11.62539 (0.012)	-13.82428 (0.016)	-11.82564 (0.011)	-13.94823 (0.015)
Poverty Incidence Index		1101.869 (0.508)		1063.269 (0.524)
Population Density (pop./km <sup>2</sup> as a measure of rural-ness)			3.689835 (0.332)	3.663698 (0.339)
Constant	2378.316 (0.000)	1824.762 (0.039)	2281.078 (0.000)	1748.115 (0.048)

Again, stronger affiliation with the ruling party corresponds to a larger share of health goods.

A one percent increase in voting output for FRELIMO is significantly associated with a drop of over 11 people to each bed, regardless of the model's economic specifications. Over the period 1997-2004, there is also an inequitable concentration of this health resource evident

at the province level :

Figure 16: Concentration Indices of Bed Allocation, by Province (1997-2004)

Year	Concentration Index
1997	0.12642598
1998	0.0845784
1999	0.09581483
2000	0.06997751
2001	0.07194866
2002	0.1060108
2003	0.10620362
2004	0.10861139

The positive indices above demonstrate a persistent unequal concentration of this health resource among the populations with a stronger ruling party affiliation—one that has grown over the last 5 years included in the analysis. If this is an indication of future health resource allocation, the trend will further exclude the populations with a greater need of human capital investment (in the form of health), concentrating the distribution of health goods among those more aligned with the ruling party.

Just as the allocation of existing health goods provides an indication of expected trends in the distribution of health outcomes, so does budgetary expenditure imply an allocation of resources for health, and by extension, policy's future impact on health equity. The following regression outputs are based on districts' reports of their budget on a per capita basis:

Figure 17: Per Capita Budget Allocation (by district) and FRELIMO Affiliation (2004)

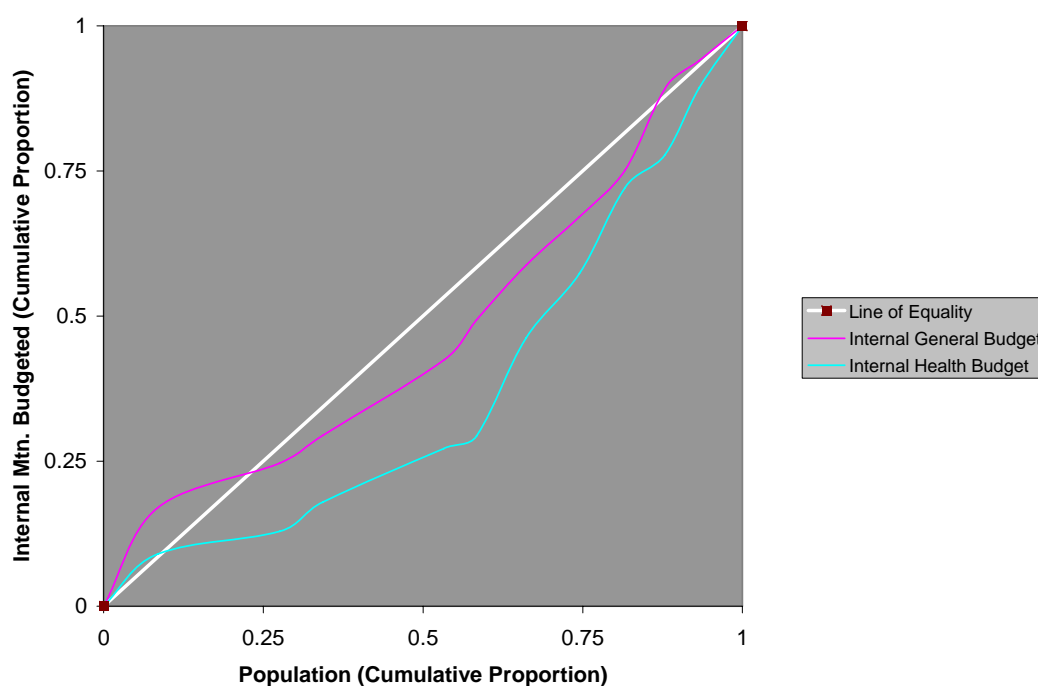
Model Specifications	Regression 1	Regression 2	Regression 3	Regression 4
% voting for FRELIMO in most recent election	.1034152 (0.034)	.1959001 (0.003)	.09548961 (0.048)	.180187 (0.005)
Poverty Incidence Index		-41.27191 (0.027)		-37.34456 (0.045)
Population Density (pop./km <sup>2</sup> as a measure of rural-ness)			-.0762272 (0.048)	-.0659544 (0.086)
Constant	15.41275 (0.000)	34.47982 (0.000)	18.1927 (0.000)	35.07717 (0.000)

The per capita budget in 2004 (as reported by the districts) is positively associated with a district's degree of affiliation with the ruling party, independent of model specifications. A one percent increase in voting output for FRELIMO is significantly correlated with an additional 0.10 MTn. increase in the general budget allocation per person when considered in isolation. Once controlling for the other factors more often emphasized as relevant stratifiers, the magnitude of the impact of political affiliation tends to increase, demonstrating its relevance and sensitivity as a distinguishing variable within the context of poor and rural districts. While increased voting output for the ruling party is a statistically significant predictor of higher general budgetary allocation per capita, the inequality that

exists along political lines becomes even more pronounced with the isolation of budget expenditures in health. The following curves plot the concentration of general budget expenditures alongside the distribution of the health budget. Figure 18 plots the budget allocation from internal financing sources:

Figure 18: Internal Budget Allocation Concentration Curve Ranked by Frelimo Affiliation,

Provinces (2004)

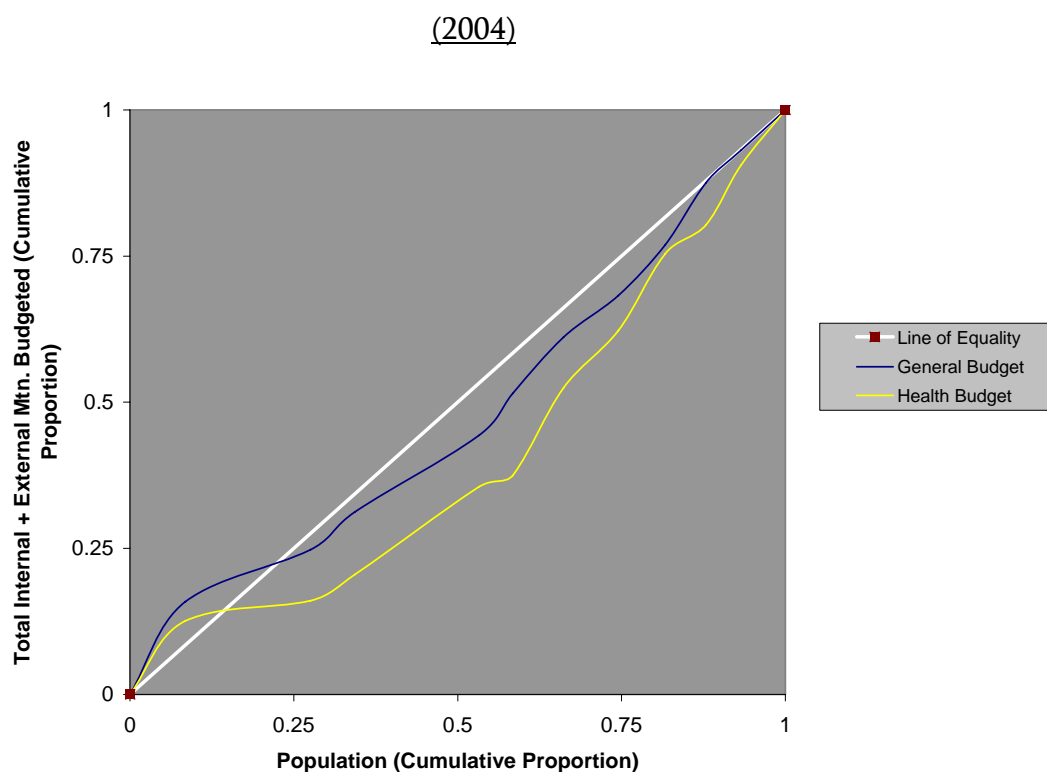


The above concentration curves demonstrate that the inequity in allocation of financial resources is preserved at the provincial level. The concentration index for the internally-financed general budget is .06, whereas this figure jumps to .27 when considering the health sector in isolation. This suggests that internal financing in the health sector is overwhelmingly concentrated out of the hands of those with a concentration of worse health


outcomes and a lower per person share of health goods. This can only result in greater health disparities along political lines.

A case can be made, however, for the role of external financing in reducing inequality both in general expenditure and health expenditure, specifically:

Figure 19: Budget Allocation Concentration Curve Ranked by Frelimo Affiliation, Provinces



When internal and external financing are considered jointly, inequity still persists, although with some alleviation. The per capita budget allocation for all sectors corresponds to a concentration index of .05, demonstrating a concentration of resources among those with a stronger affiliation with the ruling party, although to a lesser extent than the internal financing index of .06 implies 📄. When the health sector is considered in isolation, the concentration index is .19—again, an indication that total financing for health is particularly

plagued by an inequitable distribution of resources. This is, however, a meaningful improvement over the otherwise .27 concentration index .

The above analysis of the allocation of health resources demonstrates that the Mozambican health system is not structured to target the populations in need as determined by the distribution of health outcomes. In fact, it is regressive, perpetuating the exclusion of unidentified underserved populations. External financing can successfully serve to reduce inequity in the distribution of health investment—and ultimately mitigate health disparities—if it is sufficiently progressive and targeted at groups currently missed. This has been demonstrated in Mozambique’s allocation of health financing along a political stratification, although the resulting distribution remains highly inequitable, prompting the need for further health equity investment and policy better equipped to identify underserved populations.

### ***The Nature of Mozambican Politics and the Feasibility of Moving Forward***

Donors have acknowledged that political affiliation plays a role in the country’s development, and Mozambicans are still keenly aware of their tumultuous political history: “There is a collective memory of the persecution of non-FRELIMO people...FRELIMO had a brutal re-education camp in Niassa...Lazaro Nkavandame, Uria Simango, Padre Gwenjere [political dissidents], these have long been forbidden names...FRELIMO does not allow the space for freedom. Other political parties have disappeared...Even if someone senior in

FRELIMO were to try to exit, their [sic] life would be destroyed.”<sup>26</sup> Incidents of violence also demonstrate the depth of Mozambicans’ perceptions of political rifts, including “the death of 119 RENAMO cadres in Montepuez after the 2004 election”<sup>8</sup>, and reports of politically-motivated violence even outside election time. These include “terrorist acts” and RENAMO “political prisoners”<sup>37</sup>, or the “assassination” of a RENAMO parliamentary deputy.<sup>38</sup>

Both the UK Department for International Development (DfID) and the US Agency for International Development (USAID) produced reports that discuss Mozambique’s political cleavage. The DfID conflict assessment describes an almost tenuous democracy: “as a trigger for actual conflict, the election process is pre-eminent...largely because the political system is currently based on the exclusion of RENAMO.”<sup>8</sup> This clearly couches political divides in a historical framework, and provides precedent for political stratification. The USAID Corruption report states, “A dominant fact of Mozambican political life is the blurring of the line between party (Frelimo) and state, thus rendering separation and balance of power a meaningless construct that does little to check the excesses of any branch of government or of the party... The dominance of the Presidency, combined with the weak legislative branch, ensures that electoral politics in Mozambique is a winner-take-all game.”<sup>12</sup> Beyond a discussion of FRELIMO’s dominance of domestic politics, the report alludes to how this may translate into disparities in development outcomes: “Frelimo benefits greatly from access to state resources not only during political campaigns, but perhaps even more so from its ongoing ability to use its control of the state to disperse patronage in the form of jobs and access to public services. This helps maintain political domination especially in the rural

areas, where alternatives to state-provided jobs and services are fewest.”<sup>12</sup> This assessment offers one of many explanations as to the mechanism by which political factors translate into differences in well-being of whole populations.

Political dimensions of development, embedded in a social, cultural, and historic reality, are multifaceted and complex, with paths of causation that are nearly impossible to trace. There are several explanations offered for why political affiliation and development outcomes are closely linked in Mozambique, which motivate the exploration of association between politics and health disparities. As described in the USAID report, there are widely-held perceptions that “The whole economic and social system in Mozambique is in the hands of FRELIMO...relationship with the party is key to economic success. It gives access to loans and concessions, it means influence.”<sup>26</sup> Likewise, many Mozambicans believe that development aid has been targeted by the ruling government to punish the regions that support RENAMO.<sup>8</sup> Others claim that RENAMO is defunct and to blame for their supporters being worse-off: “It is alleged that only [RENAMO] party leader Afonso Dhlakama knows how...financial resources the party pulled together from private donations are spent. Most notably, money hardly trickles down to the districts.”<sup>39</sup> RENAMO claims that FRELIMO actively tries to undermine its ability to govern effectively: “there’s too much political, economic and social exclusion...[FRELIMO] created an establishment and a status quo that they fear Renamo in power would destroy’ (Simango).”<sup>39</sup> One interviewee attributed positive health indicators in FRELIMO areas to the party’s “[strength] in the women’s empowerment movement... We know that lower under-5 and infant mortality rates have a correlation with



education of the mother...Mozambique has done better [in empowering women] than other countries that were independent longer...This was a key success of FRELIMO. It was good at mobilizing women for social action.”<sup>25</sup>

So while Mozambicans are acutely aware that this dynamic exists, and are only too quick to offer their theories as to how this came to be, Mozambicans are prepared to move forward. The lack of consensus around the *causes* of these disparities need not impair the priority of aid to address this stratifier. The history of conflict resolution in Mozambique is one of making amends and not dwelling on the past: “Despite [the] atrocities committed in the past, neither Frelimo nor Renamo publicly offered any apology for their crimes against the people of Mozambique...For the people, it was the need for peace that was emphasized more than the desire to settle accounts.”<sup>40</sup> Therefore, the possibility of targeting people who have been excluded, without a detailed articulation of how this came to be, is possible in this context, and should be reflected in health equity programming.

### *Conclusion*

The purpose of equity-based approaches to health is to target the most underserved populations. This is consistent with the perspectives of policy-makers in Mozambique: “Mozambique has achieved good results despite low spending...This does not mean that disparities have been eliminated...The health sector should compensate for it. It should improve in general the level of living. Our greatest challenge...is to allocate resources in the most efficient manner.”<sup>25</sup> This “greatest challenge” to health equity policy suggests that

resources should target whichever populations are in most need, particularly populations that are systematically missed by current equity policy frameworks.

The association between political affiliation and health outcomes exists, regardless of the lack of consensus as to the cause. Given the systematic emphasis on economic frameworks in the country's development policy, it is conceivable that both the government and donors are as yet unaware of this dynamic. As such, it is a correlation that policy-makers have demonstrably been unable to address. It is therefore incumbent upon those of them who are concerned about health equity in Mozambique to attend to this persistent need.

### *Appendix A - Geography*

Community 1 is located in the province of Sofala, and Community 2 is located in the province of Gaza. Maputo and Beira are the closest urban centers, respectively.

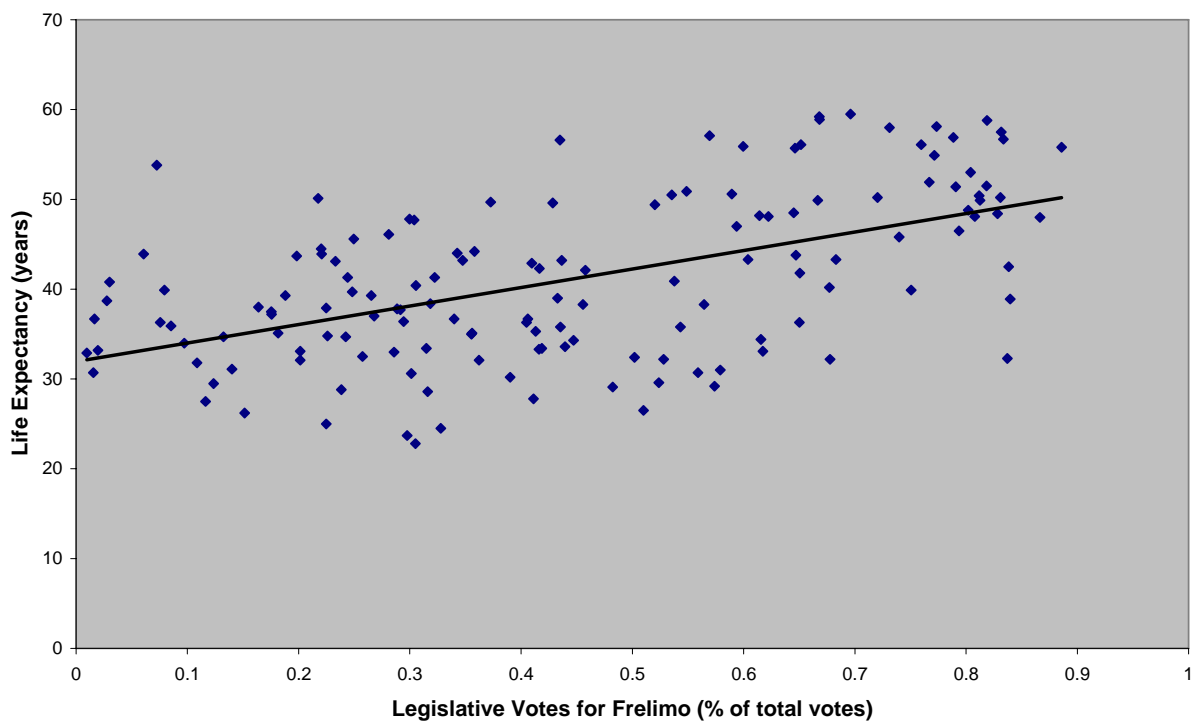


Click on the icon for a history of Mozambique's political affiliation: 

*Appendix B – Supplementary Quantitative Data*

Scatter plots for Figure 1: Life Expectancy and U5MR <sup>32, 33, 41</sup>

**Life Expectancy by Frelimo Affiliation, 1997**



### Under-5 Mortality Rate by Frelimo Affiliation, Districts (1997)

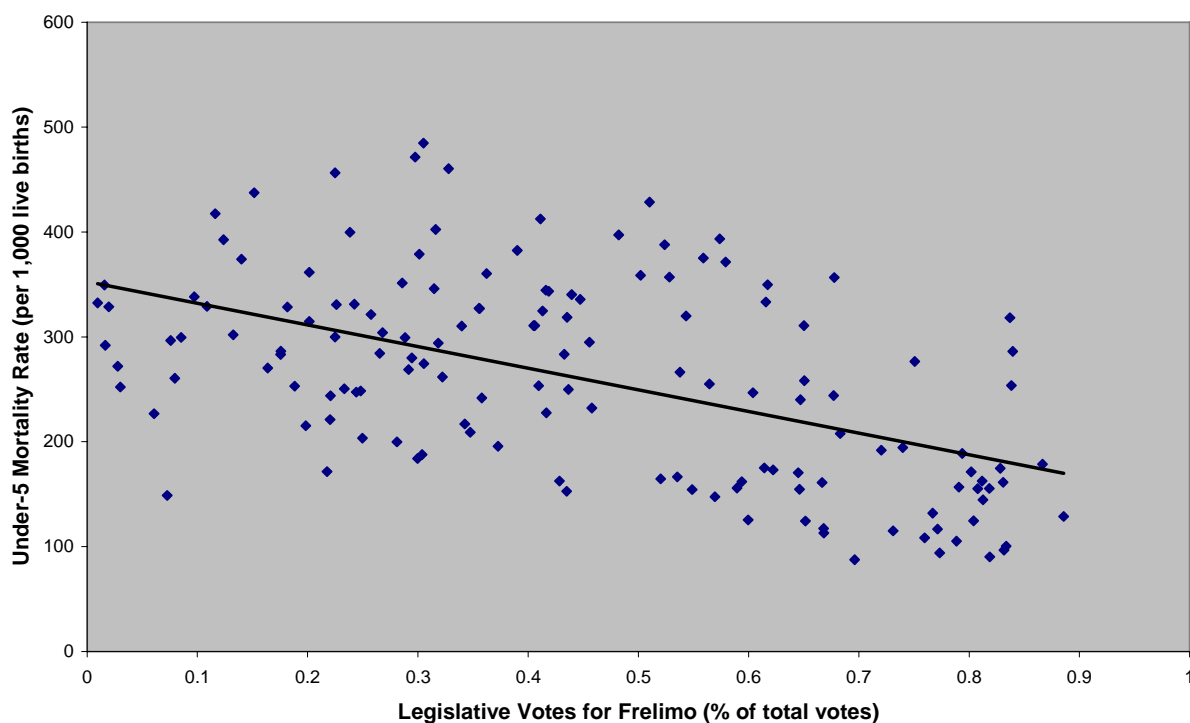
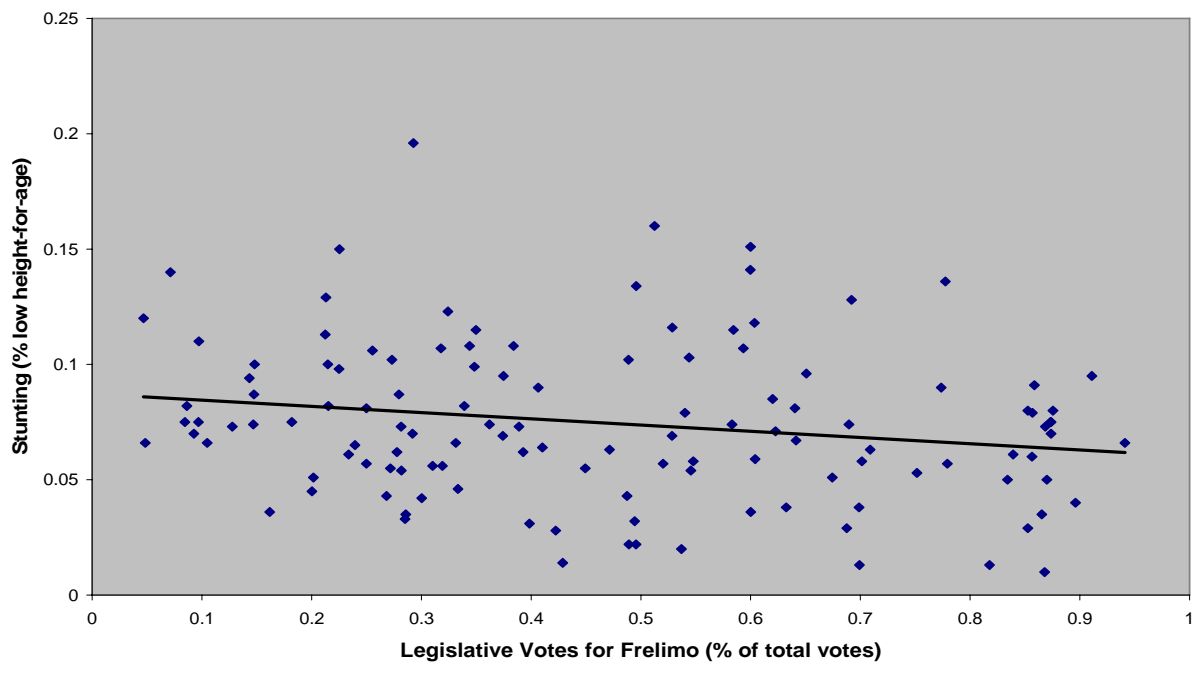


Table for Figure 2: Chronic Health Burden <sup>31, 32</sup>

Province	% Frelimo Legislative Votes 1999	Average Population	% Chronically Ill	Cumulative Average Population	Cumulative Chronically Ill	Concentration Index
				0	0	
Sofala	0.19622333	0.09811167	5.6	0.084737466	0.189914583	-0.024085104
Zambezia	0.2605445	0.13027225	1.9	0.27668234	0.335871586	-0.008290095
Manica	0.31944942	0.15972471	1.9	0.342749782	0.386109999	-0.002268268
Tete	0.37222155	0.18611078	2.6	0.419751341	0.466234932	-0.015146171
Nampula	0.39229275	0.19614637	2.3	0.609422637	0.640826901	-0.004050595
Niassa	0.41191026	0.20595513	2.3	0.660147113	0.687518659	0.011306845
Inhambane	0.6211479	0.31057395	3.2	0.731742656	0.779210519	-0.031260992
Cabo Delgado	0.62314786	0.31157393	1.4	0.816411915	0.826650948	-0.010839924
Maputo Cidade	0.82659902	0.41329951	2.0	0.879009583	0.876756167	-0.014720583
Maputo Province	0.84778385	0.42389193	1.7	0.931827118	0.912691516	0.019135602
Gaza	0.87432402	0.43716201	3.2	1	1	0
						<b>-0.080219284</b>

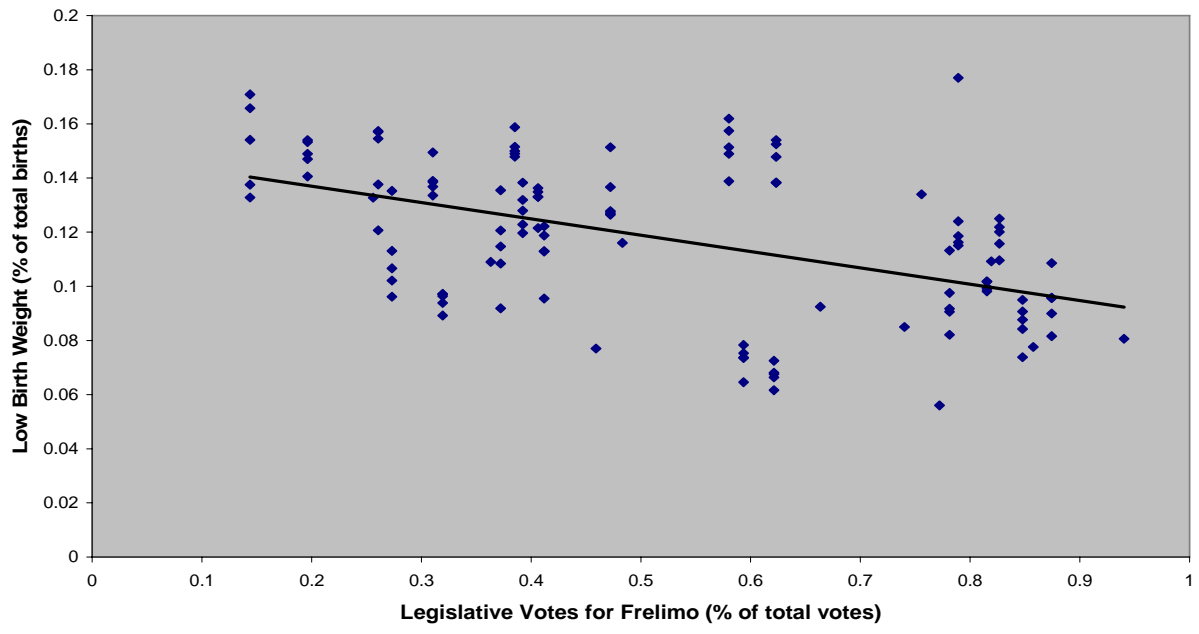
Scatter plot for Figure 3: Stunting <sup>32, 33</sup>

**Stunting by Freilimo Affiliation, Districts (2003)**



Scatter plot for Figure 4: Low Birth Weight <sup>30, 32, 33</sup>

**Rates of Low Birth Weight by Freilimo Affiliation, Provinces (1994-2004)**



Tables for Figure 5: Low Birth Weight Concentration Curves <sup>30</sup>

Province (1994)	%Frelimo Legislative Votes 1994	Live Births	Live Births with weight<2500g	% Low Birth Weights (1994)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.143947664	22737	3504	0.154110041	0.102939645	0.11789247	-0.00223041
Manica	0.273117541	15703	1776	0.113099408	0.174033512	0.177646188	0.000289454
Nampula	0.310440552	30727	4270	0.13896573	0.313147136	0.321310814	0.00252453
Zambezia	0.385160524	24338	3600	0.147916838	0.423335159	0.442433214	-0.00110649
Tete	0.40634992	13444	1813	0.134855698	0.484201614	0.503431801	-0.00264705
Niassa	0.472281087	12090	1529	0.126468156	0.538937961	0.554875177	0.004340395
Cabo Delgado	0.580203181	10218	1655	0.161969074	0.585199002	0.610557836	-0.02812356
Inhambane	0.593574963	21948	1653	0.075314379	0.684566523	0.666173205	-0.00432326
Maputo Province	0.781222687	10605	1201	0.113248468	0.732579671	0.706580984	0.043129808
Maputo Cidade	0.789194756	37077	6562	0.176983035	0.900442328	0.927360205	-0.02691788
Gaza	0.815359129	21990	2159	0.098180991	1	1	0
							<b>-0.01506446</b>

Province (1995)	%Frelimo Legislative Votes 1994	Live Births	Live Births with weight<2500g	% Low Birth Weights (1995)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.143947664	22170	3788	0.170861525	0.102862711	0.134708393	-0.00201613
Manica	0.273117541	15493	2096	0.135286904	0.174745975	0.209246088	-0.00133554
Nampula	0.310440552	31716	4740	0.149451381	0.321899504	0.377809388	-0.0004419
Zambezia	0.385160524	24075	3648	0.15152648	0.433600891	0.507539118	-0.00376125
Tete	0.40634992	12395	1649	0.133037515	0.491110286	0.566180654	-0.00322655
Niassa	0.472281087	13448	1838	0.136674598	0.553505312	0.631543385	0.000479006
Cabo Delgado	0.580203181	9624	1457	0.151392352	0.598158029	0.683357041	-0.02522211
Inhambane	0.593574963	16764	1313	0.078322596	0.675938384	0.730049787	-0.01327806
Maputo Province	0.781222687	10974	994	0.090577729	0.72685473	0.765398293	-0.01766412
Maputo Cidade	0.789194756	36236	4295	0.118528535	0.894979817	0.918136558	-0.02315674
Gaza	0.815359129	22635	2302	0.101700906	1	1	0
							<b>-0.08962339</b>

Province (1996)	%Frelimo Legislative Votes 1994	Live Births	Live Births with weight<2500g	% Low Birth Weights (1996)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.143947664	20903	3465	0.16576568	0.090765009	0.119158155	-0.00296684
Manica	0.273117541	16086	1716	0.106676613	0.16061364	0.178169813	-0.00033725
Nampula	0.310440552	38710	5361	0.138491346	0.328700206	0.362529661	0.002910622
Zambezia	0.385160524	26443	3940	0.148999735	0.443521003	0.498022628	-0.00118669
Tete	0.40634992	14147	1928	0.136283311	0.504950108	0.56432477	-0.00373802
Niassa	0.472281087	15337	1949	0.127078307	0.571546431	0.631349084	0.002152975
Cabo Delgado	0.580203181	11618	1730	0.148906869	0.621994112	0.690842189	-0.02410867
Inhambane	0.593574963	16900	1243	0.073550296	0.695377294	0.733587813	-0.01254124
Maputo Province	0.781222687	12653	1161	0.091756896	0.750319152	0.773513532	-0.00552165
Maputo Cidade	0.789194756	35008	4343	0.124057358	0.902330893	0.922865298	-0.0205344
Gaza	0.815359129	22493	2243	0.099719913	1	1	0
							<b>-0.06587117</b>

Province (1997)	%Frelimo Legislative Votes 1994	Live Births	Live Births with weight<2500g	% Low Birth Weights (1997)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.143947664	17931	2382	0.132842563	0.07303126	0.080402349	-0.00141873
Manica	0.273117541	18763	1917	0.102169163	0.149451176	0.145109026	0.003934122
Nampula	0.310440552	39674	5428	0.136815043	0.311039609	0.32832647	0.007169423
Zambezia	0.385160524	30220	4532	0.149966909	0.434122798	0.481300209	-0.00018378
Tete	0.40634992	16255	2162	0.133005229	0.500327869	0.554276649	-0.00166888
Niassa	0.472281087	16853	2154	0.127811072	0.568968537	0.626983055	0.001475449
Cabo Delgado	0.580203181	13185	1830	0.138794084	0.622669789	0.688753122	-0.02734915
Inhambane	0.593574963	18890	1220	0.064584436	0.699606965	0.729933167	-0.00833613
Maputo Province	0.781222687	12447	1214	0.097533542	0.750302413	0.770910687	-0.00733671
Maputo Cidade	0.789194756	37609	4373	0.11627536	0.903480297	0.918517518	-0.01503722
Gaza	0.815359129	23698	2414	0.101865136	1	1	0
							<b>-0.0487516</b>



Province (1998)	%Frelimo Legislative Votes 1994	Live Births	Live Births with weight<2500g	% Low Birth Weights (1998)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.143947664	23443	3224	0.137525061	0.089664642	0.100326747	-0.00233064
Manica	0.273117541	20202	1943	0.096178596	0.166933127	0.160790415	0.003099606
Nampula	0.310440552	39306	5250	0.133567394	0.317270474	0.324163684	0.010915178
Zambezia	0.385160524	33305	5288	0.158774959	0.444655233	0.488719465	-0.00329235
Tete	0.40634992	17499	2126	0.121492657	0.511585301	0.554877859	0.005526809
Niassa	0.472281087	19202	2907	0.15139048	0.585028992	0.645339972	0.005117121
Cabo Delgado	0.580203181	12870	2026	0.157420357	0.634254089	0.708386494	-0.02506508
Inhambane	0.593574963	19974	1472	0.073695805	0.710650521	0.754193247	-0.01259816
Maputo Province	0.781222687	11796	969	0.08214649	0.755767789	0.784347285	-0.01111716
Maputo Cidade	0.789194756	37808	4350	0.115055015	0.900375595	0.919713708	-0.01933811
Gaza	0.815359129	26047	2580	0.099051714	1	1	0
							<b>-0.04908279</b>

Province (1999)	%Frelimo Legislative Votes 1999	Live Births	Live Births with weight<2500g	% Low Birth Weights (1999)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.196223334	26325	4054	0.153998101	0.094260578	0.118822909	0.00030863
Zambezia	0.260544499	36840	5785	0.157030402	0.226171678	0.2883815	-0.00897043
Manica	0.31944942	21848	2050	0.093830099	0.304401691	0.348467085	-0.00080634
Tete	0.372221554	20582	2788	0.135458167	0.378098604	0.430183481	-0.00854493
Nampula	0.39229275	39916	4777	0.11967632	0.521023779	0.57019755	-0.00567462
Niassa	0.411910265	17881	2019	0.112913148	0.585049359	0.629374524	-0.021766
Inhambane	0.621147898	21544	1562	0.072502785	0.662190856	0.675156809	0.007114803
Cabo Delgado	0.623147857	13138	2003	0.152458517	0.709233419	0.733864822	-0.00391148
Maputo Cidade	0.826599023	41241	5025	0.121844766	0.856902954	0.881147781	-0.01293894
Maputo Province	0.847783853	13558	1188	0.087623543	0.905449389	0.915968111	-0.01051872
Gaza	0.874324018	26406	2867	0.108573809	1	1	0
							<b>-0.06570802</b>

Province (2000)	%Frelimo Legislative Votes 1999	Live Births	Live Births with weight<2500g	% Low Birth Weights (2000)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.196223334	27820	4265	0.153306973	0.091373993	0.114761597	0.000435176
Zambezia	0.260544499	43364	6825	0.157388617	0.233801808	0.298407061	-0.00838396
Manica	0.31944942	20018	1786	0.089219702	0.299550356	0.34646432	-0.0041401
Tete	0.372221554	25015	3018	0.120647611	0.381711407	0.427671941	-0.00246905
Nampula	0.39229275	49549	6536	0.131909827	0.544453677	0.603541061	-0.00388249
Niassa	0.411910265	20198	2468	0.122190316	0.61079343	0.669949413	-0.02392124
Inhambane	0.621147898	22127	1507	0.068106838	0.683468927	0.710499408	0.003304505
Cabo Delgado	0.623147857	15630	2163	0.138387716	0.734805214	0.768700893	-0.00625435
Maputo Cidade	0.826599023	41868	5030	0.120139486	0.872319461	0.904046927	-0.01022619
Maputo Province	0.847783853	13831	1314	0.095003977	0.917746984	0.939403724	-0.02165674
Gaza	0.874324018	25043	2252	0.089925328	1	1	0
							<b>-0.07719444</b>

Province (2001)	%Frelimo Legislative Votes 1999	Live Births	Live Births with weight<2500g	% Low Birth Weights (2001)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.196223334	27846	4093	0.146987	0.087039422	0.104717802	0.000709087
Zambezia	0.260544499	41926	6481	0.154581882	0.218089296	0.270531648	-0.00764281
Manica	0.31944942	25211	2451	0.097219468	0.296892387	0.333239523	-0.00433689
Tete	0.372221554	25450	2919	0.114695481	0.37644253	0.407920995	0.003009487
Nampula	0.39229275	52954	7323	0.138289836	0.541963091	0.595277081	-0.00458484
Niassa	0.411910265	21437	2546	0.118766618	0.60896963	0.660415494	-0.02418585
Inhambane	0.621147898	23898	1614	0.067537032	0.683668621	0.701709052	0.006623662
Cabo Delgado	0.623147857	16877	2495	0.147834331	0.736421775	0.76554265	-0.00151594
Maputo Cidade	0.826599023	40026	5003	0.124993754	0.861532739	0.893542445	-0.01280869
Maputo Province	0.847783853	16124	1462	0.09067229	0.911932209	0.930947142	-0.01901493
Gaza	0.874324018	28175	2699	0.095794144	1	1	0
							<b>-0.06374773</b>

Province (2002)	%Frelimo Legislative Votes 1999	Live Births	Live Births with weight<2500g	% Low Birth Weights (2002)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.196223334	32050	4772	0.148892356	0.092415845	0.11909159	-0.00122007
Zambezia	0.260544499	47034	6474	0.137645108	0.228037901	0.280658847	-0.00715554
Manica	0.31944942	27871	2706	0.097090165	0.308403642	0.348190666	-0.00483558
Tete	0.372221554	28573	3099	0.108459035	0.390793594	0.425530322	-0.00156423
Nampula	0.39229275	53766	6604	0.122828553	0.545827302	0.590341902	-0.00381816
Niassa	0.411910265	23233	2623	0.112899755	0.612819419	0.655802346	-0.02227042
Inhambane	0.621147898	25429	1688	0.066380904	0.686143679	0.697928625	0.011013834
Cabo Delgado	0.623147857	17637	2716	0.153994443	0.736999787	0.765710007	-0.00343449
Maputo Cidade	0.826599023	43624	5050	0.115761966	0.862789142	0.891739456	-0.0141357
Maputo Province	0.847783853	18678	1574	0.084270264	0.916646963	0.931020714	-0.01437375
Gaza	0.874324018	28907	2764	0.095616979	1	1	0
							<b>-0.06179411</b>

Province (2003)	%Frelimo Legislative Votes 1999	Live Births	Live Births with weight<2500g	% Low Birth Weights (2003)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.196223334	31079	4369	0.140577239	0.083822629	0.10947954	-0.00227558
Zambezia	0.260544499	54535	6583	0.12071147	0.230908027	0.274438069	-0.00531163
Manica	0.31944942	29119	2807	0.096397541	0.309444374	0.344776606	-0.00648054
Tete	0.372221554	29809	2739	0.091885001	0.389841708	0.413411181	0.008321247
Nampula	0.39229275	61654	7889	0.127956013	0.556127637	0.611095798	-0.00863665
Niassa	0.411910265	27232	2601	0.095512632	0.629574589	0.676272333	-0.0212516
Inhambane	0.621147898	24954	1538	0.061633405	0.696877588	0.714811938	0.009710364
Cabo Delgado	0.623147857	20008	2765	0.138194722	0.750840815	0.784098028	-0.00232256
Maputo Cidade	0.826599023	43883	4809	0.109586856	0.86919689	0.904603202	-0.01603303
Maputo Province	0.847783853	19266	1422	0.073808782	0.921158882	0.940236049	-0.01907717
Gaza	0.874324018	29232	2385	0.08158867	1	1	0
							<b>-0.06335715</b>

Province (2004)	%Frelimo Legislative Votes 2004	Live Births	Live Births with weight<2500g	% Low Birth Weights (2004)	Cumulative Live Births	Cumulative Low Birth Weights	Concentration Index
					0	0	
Sofala	0.2560518	35175	4669	0.132736318	0.08876994	0.116879866	-0.00299587
Zambezia	0.363148466	56798	6191	0.109000317	0.232109103	0.271860215	-0.00760402
Manica	0.459000902	31883	2456	0.077031647	0.312571136	0.333341678	0.004525196
Nampula	0.483064973	67915	7880	0.116027387	0.48396589	0.530603049	-0.00694661
Niassa	0.663506596	31724	2933	0.092453663	0.56402666	0.604025334	-0.01032396
Tete	0.740098501	31837	2706	0.084995446	0.644372604	0.671765089	0.010989026
Cabo Delgado	0.755719003	23566	3158	0.13400662	0.703845309	0.750819836	-0.02333691
Inhambane	0.771984417	25725	1442	0.056054422	0.768766609	0.786917666	0.004811848
Maputo Cidade	0.819233172	41359	4518	0.109238618	0.873142898	0.900017523	-0.01122417
Maputo Province	0.857565205	19540	1517	0.077635619	0.922455325	0.937992841	-0.01553752
Gaza	0.940233047	30727	2477	0.080613142	1	1	0
							<b>-0.05764298</b>

Tables for Figure 6: No Antenatal Care <sup>34</sup>

Region 1997	%Frelimo Legislative Votes 1994	Number of Women	% No antenatal care	Cumulative Total	Cumulative no antenatal care	Concentration Index
				0	0	
Sofala	0.143947664	632	54.2	0.150190114	0.296641411	-0.012058744
Manica	0.273117541	307	24	0.223146388	0.360447927	-0.018687157
Nampula	0.310440552	675	30	0.383555133	0.535811927	0.022388679
Zambezia	0.385160524	632	49	0.533745247	0.803993276	-0.024345026
Tete	0.40634992	197	14.6	0.580560837	0.828901026	-0.010037091
Niassa	0.472281087	230	30.5	0.635218631	0.88965058	-0.023113423
Cabo Delgado	0.580203181	233	20.4	0.690589354	0.930813057	-0.066491089
Inhambane	0.593574963	372	7.1	0.778992395	0.953685718	-0.048647584
Maputo Province	0.781222687	247	4.4	0.837690114	0.963097353	-0.044618237
Maputo Cidade	0.789194756	204	1.4	0.886169202	0.965570634	-0.079401433
Gaza	0.815359129	479	8.3	1	1	0
						<b>-0.305011105</b>

Region 2003	%Frelimo Legislative Votes 1999	Number of Women	% No antenatal care	Cumulative Total	Cumulative no antenatal care	Concentration Index
				0	0	
Sofala	0.196223334	418	18.7	0.073526825	0.094193721	0.017627626
Zambezia	0.260544499	865	41.7	0.225681618	0.528860278	-0.030793931
Manica	0.31944942	451	9.1	0.305013193	0.578316621	-0.031275495
Tete	0.372221554	557	12.4	0.402990325	0.661546823	-0.068667268
Nampula	0.39229275	1192	12.1	0.612664908	0.835353193	-0.006833185
Niassa	0.411910265	272	16.5	0.660510114	0.889435713	-0.045581116
Inhambane	0.621147898	442	6.7	0.738258575	0.925121981	-0.040740177
Cabo Delgado	0.623147857	533	9.7	0.832014072	0.987424127	-0.049668326
Maputo Cidade	0.826599023	291	0.3	0.883201407	0.988476133	-0.061656753
Maputo Province	0.847783853	359	0.2	0.946350044	0.989341357	-0.042991313
Gaza	0.874324018	305	2.9	1	1	0
						<b>-0.360579939</b>

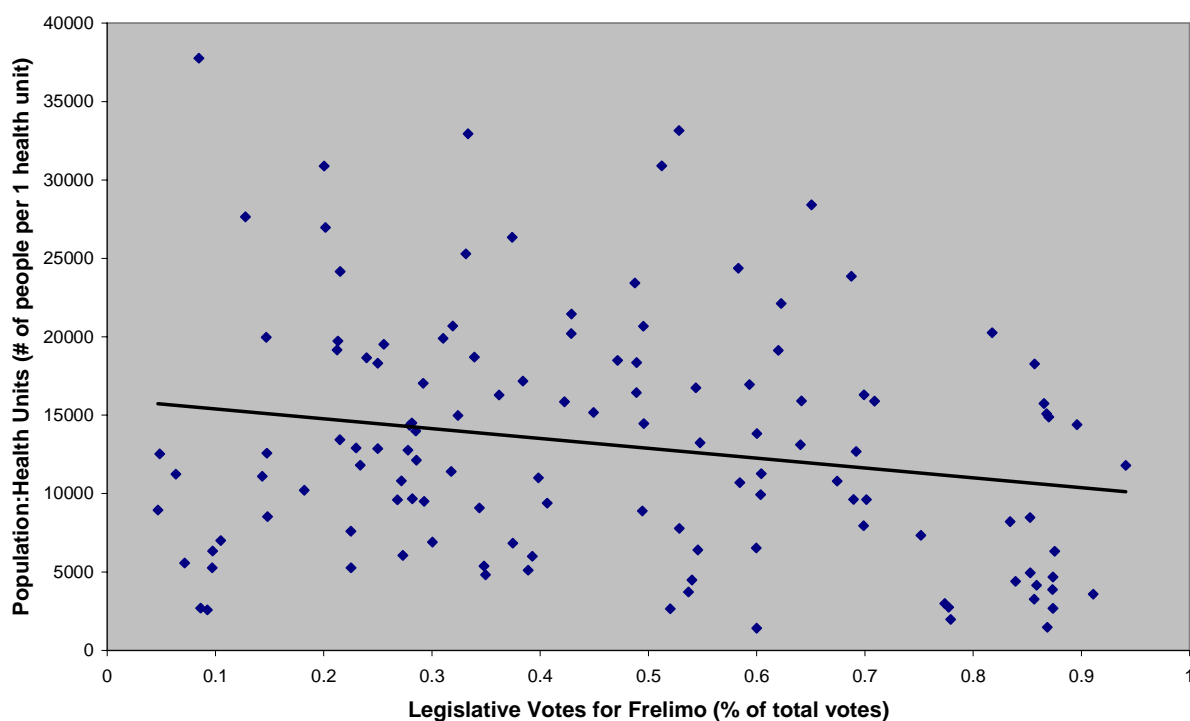
Tables for Figure 7: Children with No Vaccinations <sup>34</sup>

Region 1997	%Frelimo Legislative Votes 1994	Total Number of children	% No Vaccinations	Cumulative Number of children	Cumulative No Vaccinations	Concentration Index
				0	0	
Sofala	0.143947664	125	27.3	0.100482315	0.139367059	-0.00385585
Manica	0.273117541	81	15.7	0.165594855	0.191303496	-0.006200548
Nampula	0.310440552	202	18.2	0.327974277	0.341448274	0.083883648
Zambezia	0.385160524	208	50.6	0.495176849	0.77128283	-0.029313126
Tete	0.40634992	60	6.5	0.54340836	0.787210494	-0.016488724
Niassa	0.472281087	70	17.9	0.599678457	0.83838322	0.003968141
Cabo Delgado	0.580203181	71	29.8	0.656752412	0.924792838	-0.072270672
Inhambane	0.593574963	127	6.5	0.758842444	0.958506394	-0.046074993
Maputo Province	0.781222687	76	5.3	0.819935691	0.974956812	-0.044612626
Maputo Cidade	0.789194756	60	1.2	0.868167203	0.977897303	-0.109730101
Gaza	0.815359129	164	3.3	1	1	0
						<b>-0.240694851</b>

Region 2003	%Frelimo Legislative Votes 1999	Total Number of children	% No Vaccinations	Cumulative Number of children	Cumulative No Vaccinations	Concentration Index
				0	0	
Sofala	0.196223334	138	10.6	0.071354705	0.086542899	0.011459745
Zambezia	0.260544499	277	20.4	0.214581179	0.420858329	-0.024597747
Manica	0.31944942	157	4.8	0.295760083	0.465443186	-0.013621715
Tete	0.372221554	202	9.9	0.400206825	0.583756345	-0.023822932
Nampula	0.39229275	411	10.3	0.612719752	0.834208938	0.014140375
Niassa	0.411910265	78	16.9	0.653050672	0.91219694	-0.064222957
Inhambane	0.621147898	147	0.9	0.729058945	0.920024138	-0.030826695
Cabo Delgado	0.623147857	169	6.8	0.816442606	0.988013678	-0.052615704
Maputo Cidade	0.826599023	106	0.3	0.871251293	0.989895046	-0.065003449
Maputo Province	0.847783853	127	0	0.936918304	0.989895046	-0.052976742
Gaza	0.874324018	122	1.4	1	1	0
						-0.302087821

Scatter plot for Figure 8: Population : Health Units Ratio <sup>32, 33</sup>

### Population:Health Units Ratio by Frelimo Affiliation, Districts (2003)



Tables for Figure 9: Allocation of Health Units<sup>30, 32</sup>

Province	%Frelimo Legislative Votes 1994	1997 Population	Health Units (1997)	Cumulative Population	Cumulative Health Units	Concentration Index
				0	0	
Sofala	0.143947664	1368671	121	0.08513908	0.11480076	-0.00136479
Manica	0.273117541	1039463	75	0.14979956	0.18595825	-0.01312341
Nampula	0.310440552	3063456	157	0.34036386	0.33491461	-0.01090342
Zambezia	0.385160524	3096400	166	0.53297746	0.49240987	0.004922923
Tete	0.40634992	1226008	84	0.60924209	0.57210626	0.033073395
Niassa	0.472281087	808572	107	0.65953985	0.67362429	-0.00527199
Cabo Delgado	0.580203181	1380202	84	0.74539622	0.75332068	-0.00047875
Inhambane	0.593574963	1157182	76	0.81737949	0.82542694	0.004641654
Maputo Province	0.781222687	830908	61	0.86906667	0.88330171	-0.0229513
Maputo Cidade	0.789194756	987943	38	0.93052231	0.91935484	0.011167475
Gaza	0.815359129	1116903	85	1	1	0
						<b>-0.00028821</b>

Province	%Frelimo Legislative Votes 1994	1998 Population	Health Units (1998)	Cumulative Population	Cumulative Health Units	Concentration Index
				0	0	
Sofala	0.143947664	1398561	130	0.0850119	0.11638317	-0.00064422
Manica	0.273117541	1070057	91	0.1500556	0.19785139	-0.01588108
Nampula	0.310440552	3130088	162	0.34031884	0.34288272	-0.01540283
Zambezia	0.385160524	3165614	166	0.53274153	0.49149508	0.003420947
Tete	0.40634992	1258411	86	0.60923438	0.56848702	0.032433808
Niassa	0.472281087	829192	112	0.65963703	0.6687556	-0.00699624
Cabo Delgado	0.580203181	1406931	85	0.74515771	0.74485228	-0.00016793
Inhambane	0.593574963	1182445	80	0.81703294	0.81647269	0.006524685
Maputo Province	0.781222687	855996	67	0.86906489	0.87645479	-0.02390425
Maputo Cidade	0.789194756	1018246	39	0.93095924	0.91136974	0.019589503
Gaza	0.815359129	1135814	99	1	1	0
						<b>-0.00102761</b>

Province	%Frelimo Legislative Votes 1999	2000 Population	Health Units (2000)	Cumulative Population	Cumulative Health Units	Concentration Index
				0	0	
Sofala	0.196223334	1461812	163	0.08478861	0.13360656	-0.01356482
Zambezia	0.260544499	3310874	174	0.27682726	0.27622951	-0.00049219
Manica	0.31944942	1135377	78	0.34268185	0.34016393	-0.00059941
Tete	0.372221554	1325883	91	0.41958625	0.4147541	-0.01405117
Nampula	0.39229275	3271796	188	0.60935828	0.56885246	0.027626096
Niassa	0.411910265	873303	113	0.66001195	0.66147541	-0.0014114
Inhambane	0.621147898	1235323	85	0.73166366	0.73114754	-0.00865391
Cabo Delgado	0.623147857	1462670	89	0.81650203	0.80409836	-0.02549844
Maputo Cidade	0.826599023	1077650	37	0.87900832	0.83442623	0.022337216
Maputo Province	0.847783853	908054	92	0.93167764	0.90983607	0.02184157
Gaza	0.874324018	1177923	110	1	1	0
						<b>0.007533545</b>

Province	%Frelimo Legislative Votes 1999	2001 Population	Health Units (2001)	Cumulative Population	Cumulative Health Units	Concentration Index
				0	0	
Sofala	0.196223334	1495009	157	0.08468752	0.13116124	-0.0127825
Zambezia	0.260544499	3386832	175	0.27654081	0.27736007	-0.00059295
Manica	0.31944942	1169974	77	0.34281613	0.34168755	0.000291941
Tete	0.372221554	1361002	93	0.41991257	0.41938179	-0.01355225
Nampula	0.39229275	3346576	188	0.60948549	0.5764411	0.028257526
Niassa	0.411910265	896672	113	0.66027911	0.67084378	-0.00110564
Inhambane	0.621147898	1262925	85	0.73181981	0.74185464	-0.00827709
Cabo Delgado	0.623147857	1491771	89	0.81632391	0.81620718	-0.02593244
Maputo Cidade	0.826599023	1106627	37	0.87901081	0.84711779	0.022694428
Maputo Province	0.847783853	934956	92	0.93197311	0.92397661	0.007996499
Gaza	0.874324018	1200895	91	1	1	0
						<b>-0.00300247</b>



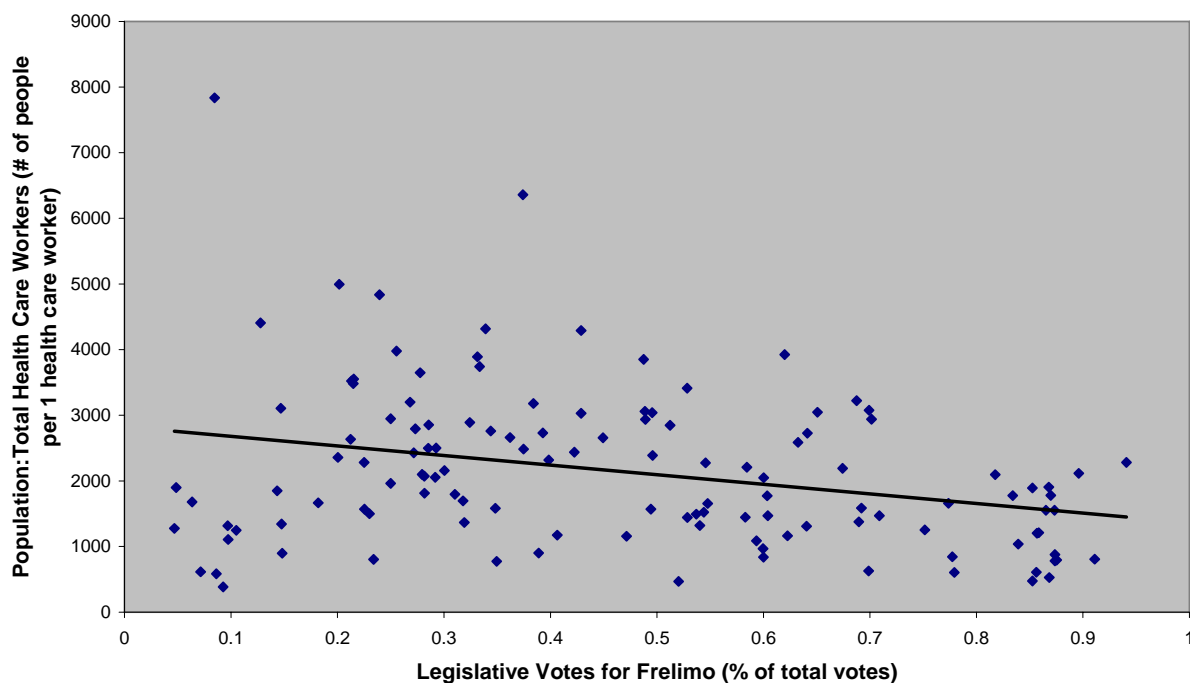
Province	%Frelimo Legislative Votes 1999	2002 Population	Health Units (2002)	Cumulative Population	Cumulative Health Units	Concentration Index
				0	0	
Sofala	0.196223334	1529187	146	0.0845903	0.11850649	-0.01117829
Zambezia	0.260544499	3464805	168	0.2762535	0.25487013	0.000264214
Manica	0.31944942	1205901	77	0.34296053	0.31737013	0.003031185
Tete	0.372221554	1397136	99	0.42024614	0.39772727	-0.0108636
Nampula	0.39229275	3424057	189	0.60965528	0.55113636	0.033283912
Niassa	0.411910265	920957	124	0.66060001	0.65178571	0.00438138
Inhambane	0.621147898	1291300	95	0.73203107	0.7288961	-0.00491067
Cabo Delgado	0.623147857	1521755	95	0.81621025	0.80600649	-0.02410397
Maputo Cidade	0.826599023	1134982	40	0.87899425	0.83847403	0.011727749
Maputo Province	0.847783853	962363	79	0.93222944	0.9025974	0.02963204
Gaza	0.874324018	1225127	120	1	1	0
						<b>0.031263937</b>

Province	%Frelimo Legislative Votes 1999	2003 Population	Health Units (2003)	Cumulative Population	Cumulative Health Units	Concentration Index
				0	0	
Sofala	0.196223334	1564367	146	0.08449723	0.11850649	-0.01116816
Zambezia	0.260544499	3544853	168	0.27596781	0.25487013	0.000134552
Manica	0.31944942	1243124	77	0.34311352	0.31737013	0.002982131
Tete	0.372221554	1434431	99	0.42059243	0.39772727	-0.01076339
Nampula	0.39229275	3504496	189	0.60988318	0.55113636	0.033216083
Niassa	0.411910265	946231	124	0.6609926	0.65178571	0.004482388
Inhambane	0.621147898	1320453	95	0.73231514	0.7288961	-0.00466256
Cabo Delgado	0.623147857	1552733	95	0.81618397	0.80600649	-0.02410979
Maputo Cidade	0.826599023	1162486	40	0.87897412	0.83847403	0.011527195
Maputo Province	0.847783853	989987	79	0.93244697	0.9025974	0.02984957
Gaza	0.874324018	1250665	120	1	1	0
						<b>0.031488016</b>

Province	%Frelimo Legislative Votes 2004	2004 Population	Health Units (2004)	Cumulative Population	Cumulative Health Units	Concentration Index
				0	0	
Sofala	0.2560518	1600581	140	0.08441214	0.11372868	-0.01112406
Zambezia	0.363148466	3626739	155	0.27568068	0.23964257	0.002170018
Manica	0.459000902	1281317	82	0.34325533	0.30625508	-0.00553447
Nampula	0.483064973	3588348	188	0.53249919	0.45897644	0.030966981
Niassa	0.663506596	972391	126	0.58378157	0.56133225	0.003350805
Tete	0.740098501	1472728	99	0.66145094	0.64175467	-0.00258429
Cabo Delgado	0.755719003	1584584	95	0.74501942	0.7189277	0.012348035
Inhambane	0.771984417	1350372	105	0.81623593	0.80422421	-0.02260605
Maputo Cidade	0.819233172	1189594	42	0.87897325	0.83834281	0.011420049
Maputo Province	0.857565205	1017542	79	0.93263683	0.90251828	0.03011855
Gaza	0.940233047	1277307	120	1	1	0
						<b>0.048525573</b>

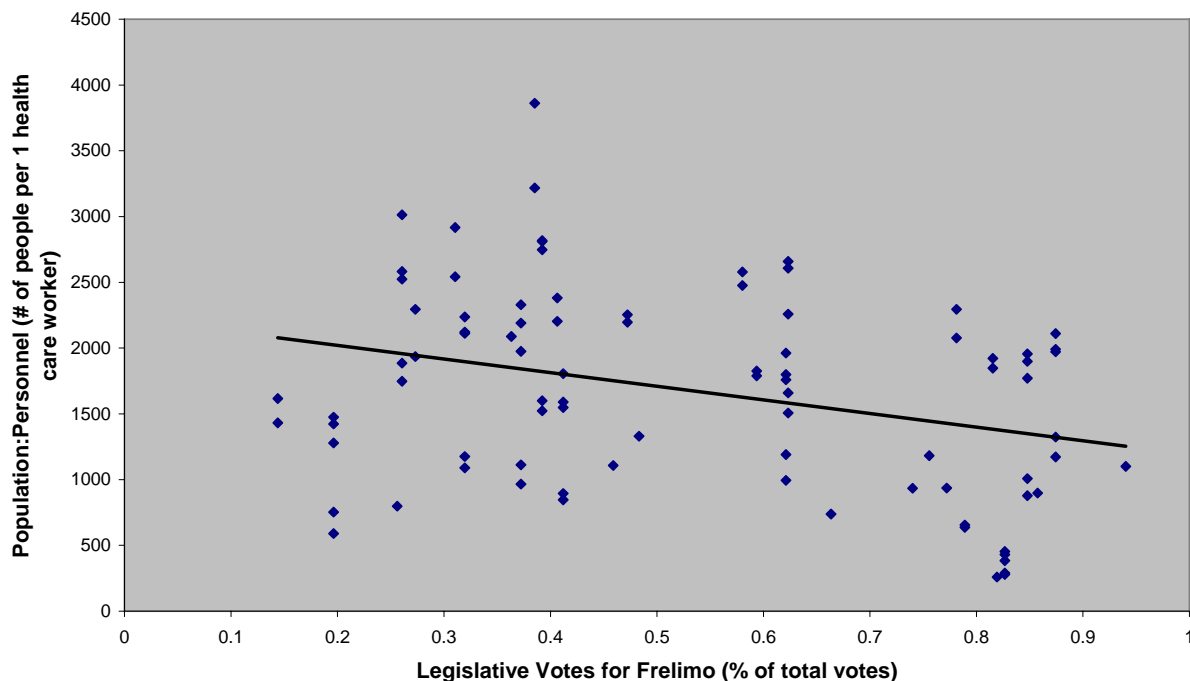
Scatter plot for Figure 10: Population : Total Health Workers Ratio<sup>32,33</sup>

**Population:Total Health Workers Ratio by Frelimo Affiliation,  
Districts (2003)**



Scatter plot for Figure 11: Total Health Workers Ratio<sup>30, 32, 33</sup>

**Population:Health Care Personnel Ratio by Frelimo Affiliation,  
Provinces (1997-2004)**



Tables for Figure 12: Allocation of Total Health Workers<sup>30, 32</sup>

Province	%Frelimo Legislative Votes 1994	1997 Population	Personnel (1997)	Cumulative Population	Cumulative Personnel	Concentration Index
				0	0	
Sofala	0.143947664	1368671	847	0.08513908	0.11	-0.00210382
Manica	0.273117541	1039463	453	0.14979956	0.16883117	-0.01174598
Nampula	0.310440552	3063456	1050	0.34036386	0.30519481	-0.02333379
Zambezia	0.385160524	3096400	802	0.53297746	0.40935065	0.004428216
Tete	0.40634992	1226008	515	0.60924209	0.47623377	0.005163536
Niassa	0.472281087	808572	368	0.65953985	0.52402597	0.000834201
Cabo Delgado	0.580203181	1380202	535	0.74539622	0.59350649	0.018651645
Inhambane	0.593574963	1157182	634	0.81737949	0.67584416	0.003494973
Maputo Province	0.781222687	830908	362	0.86906667	0.72285714	0.130856937
Maputo Cidade	0.789194756	987943	1553	0.93052231	0.92454545	0.005976859
Gaza	0.815359129	1116903	581	1	1	0
						<b>0.132222781</b>

Province	%Frelimo Legislative Votes 1994	1998 Population	Personnel (1998)	Cumulative Population	Cumulative Personnel	Concentration Index
				0	0	
Sofala	0.143947664	1398561	977	0.0850119	0.11503591	-0.00194703
Manica	0.273117541	1070057	553	0.1500556	0.18014836	-0.01252612
Nampula	0.310440552	3130088	1231	0.34031884	0.32509125	-0.02312555
Zambezia	0.385160524	3165614	984	0.53274153	0.44095137	0.002087566
Tete	0.40634992	1258411	571	0.60923438	0.50818321	0.00078422
Niassa	0.472281087	829192	368	0.65963703	0.55151301	-0.00305016
Cabo Delgado	0.580203181	1406931	568	0.74515771	0.61839162	0.013547688
Inhambane	0.593574963	1182445	661	0.81703294	0.69622042	0.003409005
Maputo Province	0.781222687	855996	412	0.86906489	0.74473095	0.112819496
Maputo Cidade	0.789194756	1018246	1553	0.93095924	0.92758742	0.003371818
Gaza	0.815359129	1135814	615	1	1	0
						<b>0.095370937</b>

Province	%Frelimo Legislative Votes 1999	1999 Population	Personnel (1999)	Cumulative Population	Cumulative Personnel	Concentration Index
				0	0	
Sofala	0.196223334	1429640	969	0.08489608	0.09956843	-0.00795634
Zambezia	0.260544499	3237079	1282	0.27712302	0.23129881	-0.00027293
Manica	0.31944942	1102069	522	0.34256701	0.28493629	-0.00108785
Tete	0.372221554	1291694	590	0.41927147	0.34556104	-0.01671657
Nampula	0.39229275	3199618	1136	0.60927387	0.46228935	0.006130597
Niassa	0.411910265	850809	471	0.65979732	0.5106864	0.005113988
Inhambane	0.621147898	1208493	616	0.73156106	0.57398274	-0.00115744
Cabo Delgado	0.623147857	1434391	635	0.81673927	0.6392314	0.164313586
Maputo Cidade	0.826599023	1048155	2432	0.87898169	0.88912865	-0.00157488
Maputo Province	0.847783853	881714	498	0.93134037	0.94030004	-0.00895967
Gaza	0.874324018	1156220	581	1	1	0
						<b>0.137832484</b>

Province	%Frelimo Legislative Votes 1999	2000 Population	Personnel (2000)	Cumulative Population	Cumulative Personnel	Concentration Index
				0	0	
Sofala	0.196223334	1461812	1027	0.08478861	0.10398947	-0.00896362
Zambezia	0.260544499	3310874	1282	0.27682726	0.23379911	-0.00040053
Manica	0.31944942	1135377	535	0.34268185	0.28797084	-0.00240281
Tete	0.372221554	1325883	569	0.41958625	0.34558526	-0.01498225
Nampula	0.39229275	3271796	1191	0.60935828	0.46618064	0.011185557
Niassa	0.411910265	873303	564	0.66001195	0.52328878	0.009420048
Inhambane	0.621147898	1235323	702	0.73166366	0.59437019	-0.0088637
Cabo Delgado	0.623147857	1462670	561	0.81650203	0.65117456	0.15523814
Maputo Cidade	0.826599023	1077650	2370	0.87900832	0.89115026	-0.00439213
Maputo Province	0.847783853	908054	478	0.93167764	0.93955043	-0.00787279
Gaza	0.874324018	1177923	597	1	1	0
						<b>0.127965909</b>

Province	%Frelimo Legislative Votes 1999	2001 Population	Personnel (2001)	Cumulative Population	Cumulative Personnel	Concentration Index
				0	0	
Sofala	0.19622333	1495009	1169	0.08468752	0.11185532	-0.01235171
Zambezia	0.2605445	3386832	1124	0.27654081	0.21940484	-0.00070218
Manica	0.31944942	1169974	523	0.34281613	0.2694479	0.001827262
Tete	0.37222155	1361002	689	0.41991257	0.33537461	-0.01572454
Nampula	0.39229275	3346576	1191	0.60948549	0.44933499	0.010068219
Niassa	0.41191026	896672	564	0.66027911	0.50330112	0.008344836
Inhambane	0.6211479	1262925	702	0.73181981	0.57047173	-0.00892379
Cabo Delgado	0.62314786	1491771	561	0.81632391	0.6241508	0.185907804
Maputo Cidade	0.82659902	1106627	2881	0.87901081	0.8998182	-0.0074529
Maputo Province	0.84778385	934956	478	0.93197311	0.94555545	-0.01358234
Gaza	0.87432402	1200895	569	1	1	0
						<b>0.147410663</b>

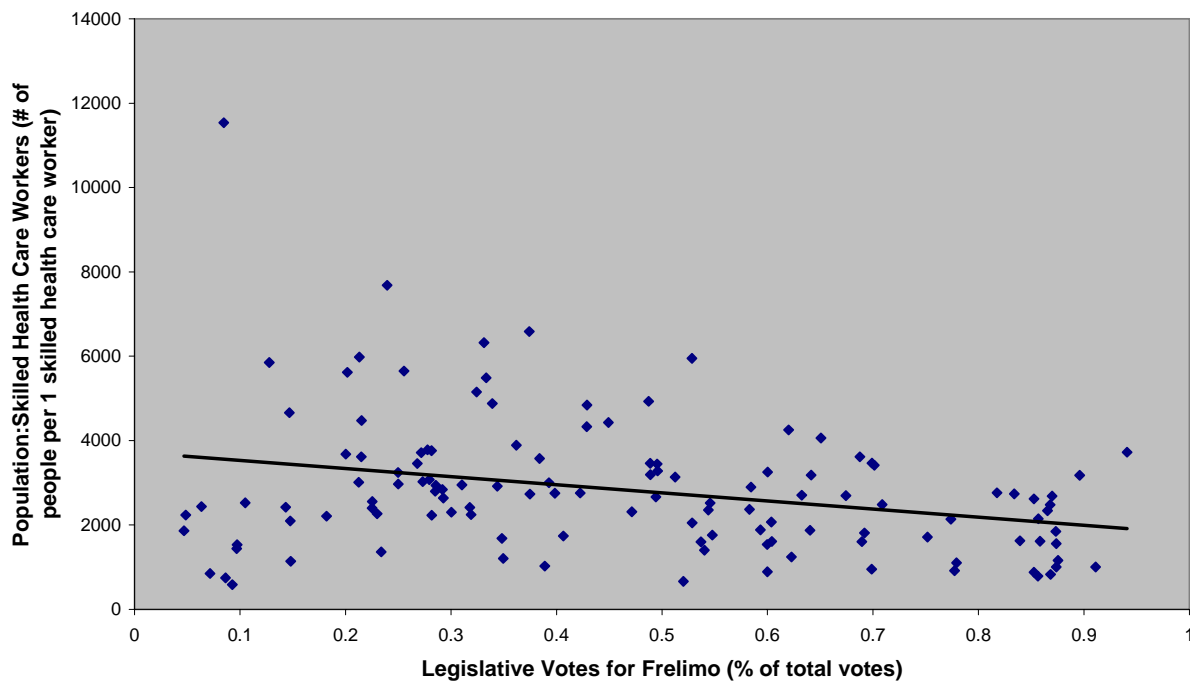
Province	%Frelimo Legislative Votes 1999	2002 Population	Personnel (2002)	Cumulative Population	Cumulative Personnel	Concentration Index
				0	0	
Sofala	0.19622333	1529187	2593	0.0845903	0.14496562	-0.0184114
Zambezia	0.2605445	3464805	1982	0.2762535	0.25577235	-0.00123133
Manica	0.31944942	1205901	1025	0.34296053	0.31307654	-0.00013328
Tete	0.37222155	1397136	1255	0.42024614	0.38323922	-0.02231078
Nampula	0.39229275	3424057	2140	0.60965528	0.50287919	0.011498111
Niassa	0.41191026	920957	1089	0.66060001	0.56376139	-0.00023595
Inhambane	0.6211479	1291300	1084	0.73203107	0.62436406	-0.01502994
Cabo Delgado	0.62314786	1521755	917	0.81621025	0.67563035	0.136547888
Maputo Cidade	0.82659902	1134982	3922	0.87899425	0.89489573	-0.00070981
Maputo Province	0.84778385	962363	955	0.93222944	0.94828647	-0.01605702
Gaza	0.87432402	1225127	925	1	1	0
						<b>0.073926491</b>

Province	%Frelimo Legislative Votes 1999	2003 Population	Personnel (2003)	Cumulative Population	Cumulative Personnel	Concentration Index
				0	0	
Sofala	0.19622333	1564367	2076	0.08449723	0.11134352	-0.01280357
Zambezia	0.2605445	3544853	1879	0.27596781	0.21212121	0.002645105
Manica	0.31944942	1243124	1141	0.34311352	0.27331724	0.006151304
Tete	0.37222155	1434431	1485	0.42059243	0.35296326	-0.01490691
Nampula	0.39229275	3504496	2301	0.60988318	0.47637436	0.010227547
Niassa	0.41191026	946231	1057	0.6609926	0.53306516	0.009024538
Inhambane	0.6211479	1320453	1327	0.73231514	0.60423706	-0.01018232
Cabo Delgado	0.62314786	1552733	1031	0.81618397	0.65953339	0.140428945
Maputo Cidade	0.82659902	1162486	4154	0.87897412	0.8823277	0.005949156
Maputo Province	0.84778385	989987	1127	0.93244697	0.94277286	-0.01032589
Gaza	0.87432402	1250665	1067	1	1	0
						<b>0.126207906</b>

Province	%Frelimo Legislative Votes 2004	2004 Population	Personnel (2004)	Cumulative Population	Cumulative Personnel	Concentration Index
				0	0	
Sofala	0.2560518	1600581	2005	0.08441214	0.09956302	-0.01176651
Zambezia	0.363148466	3626739	1736	0.27568068	0.1857682	0.003285617
Manica	0.459000902	1281317	1157	0.34325533	0.24322177	-5.7443E-05
Nampula	0.483064973	3588348	2697	0.53249919	0.37714768	0.015510193
Niassa	0.663506596	972391	1318	0.58378157	0.44259609	0.01131059
Tete	0.740098501	1472728	1576	0.66145094	0.52085609	0.000519213
Cabo Delgado	0.755719003	1584584	1341	0.74501942	0.58744662	0.0115489
Inhambane	0.771984417	1350372	1443	0.81623593	0.65910219	0.143922033
Maputo Cidade	0.819233172	1189594	4571	0.87897325	0.88608601	0.001945718
Maputo Province	0.857565205	1017542	1134	0.93263683	0.94239746	-0.00976063
Gaza	0.940233047	1277307	1160	1	1	0
						<b>0.166457682</b>

Scatter plot for Figure 13: Skilled Health Workers <sup>32, 33</sup>

**Population:Skilled Health Care Workers Ratio by Frelimo Affiliation,  
Districts (2003)**



Tables for Figure 14: Skilled Health Workers, Provinces<sup>f 30, 32</sup>

Province	%Frelimo Legislative Votes 1994	1997 Population	Skilled Health Workers (1997)	Cumulative Population	Cumulative Skilled Health Workers	Concentration Index
				0	0	
Sofala	0.143947664	1368671	202	0.08513908	0.097115385	-0.00124486
Manica	0.273117541	1039463	123	0.14979956	0.15625	-0.01227505
Nampula	0.310440552	3063456	243	0.34036386	0.273076923	-0.02314376
Zambezia	0.385160524	3096400	180	0.53297746	0.359615385	0.004603959
Tete	0.40634992	1226008	125	0.60924209	0.419711538	-0.00382916
Niassa	0.472281087	808572	59	0.65953985	0.448076923	0.006556018
Cabo Delgado	0.580203181	1380202	142	0.74539622	0.516346154	0.015152797
Inhambane	0.593574963	1157182	146	0.81737949	0.586538462	0.006229776
Maputo Province	0.781222687	830908	93	0.86906667	0.63125	0.206048945
Maputo Cidade	0.789194756	987943	586	0.93052231	0.912980769	0.017541544
Gaza	0.815359129	1116903	181	1	1	0
						<b>0.215640204</b>

Province	%Frelimo Legislative Votes 1994	1998 Population	Skilled Health Workers (1998)	Cumulative Population	Cumulative Skilled Health Workers	Concentration Index
				0	0	
Sofala	0.143947664	1398561	232	0.11503591	0.098765432	0.000425262
Manica	0.273117541	1070057	140	0.18014836	0.158365262	0.003197886
Nampula	0.310440552	3130088	341	0.32509125	0.303533418	-0.00264445
Zambezia	0.385160524	3165614	235	0.44095137	0.40357599	0.004028159
Tete	0.40634992	1258411	166	0.50818321	0.474244359	-0.00778484
Niassa	0.472281087	829192	59	0.55151301	0.49936143	0.002525707
Cabo Delgado	0.580203181	1406931	153	0.61839162	0.56449553	-0.0026026
Inhambane	0.593574963	1182445	157	0.69622042	0.631332482	0.003458587
Maputo Province	0.781222687	855996	115	0.74473095	0.680289485	0.056635477
Maputo Cidade	0.789194756	1018246	571	0.92758742	0.923371648	0.004215777
Gaza	0.815359129	1135814	180	1	1	0
						<b>0.061454962</b>

<sup>f</sup> Skilled Health Personnel excludes Basic, Elementary and General Support worker categories.



Province	%Frelimo Legislative Votes 1999	1999 Population	Skilled Health Workers (1999)	Cumulative Population	Cumulative Skilled Health Workers	Concentration Index
				0	0	
Sofala	0.196223334	1429640	231	0.08489608	0.093598055	-0.01080273
Zambezia	0.260544499	3237079	209	0.27712302	0.17828201	0.003828048
Manica	0.31944942	1102069	138	0.34256701	0.234197731	-0.00019716
Tete	0.372221554	1291694	128	0.41927147	0.286061588	-0.00644536
Nampula	0.39229275	3199618	282	0.60927387	0.400324149	0.015323446
Niassa	0.411910265	850809	144	0.65979732	0.458670989	0.009323913
Inhambane	0.621147898	1208493	158	0.73156106	0.522690438	0.004387231
Cabo Delgado	0.623147857	1434391	165	0.81673927	0.589546191	0.191317115
Maputo Cidade	0.826599023	1048155	689	0.87898169	0.868719611	0.007581548
Maputo Province	0.847783853	881714	149	0.93134037	0.929092382	0.002247992
Gaza	0.874324018	1156220	175	1	1	0
						<b>0.21656404</b>

Province	%Frelimo Legislative Votes 1999	2000 Population	Skilled Health Workers (2000)	Cumulative Population	Cumulative Skilled Health Workers	Concentration Index
				0	0	
Sofala	0.196223334	1461812	314	0.08478861	0.127746135	-0.01732275
Zambezia	0.260544499	3310874	209	0.27682726	0.212774614	0.002768636
Manica	0.31944942	1135377	149	0.34268185	0.273393002	0.002257165
Tete	0.372221554	1325883	167	0.41958625	0.341334418	-0.01629627
Nampula	0.39229275	3271796	284	0.60935828	0.456875509	0.008094007
Niassa	0.411910265	873303	126	0.66001195	0.508136697	0.008701803
Inhambane	0.621147898	1235323	168	0.73166366	0.576484947	-0.0069371
Cabo Delgado	0.623147857	1462670	141	0.81650203	0.633848657	0.152713538
Maputo Cidade	0.826599023	1077650	579	0.87900832	0.869406021	0.009996328
Maputo Province	0.847783853	908054	156	0.93167764	0.932872254	-0.00119462
Gaza	0.874324018	1177923	165	1	1	0
						<b>0.142780734</b>

Province	%Frelimo Legislative Votes 1999	2001 Population	Skilled Health Workers (2001)	Cumulative Population	Cumulative Skilled Health Workers	Concentration Index
				0	0	
Sofala	0.196223334	1495009	302	0.08468752	0.101376301	-0.01185906
Zambezia	0.260544499	3386832	267	0.27654081	0.191003693	-0.0020762
Manica	0.31944942	1169974	114	0.34281613	0.229271568	0.002577632
Tete	0.372221554	1361002	176	0.41991257	0.288351796	-0.01463174
Nampula	0.39229275	3346576	284	0.60948549	0.383685801	0.00629005
Niassa	0.411910265	896672	126	0.66027911	0.425981873	0.006761245
Inhambane	0.621147898	1262925	168	0.73181981	0.482376636	-0.0061248
Cabo Delgado	0.623147857	1491771	141	0.81632391	0.529707956	0.26548275
Maputo Cidade	0.826599023	1106627	1090	0.87901081	0.895602551	-0.00140239
Maputo Province	0.847783853	934956	156	0.93197311	0.947969117	-0.01599601
Gaza	0.874324018	1200895	155	1	1	0
						<b>0.229021476</b>

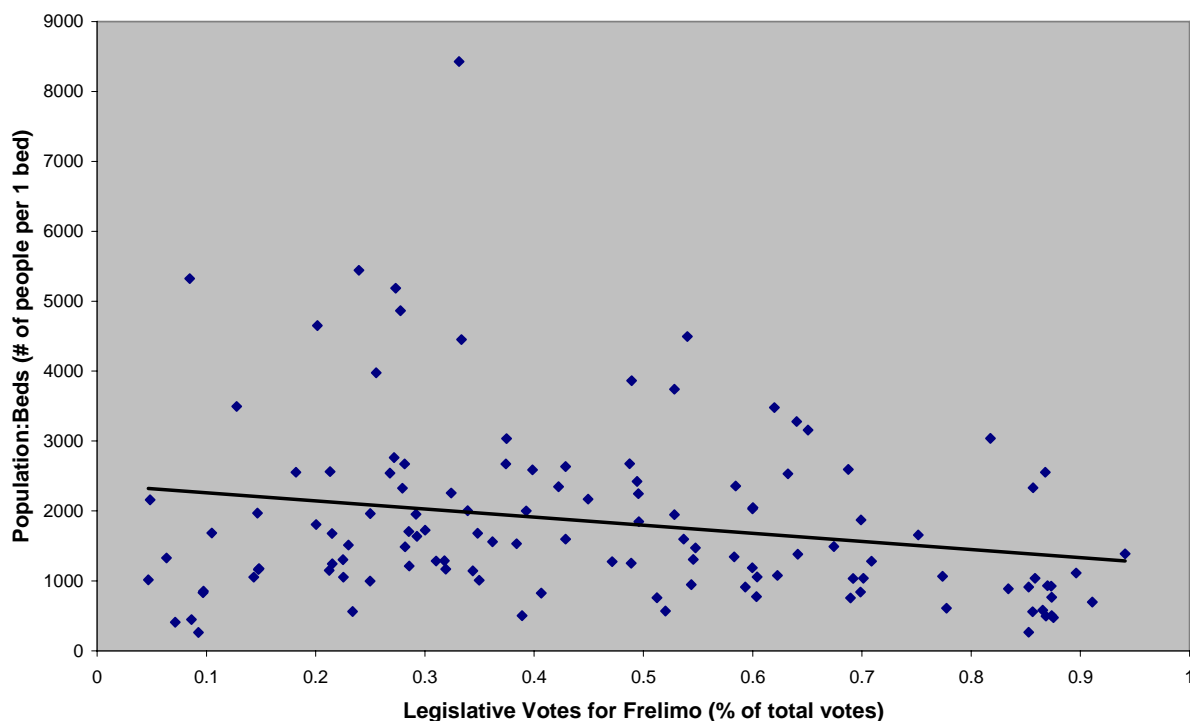
Province	%Frelimo Legislative Votes 1999	2002 Population	Skilled Health Workers (2002)	Cumulative Population	Cumulative Skilled Health Workers	Concentration Index
				0	0	
Sofala	0.196223334	1529187	370	0.0845903	0.111177885	-0.0134292
Zambezia	0.260544499	3464805	310	0.2762535	0.204326923	0.002722704
Manica	0.31944942	1205901	197	0.34296053	0.263521635	-0.00058025
Tete	0.372221554	1397136	192	0.42024614	0.321213942	-0.01967492
Nampula	0.39229275	3424057	326	0.60965528	0.419170673	0.010886846
Niassa	0.411910265	920957	176	0.66060001	0.472055288	0.003598139
Inhambane	0.621147898	1291300	188	0.73203107	0.528545673	-0.01545765
Cabo Delgado	0.623147857	1521755	132	0.81621025	0.568209135	0.230918275
Maputo Cidade	0.826599023	1134982	1087	0.87899425	0.894831731	-0.00379248
Maputo Province	0.847783853	962363	166	0.93222944	0.944711538	-0.0124821
Gaza	0.874324018	1225127	184	1	1	0
						<b>0.182709365</b>

Province	%Frelimo Legislative Votes 1999	2003 Skilled Health Workers	Skilled Health Workers (2003)	Cumulative Population	Cumulative Skilled Health Workers	Concentration Index
				0	0	
Sofala	0.196223334	1564367	401	0.08449723	0.109353695	-0.01391002
Zambezia	0.260544499	3544853	305	0.27596781	0.192527952	0.001822967
Manica	0.31944942	1243124	196	0.34311352	0.245977638	0.002275405
Tete	0.372221554	1434431	228	0.42059243	0.308153804	-0.01486065
Nampula	0.39229275	3504496	379	0.60988318	0.411508045	0.010734542
Niassa	0.411910265	946231	191	0.6609926	0.463594219	0.007672762
Inhambane	0.621147898	1320453	226	0.73231514	0.52522498	-0.00810326
Cabo Delgado	0.623147857	1552733	180	0.81618397	0.574311426	0.22568756
Maputo Cidade	0.826599023	1162486	1176	0.87897412	0.895009545	-0.00255571
Maputo Province	0.847783853	989987	189	0.93244697	0.946550314	-0.01410334
Gaza	0.874324018	1250665	196	1	1	0
						<b>0.194660253</b>

Province	%Frelimo Legislative Votes 2004	2004 Population	Skilled Health Workers (2004)	Cumulative Population	Cumulative Skilled Health Workers	Concentration Index
				0	0	
Sofala	0.2560518	1600581	420	0.08441214	0.099384761	-0.0123377
Zambezia	0.363148466	3626739	334	0.27568068	0.178419309	0.001968778
Manica	0.459000902	1281317	215	0.34325533	0.229294841	0.005342144
Nampula	0.483064973	3588348	600	0.53249919	0.371273071	0.00842943
Niassa	0.663506596	972391	218	0.58378157	0.422858495	-0.00134713
Tete	0.740098501	1472728	228	0.66145094	0.476810222	-0.00525552
Cabo Delgado	0.755719003	1584584	221	0.74501942	0.529105537	0.00639251
Inhambane	0.771984417	1350372	250	0.81623593	0.588263133	0.212059422
Maputo Cidade	0.819233172	1189594	1289	0.87897325	0.893279697	-0.00737818
Maputo Province	0.857565205	1017542	195	0.93263683	0.939422622	-0.00678579
Gaza	0.940233047	1277307	256	1	1	0
						<b>0.201087953</b>

Scatter plot for Figure 15: Beds <sup>32, 33</sup>

## Population:Beds Ratio by Frelimo Affiliation, Districts (2003)

Tables for Figure 16: Beds, Provinces <sup>30, 32</sup>

Province	%Frelimo Legislative Votes 1994	1997 Population	Beds (1997)	Cumulative Population	Cumulative Beds	Concentration Index
				0	0	
Sofala	0.14394766	1368671	1641	0.08513908	0.11471513	-0.0030847
Manica	0.27311754	1039463	728	0.14979956	0.16560643	-0.0093165
Nampula	0.31044055	3063456	2124	0.34036386	0.31408598	-0.02861414
Zambezia	0.38516052	3096400	1340	0.53297746	0.40775952	0.010035337
Tete	0.40634992	1226008	1104	0.60924209	0.48493534	0.0052511
Niassa	0.47228109	808572	696	0.65953985	0.53358965	-0.00629962
Cabo Delgado	0.58020318	1380202	857	0.74539622	0.59349878	0.020849035
Inhambane	0.59357496	1157182	1220	0.81737949	0.67878364	0.017541
Maputo Province	0.78122269	830908	921	0.86906667	0.74316672	0.097825971
Maputo Cidade	0.78919476	987943	2362	0.93052231	0.90828382	0.022238497
Gaza	0.81535913	1116903	1312	1	1	0
						<b>0.126425976</b>

Province	%Frelimo Legislative Votes 1994	1998 Population	Beds (1998)	Cumulative Population	Cumulative Beds	Concentration Index
				0	0	
Sofala	0.14394766	1398561	1676	0.0850119	0.11566598	-0.00175028
Manica	0.27311754	1070057	984	0.1500556	0.18357488	-0.00971117
Nampula	0.31044055	3130088	2435	0.34031884	0.35162181	-0.03297051
Zambezia	0.38516052	3165614	1477	0.53274153	0.45355418	-0.00855292
Tete	0.40634992	1258411	711	0.60923438	0.5026225	0.004350374
Niassa	0.47228109	829192	706	0.65963703	0.55134576	-0.01109677
Cabo Delgado	0.58020318	1406931	792	0.74515771	0.60600414	0.01985114
Inhambane	0.59357496	1182445	1233	0.81703294	0.69109731	0.016987304
Maputo Province	0.78122269	855996	939	0.86906489	0.75590062	0.09128078
Maputo Cidade	0.78919476	1018246	2302	0.93095924	0.91476881	0.016190437
Gaza	0.81535913	1135814	1235	1	1	0
						<b>0.084578397</b>

Province	%Frelimo Legislative Votes 1999	1999 Population	Beds (1999)	Cumulative Population	Cumulative Beds	Concentration Index
				0	0	
Sofala	0.19622333	1429640	1786	0.08489608	0.11739188	-0.01381066
Zambezia	0.2605445	3237079	1569	0.27712302	0.22052057	0.001633885
Manica	0.31944942	1102069	882	0.34256701	0.27849349	0.00673898
Tete	0.37222155	1291694	1248	0.41927147	0.3605232	-0.00211241
Nampula	0.39229275	3199618	2409	0.60927387	0.5188642	0.005422256
Niassa	0.41191026	850809	790	0.65979732	0.57079006	0.011512974
Inhambane	0.6211479	1208493	1210	0.73156106	0.65032207	-0.01471359
Cabo Delgado	0.62314786	1434391	846	0.81673927	0.70592875	0.081519396
Maputo Cidade	0.82659902	1048155	2337	0.87898169	0.85953727	0.007108389
Maputo Province	0.84778385	881714	902	0.93134037	0.91882477	0.012515607
Gaza	0.87432402	1156220	1235	1	1	0
						<b>0.095814831</b>

Province	%Frelimo Legislative Votes 1999	2000 Population	Beds (2000)	Cumulative Population	Cumulative Beds	Concentration Index
				0	0	
Sofala	0.19622333	1461812	1906	0.08478861	0.12699893	-0.01552454
Zambezia	0.2605445	3310874	1569	0.27682726	0.23154318	0.00166617
Manica	0.31944942	1135377	917	0.34268185	0.29264392	0.006446992
Tete	0.37222155	1325883	1268	0.41958625	0.3771322	-0.00257002
Nampula	0.39229275	3271796	2468	0.60935828	0.54157783	-0.00100085
Niassa	0.41191026	873303	651	0.66001195	0.58495469	0.011299585
Inhambane	0.6211479	1235323	1210	0.73166366	0.66557836	-0.01327269
Cabo Delgado	0.62314786	1462670	886	0.81650203	0.72461354	0.068793234
Maputo Cidade	0.82659902	1077650	2097	0.87900832	0.86433902	0.010233847
Maputo Province	0.84778385	908054	952	0.93167764	0.92777186	0.00390578
Gaza	0.87432402	1177923	1084	1	1	0
						<b>0.069977506</b>

Province	%Frelimo Legislative Votes 1999	2001 Population	Beds (2001)	Cumulative Population	Cumulative Beds	Concentration Index
				0	0	
Sofala	0.19622333	1495009	2001	0.08468752	0.12831858	-0.01550007
Zambezia	0.2605445	3386832	1679	0.27654081	0.2359882	0.00184533
Manica	0.31944942	1169974	986	0.34281613	0.29921765	0.005510385
Tete	0.37222155	1361002	1300	0.41991257	0.38258304	-0.0060695
Nampula	0.39229275	3346576	2468	0.60948549	0.54084904	-0.0020276
Niassa	0.41191026	896672	651	0.66027911	0.58259587	0.009554348
Inhambane	0.6211479	1262925	1210	0.73181981	0.66018982	-0.01420914
Cabo Delgado	0.62314786	1491771	886	0.81632391	0.71700654	0.064828068
Maputo Cidade	0.82659902	1106627	2097	0.87901081	0.85148134	0.008510066
Maputo Province	0.84778385	934956	951	0.93197311	0.91246633	0.019506774
Gaza	0.87432402	1200895	1365	1	1	0
						<b>0.071948662</b>

Province	%Frelimo Legislative Votes 1999	2002 Population	Beds (2002)	Cumulative Population	Cumulative Beds	Concentration Index
				0	0	
Sofala	0.19622333	1529187	2024	0.0845903	0.12271873	-0.01517601
Zambezia	0.2605445	3464805	1627	0.2762535	0.22136664	0.001514039
Manica	0.31944942	1205901	972	0.34296053	0.28030073	0.002499774
Tete	0.37222155	1397136	1162	0.42024614	0.35075487	0.00248796
Nampula	0.39229275	3424057	2705	0.60965528	0.51476384	-0.0032326
Niassa	0.41191026	920957	622	0.66060001	0.55247681	0.015849681
Inhambane	0.6211479	1291300	1381	0.73203107	0.6362093	-0.01001453
Cabo Delgado	0.62314786	1521755	981	0.81621025	0.69568908	0.080784895
Maputo Cidade	0.82659902	1134982	2515	0.87899425	0.84817801	0.010060684
Maputo Province	0.84778385	962363	1036	0.93222944	0.91099254	0.0212369
Gaza	0.87432402	1225127	1468	1	1	0
						<b>0.106010798</b>

Province	%Frelimo Legislative Votes 1999	2003 Population	Beds (2003)	Cumulative Population	Cumulative Beds	Concentration Index
				0	0	
Sofala	0.19622333	1564367	2024	0.08449723	0.12271873	-0.01516155
Zambezia	0.2605445	3544853	1627	0.27596781	0.22136664	0.001400092
Manica	0.31944942	1243124	972	0.34311352	0.28030073	0.002456371
Tete	0.37222155	1434431	1162	0.42059243	0.35075487	0.002586281
Nampula	0.39229275	3504496	2705	0.60988318	0.51476384	-0.00330878
Niassa	0.41191026	946231	622	0.6609926	0.55247681	0.015942512
Inhambane	0.6211479	1320453	1381	0.73231514	0.6362093	-0.00980019
Cabo Delgado	0.62314786	1552733	981	0.81618397	0.69568908	0.080776599
Maputo Cidade	0.82659902	1162486	2515	0.87897412	0.84817801	0.00985785
Maputo Province	0.84778385	989987	1036	0.93244697	0.91099254	0.02145443
Gaza	0.87432402	1250665	1468	1	1	0
						<b>0.106203616</b>

Province	%Frelimo Legislative Votes 2004	2004 Population	Beds (2004)	Cumulative Population	Cumulative Beds	Concentration Index
				0	0	
Sofala	0.2560518	1600581	2039	0.08441214	0.11944233	-0.01463724
Zambezia	0.36314847	3626739	1660	0.27568068	0.21668326	0.00560863
Manica	0.4590009	1281317	1254	0.34325533	0.29014118	-0.00011447
Nampula	0.48306497	3588348	2725	0.53249919	0.44976861	-0.00238411
Niassa	0.6635066	972391	663	0.58378157	0.48860641	0.004796833
Tete	0.7400985	1472728	1250	0.66145094	0.56183	-0.00735179
Cabo Delgado	0.755719	1584584	1022	0.74501942	0.62169762	0.017086083
Inhambane	0.77198442	1350372	1406	0.81623593	0.70405952	0.071587327
Maputo Cidade	0.81923317	1189594	2421	0.87897325	0.84587898	0.007949991
Maputo Province	0.8575652	1017542	1036	0.93263683	0.90656669	0.026070135
Gaza	0.94023305	1277307	1595	1	1	0
						<b>0.108611387</b>

Scatter plot for Figure 17: Budget Allocation <sup>32, 33</sup>

### Per Capita Budget by Frelimo Affiliation, Districts (2004)

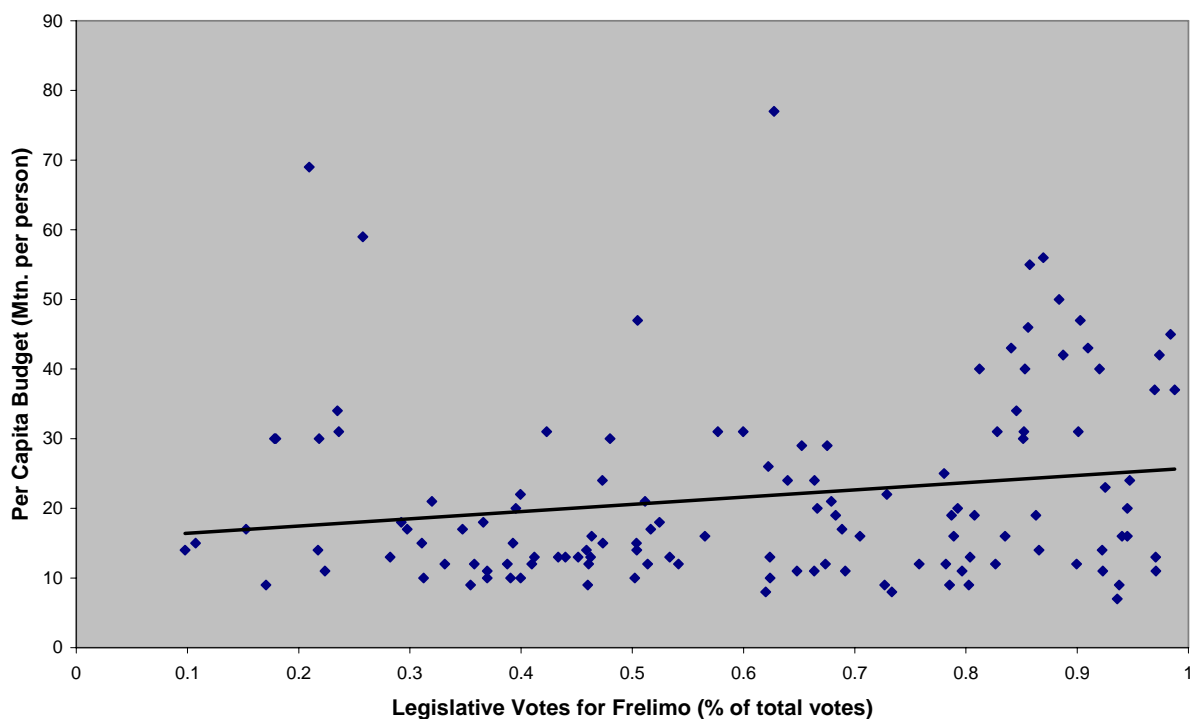




Table for Figures 18 & 19: Internal Budget Expenditure and Total Budget Expenditure <sup>32, 35</sup>Table for Figure 18: Internal Budget Expenditure <sup>1, 2</sup>

Province	%Frelimo Legislative Votes 2004	2004 Population	Internal General Expenditure	Internal Health Expenditure	Cumulative Population	Cumulative Internal General Expenditure	Cumulative Internal Health Expenditure	Concentration Index General Expenditure	Concentration Index Internal Health Expenditure
Sofala	0.2560518	1600581	149432	7048.33	0.0844121	0.1694909	0.0898051	-0.02592476	-0.013859103
Zambezia	0.3631485	3626739	67822.24	3084.81	0.2756807	0.2464172	0.1291097	-0.003337673	0.005182967
Manica	0.4590009	1281317	42579.02	3959.39	0.3432553	0.2947118	0.1795575	-0.011445449	-0.002396113
Nampula	0.483065	3588348	113853.86	7221.64	0.5324992	0.4238487	0.2715708	0.015488625	-0.002273521
Niassa	0.6635066	972391	61632.29	1717.57	0.5837816	0.4937542	0.2934549	0.016547445	0.075891585
Tete	0.7400985	1472728	82907.85	13267.28	0.6614509	0.5877911	0.4624977	0.005919137	0.034779014
Cabo Delgado	0.755719	1584584	73363.09	8712.78	0.7450194	0.671002	0.5735101	0.01210388	0.069229028
Inhambane	0.7719844	1350372	70873.87	11595.68	0.8162359	0.7513896	0.7212544	0.067689116	0.00103739
Maputo Cidade	0.8192332	1189594	124032.14	4450.7	0.8789733	0.8920711	0.7779622	-0.005524185	0.059696353
Maputo Province	0.8575652	1017542	42476.6	9058.13	0.9326368	0.9402495	0.8933748	-0.007612635	0.039261986
Gaza	0.940233	1277307	52679.19	8368.45	1	1	1	0	0
								<b>0.063903502</b>	<b>0.266549586</b>

Table for Figure 19: Total Budget Expenditure <sup>1, 2</sup>

Province	%Frelimo Legislative Votes 2004	2004 Population	General Expenditure	Health Expenditure	Cumulative Population	Cumulative General Expenditure	Cumulative Health Expenditure	Concentration Index General Expenditure	Concentration Index Health Expenditure
Sofala	0.2560518	1600581	184177	11145.47	0.0844121	0.1585744	0.125684	-0.022806073	-0.021103
Zambezia	0.3631485	3626739	103528.24	3084.81	0.2756807	0.2477111	0.1604705	0.001034149	0.00146508
Manica	0.4590009	1281317	74879.02	3959.39	0.3432553	0.3121811	0.2051193	-0.014179851	0.012734468
Nampula	0.483065	3588348	151920.69	13318.24	0.5324992	0.4429831	0.3553049	0.015547309	-0.00790717
Niassa	0.6635066	972391	83460.29	1717.57	0.5837816	0.5148415	0.3746735	0.016094299	0.058239499
Tete	0.7400985	1472728	111576.64	13267.28	0.6614509	0.6109078	0.5242845	-0.003766969	0.021174774
Cabo Delgado	0.755719	1584584	83029.85	8712.78	0.7450194	0.6823956	0.6225358	0.015482632	0.053084582
Inhambane	0.7719844	1350372	99898.83	11595.68	0.8162359	0.7684074	0.7532967	0.038958268	-0.006293619
Maputo Cidade	0.8192332	1189594	124032.14	4450.7	0.8789733	0.8751977	0.8034859	0.002139345	0.046665442
Maputo Province	0.8575652	1017542	64886.98	9058.13	0.9326368	0.9310647	0.9056316	0.001572124	0.027005248
Gaza	0.940233	1277307	80065.24	8368.45	1	1	1	0	0
								<b>0.050075233</b>	<b>0.185065305</b>

*References*

1. Page, M. E. and P. M. Sonnenburg. (2003)
2. Central Intelligence Agency. (2010)
3. Newitt, M. D. D. (1995)
4. Secretariado Técnico da Administracao Eleitoral. (1994, 1999, 2004)
5. World Bank. (2005)
6. World Health Organization. (2000): 1-2.
7. World Commission on Environment and Development. (1987)
8. Vaux, T., et al. (2006)
9. Addison, T. (2000)
10. Hanlon, J. and P. d. Renzio. (2007)
11. Gwatkin, D. R., et al. (2004): 1273-1280.
12. Spector, B. I., et al. (2005)
13. Gakidou, E. and G. King. (2002): 3.
14. Gakidou, E. and G. King. (2003)
15. Government of Mozambique. (2000)
16. Government of Mozambique. (2001b)
17. World Bank. (2002)
18. Government of Mozambique. (2001a)
19. Government of Mozambique. (2006)
20. World Bank. (2006)

21. Committee of Counsellors. (2003)
22. United Nations Development Programme. and Southern African Research and Documentation Centre. (2005)
23. Lindelöw, M., et al. (2004)
24. Chao, S., et al. (2002)
25. Donor Agency Senior Health Specialist and Former Director in the Ministry of Health. (July 4, 2006)
26. University Student. (July 19, 2006)
27. Navarro, V. and L. Shi. (2003)
28. Community 1 Resident. (July 20, 2006)
29. Community 2 Resident. (June, 2006)
30. Instituto Nacional de Estatística. (1998, 2001, 2004)
31. Instituto Nacional de Estatística. (2001)
32. Instituto Nacional de Estatística. (1999)
33. República de Mocambique: Ministérios das Administracoes Estatais. (2005)
34. Demographic and Health Surveys. (1997, 2003)
35. Government of Mozambique. (2004)
36. World Bank. (2007)
37. Fauvet, P. (2006)
38. Diário de Moçambique. (2006)
39. Carbone, G. M. (2005): 417-442.

40. Jone, C. (2005)
41. Instituto Nacional de Estadística. (1997)

**Human and Social Capital, Compensation or Cost? Reexamining the Hartwick Rule**

(Second Paper)

### *Introduction*

Sustainability in development has been defined as “meet[ing] the needs of the present without compromising the ability of future generations to meet their own needs.”<sup>1</sup> Economists have interpreted this as an average quality of life (i.e. utility derived from consumption) that is non-declining, and therefore dependent upon a non-decreasing total resource stock.<sup>2</sup> This has obvious implications for the management of exhaustible resources.

J.M. Hartwick proposed that “the investment of current exhaustible resource returns in reproducible capital implies per capita consumption constant.”<sup>3</sup> In other words, Hartwick’s rule states that as long as the rents from exhaustible resources are invested in other forms of capital, net investments are zero and the resulting intertemporal allocation will fit the sustainability criterion. Apart from the very real challenges to this framework’s assumptions about substitutability,<sup>4</sup> the implicit assumption in this argument is that the only possible impact of depleting natural capital on other forms of capital is enhancing (or neutral), and this relationship only takes place once the resource rents have been mobilized and are being invested. This overlooks the possibility that the very act of extracting exhaustible resources may be amplified by a concurrent loss of other types of capital. This suggests that adhering to Hartwick’s sustainable result—maintaining a non-decreasing total capital stock—is a more elusive goal than already thought.

Various public health studies and conflict assessments have demonstrated the potential for resource extraction to result in negative impacts on human capital (in terms of education and health) as well as social capital. This should be considered when evaluating

the sustainability of countries' natural resource use and development. Currently, the Hartwick result is preserved in principle—that utility should be non-declining—but the mechanisms for achieving this—unquestioningly extracting natural resources and investing the rents in other forms of capital after the fact—are inadequate for achieving this definition of sustainability and should be reconsidered.

### *The Hartwick Rule and its Applications*

Hartwick's rule emphasizes sustainability through "the value of depleted natural capital measured at competitive prices equal[ing] the reinvestment in manmade capital," or "The depletion of natural capital at any time correspond[ing] in market value to the *accumulation* of manmade capital."<sup>2</sup> (emphasis added) It is therefore presumed that non-natural resources can only benefit from extraction, through investment. But what if depleting natural capital simultaneously depletes other forms of capital? Without investment in some alternative store of value there is no possibility of a zero net effect and sustainable industry. What if the depletion of natural capital less than compensates for any immediate degradation of manmade capital?

In considering different approaches to sustainable resource management, it is useful to employ Geir B. Asheim's distinction between Hartwick's result—of a non-decreasing total capital stock—and Hartwick's restrictive prescription proposed to achieve this—investment of revenue from depletion of natural capital being sufficient to ensure accumulation of other forms of capital. Generally, Hartwick's result is meaningful to guide sustainable resource

management policies, but current accounting mechanisms have limited themselves to the construct of Hartwick's prescription, thereby overestimating the current sustainability of countries' policies.

In discussing the components of Hartwick's rule, I adopt Asheim's use of the term "natural capital" to refer to the exhaustible resources whose depletion we are concerned about in terms of intergenerational equity, and to identify it as a component of a total available capital stock upon which consumption and by extension, utility, are based: "Human economic activity leads to the depletion of natural resources and the degradation of environmental resources. Sustainable development requires that manmade capital (both real and human) be accumulated in order to make up for the decreased availability of natural capital...The present generation must leave behind a bequest of manmade and natural capital that will benefit all later generations."<sup>2</sup> In this context, the total capital stock "includes everything that influences the situation in which people live...captur[ing] the importance of health, culture, and nature," and "The quality of life does not exceed the sustainable level if and only if the stock of the aggregate capital good is not reduced."<sup>2</sup> Here Asheim emphasizes the importance of Hartwick's result as the key to sustainability. He also notes the potential for a vicious cycle between depletion of natural capital and investments in "manmade" capital: "accumulation of manmade capital without leading to future depletion and degradation of natural capital."<sup>2</sup> Another vicious cycle the literature does not address is one where depletion and degradation of natural capital itself leads to future depletion and degradation of "manmade" capital. Consistent with Hartwick's prescription, studies of



countries' genuine investment only consider the potential of exhaustible resources to deplete resource stocks, assuming that other forms of capital can only grow.

Kenneth Arrow et al. assess the sustainability of different countries' consumption paths by examining the "genuine investment" in the different societies' "productive bases", which "can be expressed as the sum of the values of investments or disinvestments in each of society's capital assets... The assets to be included are manufactured capital, human capital, natural capital and the knowledge base."<sup>5</sup> While this concept accommodates the notion of depletion in components of the capital stock other than the natural, in their analyses they only consider depletion in natural capital (in terms of damage from CO<sub>2</sub> emissions, energy depletion, mineral depletion and net forest depletion). Despite this limited focus inspired by Hartwick's prescription, the article concludes that "several nations of the globe are failing to meet a sustainability criterion: their investments in human and manufactured capital are not sufficient to offset the depletion of natural capital."<sup>5</sup> Once depletion of human capital is accounted for and social capital understood to be an asset of the "productive base," the results may prompt even greater concern about the sustainability of current exhaustible resource management.

Current attempts by economists to better capture harmful effects of extracting non-renewable resources on aggregate notions of capital only take into account the natural environment. This should go a step further to capture the immediate and very real effects of extractive industries on human and social capital in order to better assess whether a country is on track to achieving Hartwick's result or depleting its total capital stock.

### *Human Capital*

Apart from manufacturing capital assets, the literature considers investments in human capital as the principal means of achieving Hartwick's result.<sup>5</sup> According to the United Nations Development Programme's Human Development Index, education and health are the primary components of human capital.<sup>6</sup>

Education contributes to the "knowledge base" of total capital stock, but an individual's pursuit of it is dependent upon the individual's perception of benefit from education outweighing the individual's opportunity cost. In countries characterized by conflict involving exhaustible resources – as with Sierra Leone and its diamonds – often "the value of education itself was depreciated in favor of the quick acquisition of wealth."<sup>7</sup> This de-prioritization of education is a direct result of the presence of extractive industries; it presents an impediment to the achievement of Hartwick's result, but is not explained by the education expenditure measures currently used to describe human capital investment.

While health is a component of human capital, it is often neglected in sustainability assessments. This is particularly relevant when considering exhaustible resources, which typically involve mining. There are countless studies that establish the health risks associated with these industries, especially in developing countries. The established risks of mining include environmental factors such as air and water contamination, but also social factors like overcrowding and migration.

Environmental contamination from extractive industries can have several deleterious effects on human existence. For workers and residents near the Jwaneng diamond mining

area in Botswana, inhalation of mineral dust particles was found to pose a health hazard that could lead to silicosis (which can lead to the onset of TB) and related illnesses.<sup>8</sup> Environmental factors resulting from nickel and copper mining and smelting in Botswana were also found to “be contributory to the negative health effects occurring at [nearby communities].”<sup>9</sup> In Nigeria, the oil industry constitutes a risk to human health by threatening water supplies, fisheries, agriculture, and hunting because of polluted soils, rivers and ponds.<sup>10</sup> Although depletion of natural capital is accounted for according to Hartwick’s result, his prescription and subsequent accounting methods do not take into consideration the accompanying negative effects of environmental contamination on human health.

The transient communities associated with mining have often been thought to contribute to the spread of HIV infection, and the overcrowding migrant workers often have to endure can compound risks of acquiring tuberculosis. In China’s Yunnan province, one study determined that “miners needed to be viewed as a key population in HIV/STIs prevention and control.”<sup>11</sup>

A study assessing the impact of South Africa’s migrant mining labor system on HIV transmission concluded that this subpopulation, created by the mining industry, “fits the description in the epidemiology of STDs of a high-risk core group with multiple partners and frequent partner change, and the mobility to be major carriers to urban, suburban and rural areas.”<sup>12</sup> Mining in Zambia (primarily of copper) is associated with increased incidence of tuberculosis (and its risk factor, silicosis), and is also characterized by a high prevalence of HIV.<sup>13</sup> Finally, a regional survey of HIV/AIDS prevalence in southern Africa (South Africa,

Botswana and Zambia), determined that among 34 workforces, the mining sector had the highest infection rate.<sup>14</sup> The insalubrious effects of extractive industries are well-documented, and can arguably set back the aggregate capital stock into which a country is investing the rents from its natural capital. The negative health effects associated with migration in extractive industries are linked to strains on social ties and may therefore be acting as proxies for diminished social capital as well.<sup>15</sup>

Not only does the exploitation of exhaustible resources have direct negative effects on health and education, but the very presence of an active extractive industry has also been found to provide less incentive to a country's elites to develop human capital altogether. If elites can capture rents from extracted resources without facing the negative externalities on workers, they have no incentive to invest in human capital.<sup>16</sup>

### *Social Capital*

Whether social capital is defined as “an input in the production of human capital,”<sup>17</sup> or “can be decomposed into constituents of (a) ‘human capital’ and (b) ‘total factor productivity,’”<sup>18</sup> continuous degradation of social capital leads to a “decreasing average quality of life,”<sup>22</sup> making management of the associated resource stock unsustainable.

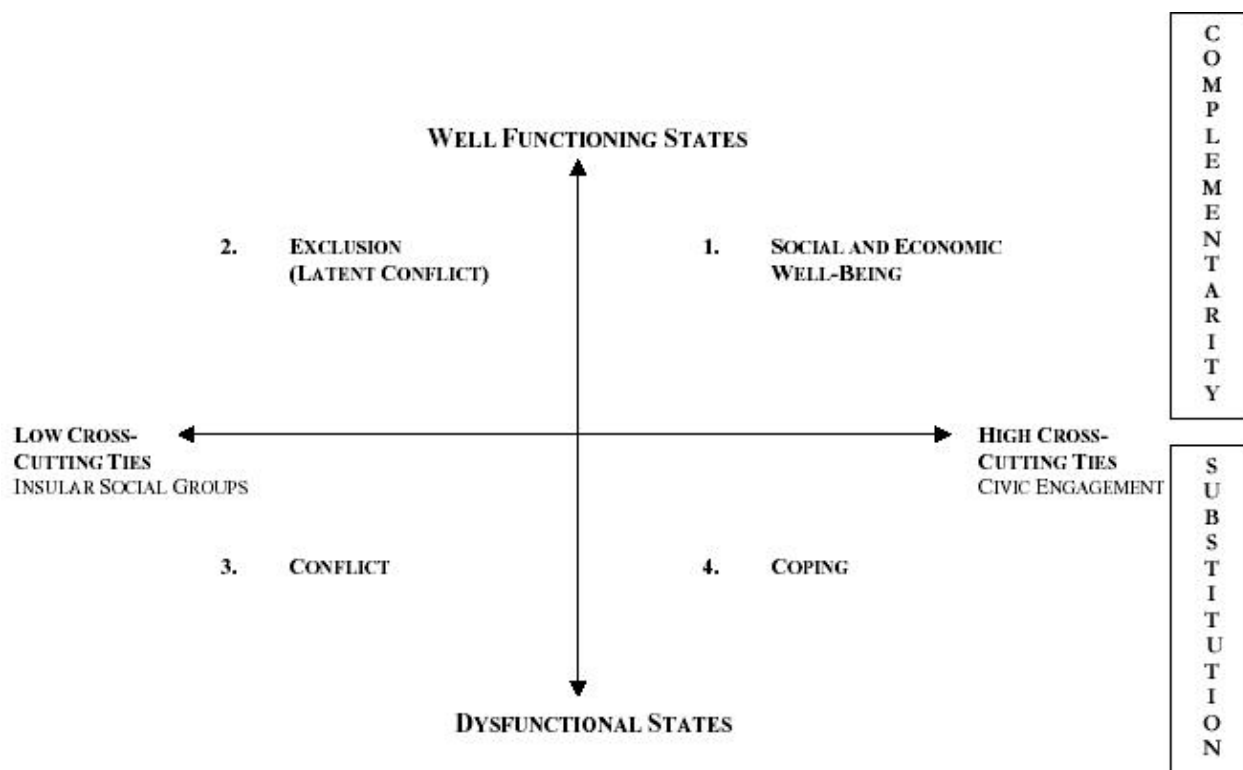
Exhaustible resources have multiple, complex effects on systems of social capital. They have been found to both initiate conflict and exacerbate already weak systems of social capital.<sup>19</sup> Hence, the windfall of resources that come from extractive industries liberate countries from the constraints present in resource-poor settings where “the state is more

dependent on the diversified financial inputs from society than in resource rich countries, and so is more likely to be representative and accountable towards it, hence less violently conflictual.”<sup>16</sup> Outlining the different components of social capital helps to identify the ways in which exhaustible resources impact other forms of capital.

### *Social Capital Theory*

There are three types of social capital. Bonding are the links formed within like groups (among homogeneous individuals), bridging relates to links created between different groups (among heterogeneous individuals), and linking captures the relationship between institutions and the people they serve. Linking best approximates notions of governance. Deepa Narayan discusses the societal effects of different combinations of social capital (see figure 1 below):

Figure 20: Social Capital Matrix <sup>20</sup>



In places with low bridging and high linking (quadrant 2), groups are systematically excluded. In societies with low bridging and low linking (quadrant 3), conflict often erupts into violence. Places with high bridging and low linking (quadrant 4) are left to construct alternatives to the State's functions. The cases of Nigeria, Botswana and Chad demonstrate relationships between natural and other forms of capital not currently considered in national sustainability assessment.

*The Case of Nigeria's Oil*

Nigeria is plagued by poor linking social capital because of external systems of accountability that override internal ones, and incentive structures exist that actively erode multiple forms of social capital, creating complex, multifaceted crises.

Nigeria's oil curse has made endemic the dynamic of exclusion (depicted in quadrant 2 above). All aspects of the oil industry—production, distribution and profits—are characterized by inequity and the active exclusion of the people of the Niger Delta, where the vast majority of the oil extraction takes place. The depletion of the natural capital itself—and the resulting adverse ecosystem impacts—constitute exclusion of these ethnic minorities: “To the oil minorities the denial of direct access to oil revenues and insensitivity to the degradation of their environment by the federal government amounts to injustice and expropriation.”<sup>10</sup> Exclusion also takes place at national levels, where access to political power is controlled by an insular ruling elite: “Environmental conflict in the oil-producing areas thus becomes a terrain for contesting not just political space and access to resources, but one for resisting authoritarian forms of state rule and accumulation.”<sup>10</sup>

Conflict pervades most aspects of Nigeria's oil industry—evidenced by recent violent developments with the Movement to Emancipate the Niger Delta—but the country's civil war in 1967 best approximates Narayan's description of simultaneous low bridging and low linking social capital. Nigeria's ethnic cleavage erupted into pogroms in which tens of thousands of people were killed and millions displaced, and culminated in a complete

breakdown of social capital where “control of the oil producing areas had been a decisive, but hidden factor in the outbreak of the Nigerian civil war.”<sup>10</sup>

In countries without established linking capital, mobilizing extractable resources inhibits the development of this form of social capital further. Because of the oil industry, the Nigerian government is independent of its people. Nigerians have to become states unto themselves (much as Narayan describes coping), providing their own water or electricity (despite the presence of delivery infrastructure) in the general absence of state provision of these services.

Where social capital is already weak, incentives exist for the revenues from resource extraction to further undermine the development of social capital. This results from less internal accountability as the government answers to external multinationals, and active marginalization of people living in resource exploitation zones. Nigeria is essentially beholden to foreign economic interests, and this sabotages any attempt to construct linking social capital with the Nigerian people: “Indeed, at no other point in time has the state been so dependent on the oil multinationals to increase oil reserves and provide revenues for resolving the economic and political crises in which Nigeria has been immersed.”<sup>10</sup>

Nigeria simultaneously suffers from multiple social capital crises as a result of the extraction of oil. Ethnic minorities living on oil rich lands are actively excluded, ethnic cleavage has been exacerbated by struggles to control this exhaustible resource, and the State has become less responsive to its people while trying to consolidate its control over the country’s oil wealth. All of these have served to immediately diminish the average Nigerian’s



quality of life, but are not captured in standard negative “genuine investment,” thereby overestimating the feasibility of achieving Hartwick’s result.

### *Botswana’s “Sustainable” Diamond Mining*

Botswana is often lauded as “an excellent model for resource-rich economies, escaping the ‘resource curse’ through prudent macroeconomic management. It devised its own rule-of-thumb for reinvestment of mineral revenues to offset depletion, the Sustainable Budget Index, which requires that all mineral revenues be reinvested, approximating Hartwick’s Rule.”<sup>21</sup> While Botswana does invest a large proportion of the revenues from diamond mining in other forms of capital, the immediate negative effects of the country’s mining industry on health and social capital threaten this sustainability.

As described previously, Botswana’s mining has been found responsible for respiratory ailments, and its workforce suffers from increased incidence of HIV infection. The latter is particularly meaningful in Botswana, which has the highest HIV prevalence of all countries in the world, and for the treatment of which a substantial portion of the diamond revenues have been allocated.

Botswana has also not escaped from the diminished social capital associated with extractive industries. The government’s mistreatment of the San people of the Kalahari desert has mired Botswana’s diamond industry in controversy, and is evidence of Narayan’s construct of exclusion. In 2002, the Government of Botswana cut off water supplies and basic services to an area of the Central Kalahari Game Reserve (CKGR) where the San resided.

This was part of an effort to facilitate the forced relocation of the San to “resettlement camps.”<sup>22</sup> The intention to exploit diamonds in the CKGR has been established by many as the reason for the displacement of indigenous peoples to marginal lands and has caused the “worsening [of] their position at the bottom of the Botswana social ladder.”<sup>22</sup>

While Botswana may initially present a model for how resources should be managed “sustainably,” Botswana’s diamonds are not without their controversy. The health burden the Government of Botswana is attempting to address with diamond wealth may actually be attributable to this industry’s existence in the first place. Moreover, the extraction of diamonds has been dependent on the systematic marginalization of an entire people, which is a cost to the people of Botswana that puts Hartwick’s result out of reach, and is not being accounted for in assessments of the sustainability of the country’s resource management.

### *The Chad-Cameroon Pipeline*

The Chad-Cameroon pipeline is Sub-Saharan Africa’s largest ever private sector investment. Under the direction of the World Bank, this project also includes several legal and financial mechanisms meant to address the negative impacts of extractive activities observed elsewhere.<sup>23</sup> In some ways, it attempted to forcibly impose an adherence to Hartwick’s prescription on the execution of the project. However, this project has been characterized by depleted human and social capital on virtually every front. The ruling government is rapidly consolidating its power and is not accountable to its people, undermining linking social capital.<sup>24</sup> The oil-producing region of Doba is not only suffering

the brunt of the negative health impacts associated with the project, but it is also being systematically politically marginalized, resulting in depletion of both its human and bridging social capital, and could be on a trajectory toward total exclusion.<sup>23</sup> The country has had various civil convulsions and may even be depleting the social capital of its neighbors.<sup>24</sup> The evidence of armed conflict has a compound effect on both the human and social capital of Chad's citizenry.<sup>23</sup>

The effects of other extractive industry projects are now widely-known and the parties involved in this pipeline project were able to anticipate the likely impact it would have on human capital. Part of the design of the program was indeed intended to account for these impacts. Still, adequate advance provisions were apparently neither made to prevent nor prepare for them.<sup>23</sup> Whatever health promotion that took place was only provided to workers involved with the project, indicating a motivating framework of project sustainability, not investment in human capital.<sup>25</sup> As a result, the prevalence of sexually-transmitted and opportunistic infections have gone up significantly in both the worker and civilian populations, and sanitation has worsened.<sup>23</sup> At the very least, meaningful, widely-accessible investments in social capital and human capital infrastructure – designed to be implemented before extraction takes place – could have reinforced the relevant social services and public capacity, equipping them to mitigate the consequent negative effects these activities have on human and social capital. Improvements in these forms of capital clearly cannot be treated as merely an afterthought – they must characterize the planning and implementation process itself.

### *Conclusion*

In a resource management sustainability assessment or a cost-benefit analysis of launching extraction of an exhaustible resource, careful evaluation of the immediate impacts on human and social capital must take place in order to achieve Hartwick's result. The relationship between non-renewable resources and other forms of capital is not necessarily desirable, and a more successful application of Hartwick's prescription would include the types of negative impacts outlined here in determining the true size of the resource stock passed on to future generations.

Improved human capital accounting could examine the changes in health burden for diseases associated with extractive industries. Here I outline three risk factors—environmental contamination, overcrowding and increased mobility from labor migration—whose associated infirmities should be monitored in order to accurately capture the status of the total capital stock. Improved social capital accounting would require careful conflict and governance assessments in order to determine the true impact of exhaustible resource depletion. In places like Botswana, the threats to social capital are well-defined and can likely be resolved through peaceful negotiation. The Nigerian context, however, is mired in deep social divisions inextricably linked to oil wealth, and resource extraction likely should have been delayed until an adequate social capital framework was in place to ensure equity and accountability. A similar argument can be made for Chad's more recent mobilization of its natural capital.<sup>26</sup> In both of these examples, foreign interests are a significant

consideration in domestic resource management, and may induce the unsustainable practices. Until these drains on the total capital stock are accounted for, Hartwick's result will remain elusive.

### *A Framework for Sustainability*

In order to avoid future costs in terms of depleted social and human capital, a framework for non-renewable management and planning is necessary. The framework presented here is adapted from one designed by ecological economists to determine ecological sustainability<sup>4</sup>:

1. Only stress existing social and human capital to the extent that these systems can absorb and adapt to the strain being placed upon them.
2. Do not disrupt established modes of coping with stress to human and social capital systems.
3. Active investment to reinforce and promote growth of human and social capital stocks must take place before any attempts are made that might deplete them, and this should only occur in circumstances where it is clear the total net benefit to human and social capital stocks of extractive activities is positive. Much like the physical capital that receives investment in advance of the generation of rents, so too must sources of human and social capital be strong and intact prior to any disruptions.

Extractive activities must therefore account not only for the natural capital being directly depleted, but for any losses incurred along the way – these impacts of extraction

should never come to outstrip the investments to human and social capital being made in advance. There is no reason, however, for these efforts at sustainability to be limited to mitigating or coping with impacts. The planning processes of extractive sectors can act as an investment in human and social capital themselves, instead of regarding these forms of wealth as necessarily outside industrial expansion. Human and social capital are currently treated as spheres removed from these processes with which there are no natural interfaces. The interactions are then actively created through rent investments after the fact. Perhaps this is why these capital losses have long gone unanticipated and unacknowledged in the first place. When human and social capital are not treated as an afterthought, extractive activities may not be something from which they merely have to recover. Community participation from the stage of the planning and execution processes may act as investments in social capital, and are likely to maximize benefits to human capital as well.

Properly conceived community participation<sup>27</sup> in the design and implementation of non-renewable resource management has the potential to promote the creation of human capital and improve social capital across the board. Capacity-building efforts that accompany effective community participation structures would constitute human capital investments. Bonding capital could be generated by facilitating community consensus about extractive activities. Bridging capital would at the very least be kept in tact by disallowing systematic marginalization of any group as inherent to the nature of community participation. Bridging capital may even be promoted by requiring different groups to cooperate in consultative processes about how these activities proceed in a just manner. Lastly, linking social capital

would be built on the basis that extractive activities cannot take place without input and endorsement from the people most affected. This would require institutions to be more representative and accountable to the people they are intended to serve. Disruptions to extractive activities in protest of the harm caused to social and human capital would then be characterized as dissent coming from legitimate stakeholders, not merely a nuisance for institutions that are more accountable to their extractive industry and project finance partners.

*References*

1. World Commission on Environment and Development. (1987)
2. Asheim, G. B. (1994): 27.
3. Hartwick, J. M. (1977): 972-974.
4. Daly, H. E. (2005): 100-107.
5. Arrow, K., et al. (2004): 147-172.
6. United Nations Development Programme. (2004)
7. Hirsch, J. L. (2001): 175.
8. Gabathuse, J., Babalola, I., & Ekosse, G. . (2002 ): 39-45.
9. Ekosse, G. (2005): 373-381.
10. Obi, C. (1997)
11. Gao, H. C., et al. (2006): 5-8.
12. Jochelson, K., et al. (1991): 157-173.
13. Mulenga, E. M., et al. (2005): 259-262.
14. Evian, C., et al. (2004): 125-130.
15. Holtgrave, D. R. and R. A. Crosby. (2003): 62-64.
16. Billon, P. L. (2001): 561-584.
17. Dasgupta, P. (2007)
18. Dasgupta, P. (2007)
19. Ross, M. L. (2004): 337-356.



20. Narayan-Parker, D. (1999): 52.
21. Lange, G.-M. and M. Wright. (2004): 485-505.
22. Taylor, I. and G. Mokhawa. (2003): 261-283.
23. Pegg, S. (2006): 1-25.
24. Polgreen, L. and C. W. Dugger. (2006): A.1.
25. Utzinger, J., et al. (2005): 63-93.
26. Keenan, J. H. (2005): 395-405.
27. Mansuri, G. and V. Rao. (2004): 1-39.

**The Materialism Paradigm – Neither Sustainable, nor Development**

(Third Paper)

*Introduction: Proselytizing the Gospel of Mammon*

*One thing I do know: Never, on this Earth, was the relation of man to man long carried on by Cash-payment alone. If, at any time, a philosophy of Laissez-faire, Competition and Supply-and-demand, start up as the exponent of human relations, expect that it will soon end. Such philosophies will arise: for man's philosophies are usually the 'supplement of his practice;' some ornamental Logic-varnish, some outer skin of Articulate Intelligence, with which he strives to render his dumb Instinctive Doings presentable when they are done. Such philosophies will arise; be preached as Mammon-Gospels, the ultimate Evangel of the World; be believed, with what is called belief, with much superficial bluster, and a kind of shallow satisfaction real in its way:--but they are ominous gospels! They are the sure, and even swift, forerunner of great changes. Expect that the old System of Society is done, is dying and fallen into dotage, when it begins to rave in that fashion. Most Systems that I have watched the death of, for the last three thousand years, have gone just so. The Ideal, the True and Noble that was in them having faded out, and nothing now remaining but naked Egoism, vulturous Greediness, they cannot live; they are bound and inexorably ordained by the oldest Destinies, Mothers of the Universe, to die. Curious enough: they thereupon, as I have pretty generally noticed, devise some light comfortable kind of 'wine-and-walnuts philosophy' for themselves, this of Supply-and-demand or another; and keep saying, during hours of mastication and rumination, which they call hours of meditation: "Soul, take thy ease; it is all well that thou art a vulture-soul;"--and pangs of dissolution come upon them, oftenest before they are aware!*

*Cash-payment never was, or could except for a few years be, the union-bond of man to man. Cash never yet paid one man fully his deserts to another; nor could it, nor can it, now or henceforth to the end of the world.*

...

*Mammon is like Fire; the usefulest of all servants, if the frightfulest of all masters!*

- Thomas Carlyle, *Past and Present* (1843)<sup>1</sup>

These words, penned by the one who first called economics a “dismal science,” point to an era of collective dysfunction in which relations between human beings become mediated through material wealth, the lights of virtue and aspiration have dimmed, and

selfishness and avarice reign. But Carlyle indicates that this philosophy is untenable, and cannot be sustained as the foundation of a society – human reality cannot be reduced to cash and its acquisition alone. The Gospel of Mammon reads: *The necessary destination of all human endeavor is self-interested material accumulation*. Here, this is being referred to as the materialism paradigm.

Thinkers have long noted trends like the one described above. These philosophies are grounded in a notion of human progress predicated upon material pursuit which robs other endeavors of their intrinsic value. It acts upon human beings through the stimulation of an impulse to which all are susceptible – material pursuits form the lowest common denominator of human reality. Economics has been heavily influenced by materialistic assumptions and this thinking is evident in its original tenets that persist in the discipline today. As a field, economics has offered its own vision of this narrow concept of prosperity which has shaped how it has approached development. These ideas are so consuming and pervasive that materialism is now a fully-established paradigm. However, the overwhelming evidence suggests that this worldview has been harmful for human well-being and is not suitable to ensure the sustainability of the planet. Thankfully, its pernicious nature has not escaped those who recognize its limitations. Alternatives have been offered that recognize the true source of human prosperity lies in the endeavors of intrinsic value that have been undermined by materialism. Great efforts must be made to reestablish and promote these as the true goal of human progress.

Much of economics appears unmoved by this learning because of its static view of human reality. There seems to be no such thing as paradigms – there are only constant, unchanging drivers of human motivation that are programmed in human beings and insulated from such dynamics. Economics therefore fails to see its true role as the master of Mammon, and has instead subordinated itself as its servant, deploying its instruments to guide human behavior while remaining agnostic toward their effects. Incentives present at least one interface which stimulates the materialistic impulse and penetrates the human psyche to destroy intrinsic motivation.

Forming the foundation upon which economics has located itself in social policy<sup>2</sup>, incentives are regularly deployed as a policy tool to achieve economic ends. This has been particularly true in the context of development. Much like the concept of chrematistics which originated with Aristotle, this approach is one that seeks immediate impacts, potentially at the expense of long-term sustainability. The idea is essentially that we can pay our way out of corruption, environmental degradation, poor health, lack of education and social vulnerability. This reflects a deeply-embedded materialistic logic that is at odds with empirical psychological research. Conditional cash transfers are one of many such incentive programs currently operating, and offer an opportunity to examine the usefulness of this materialistic approach to development. Predictably, they have offered something by way of “material capability”, but have not proven effective in the promotion of lasting, intrinsic human well-being.

These programs effectively pay people to send their children to school or to access the health system, creating an unambiguous association between material payoffs and health or education, where health- or learning-promoting behaviors are easily reduced to an opportunity for the participants to acquire cash. The design of such programs is typically ambivalent toward the source of motivation for these “optimal” behaviors. Clearly, it is not only the resultant behavior that is relevant, but the motivation as well. Relying on the material impulse to motivate improvements in health and education are both unsustainable and actually ineffective. Indeed, “Never, on this Earth, was the relation of man to man long carried on by Cash-payment alone.”

The materialism paradigm has defined our objectives, beliefs about well-being, and notions of progress. As such, it has direct implications for our approach to sustainable development, defined as: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”<sup>3</sup> Unfortunately, this paradigm is largely at odds with both well-being and sustainability, and in some ways, directly undermines them. Clearly, materialism is not a useful logic to be deploying in development.

### *Trends through the ages*

Various scholars and thinkers across disciplines have identified trends in social reality that point to the existence of a pervasive paradigm. This paradigm “reads” reality in a particular way, dictates the source of satisfaction, the nature of pursuit and the goals of

society. Many anticipated its damaging effects and proposed the restoration of alternative approaches to human purpose. The paradigm is appropriately referred to as materialism.

*Reading Reality: Heidegger, by way of Escobar*

Arturo Escobar, an anthropologist, explains Heidegger's concept of "enframing": "technology is presented as a way of bringing forth new realities, but this bringing forth is different from the creative power of arts and crafts and the manifestations of nature (poiesis)...technology imposes on nature a type of order or approach the fundamental feature of which is a challenge to release nature's energy for human purposes...driven by criteria of maximum yield at minimum expense. Everything is called upon to stand by ready for our purposes...Heidegger calls this characteristic of modern technology 'enframing'."<sup>4</sup> In this description, to enframe nature is to reduce it to its instrumental value for human beings, and poiesis is the transcendent depiction of nature in which it possesses intrinsic value. Enframing further "see[s] nature as an object of research and utilization," and "orders the real as composed of things that stand in reserve for [modern man's] use." Enframing also has elements of a paradigm in that this "ordering" should occur "to such an extent that the posture itself becomes transparent, 'natural'." As an element of a paradigm, however, Escobar explains that Heidegger regarded enframing as "a source of utmost danger, first and foremost because it precludes man from approaching nature in a more primal way (for instance, in the sense of poiesis). Science may make correct determinations through its calculations, yet truth itself may recede in the process."<sup>4</sup> In this sense, modern man's approach to progress, to

ordering nature, is one which strips nature (and “the real”) of its intrinsic value, and is so pervasive as to appear natural and preclude man from perceiving intrinsic value of those things not “standing in reserve for his use.” However, Heidegger "also believed that there are still - scattered in the midst of our contemporary, objectified and subjectifying practices - a sort of pre-technological understanding that embodies a non-objectifying way of relating to nature and human beings. It is thus necessary to unearth this understanding, muted by our everyday busy concerns and dispersed by post-Enlightenment achievements, and encourage their growth."<sup>4</sup> In this sense, poiesis can impart a transcendent knowledge revealing, or restoring, the intrinsic value that enframing may obscure: "Heidegger seemed to find part of the answer in the kind of poetic revealing founding the arts, and on a reflection on art that is not oblivious to technology."<sup>4</sup> Enframing, as an approach to interpreting reality, has deeply affected human understanding of pursuit and purpose.

#### *Intrinsic value: Scitovsky and Illich*

The economist Tibor Scitovsky wrote extensively about the inefficacy of society’s pursuit of satisfaction. He noted the tendency for material accumulation to become an indicator of one’s social value: "When profits or earnings are all a man has to show for his work, he transfers to them his pride of achievement and regards them as the symbol and measure of society's appreciation of what he does for society... We use money not only as a medium of exchange but also as the measuring rod of man's worth." Scitovsky goes on to explain that “we value income not only for the goods it will buy but also as the proof of our



usefulness to society. Being useful to society is a source of satisfaction and comfort; money income is a token of such usefulness and therefore becomes itself a source of satisfaction and comfort."<sup>5</sup> Here Scitovsky explains how material wealth, a source of instrumental value, can take on intrinsic value as a “source of satisfaction and comfort” for the individual by operating in a paradigm in which social value is articulated in exclusively material terms. Scitovsky elaborates on what is called the “money illusion”: “Money is sought and valued, not only for its purchasing power but also as a symbol of achievement, of success, of society's appreciation of one's services.”<sup>6</sup> Material accumulation therefore becomes an individual's primary – if not exclusive – source of meaning.

By contrast, in reflecting on Keynes' famous “animal spirits”, Scitovsky notes the value of intrinsic motivation: “The other context in which Keynes deals with activities pursued for their own sake is his discussion of businessmen's motivation for investment in *The General Theory of Employment, Interest and Money*...’animal spirits...the spontaneous urge to action rather than inaction’...[is] the main motivating force of all creative activity, not only in the fields of science, art and leisure, but also in that of business investment and so of economic and technical progress.” Here Scitovsky redefines the sources of society's progress, “warning against attributing an exaggerated importance to economic incentives,” and “stressing instead his animal spirits...the excitement of creating something new or unique.”<sup>7</sup>

Ivan Illich, the philosopher, explains the phenomenon he terms “the modernization of poverty”: “An addiction to paralyzing affluence, once it becomes ingrained in a culture,

generates 'modernized poverty.' This is a form of disvalue necessarily associated with the proliferation of commodities...in which the very abundance of commodities paralyzes the autonomous creation of use-values."<sup>8</sup> For Illich, use-value is true intrinsic value, and a regime of material accumulation is characterized by "the belief that useful activities by which people both express and satisfy their needs can be replaced indefinitely by standardized goods or services."<sup>8</sup> The notion that there is no intrinsic source of well-being and no need that cannot be satisfied by material accumulation leads to several dysfunctions: "Autonomous and creative human action, required to make man's universe bloom, atrophies...Expectations grow, while hopeful trust in one's own competence and the concern for others rapidly decline,"<sup>8</sup> and "The peculiarly modern inability to use personal endowments, communal life, and environmental resources in an autonomous way infects every aspect of life where a professionally engineered commodity has succeeded in replacing a culturally shaped use-value...The opportunity to experience personal and social satisfaction outside the market is thus destroyed."<sup>9</sup> Illich points out that "this does not represent simply a net loss of satisfactions that do not happen to fit into the industrial age. The impotence to produce use-values ultimately renders counterproductive the very commodities meant to replace them."<sup>8</sup> He further explains that in this regime, "Human responses to everyday occurrences have been standardized"<sup>8</sup> by what is a fundamentally materialistic paradigm. This phenomenon of undermining both the pursuit and creation of use-value is an articulation of the displacement of intrinsic value by material accumulation. The source of well-being lies in the restoration of these intrinsic use-values: "the generation of

nonmarketable use-values must inevitably occupy the center of any culture that provides a program for satisfactory life to a majority of its members...a modern world in which active people would use modern convivial tools to create an abundance of use-values that liberated them from consumption...a society [inspired] to protect personal use-value against disabling enrichment."<sup>8</sup>

### *Questioning the Primacy of Material Accumulation*

Several economists throughout history have commented on the rise of a materialistic paradigm. Simonde de Sismondi, an economist of the late eighteenth- and early nineteenth-century questioned the fundamental premise that increased material production “is the object of human society”, and that by focusing exclusively on “material goods”, society may not be “approaching its goal”.<sup>10</sup> John Ruskin, a nineteenth-century economist described how material accumulation pursued for its own sake results in what he called illth: "And possession is in use only, which for each man is sternly limited; so that such things, and so much of them as he can use, are, indeed, well for him, or Wealth; and more of them, or any other things are ill for him, or illth."<sup>11</sup> In contrast to his ideal of "organic welfare", early 20<sup>th</sup>-century economist John A. Hobson subsequently noted, "We cannot admit as the objective of the economic activities either the yield of material goods which these activities produce, or the 'psychic income' which they yield as assessed in terms of current deservedness or satisfaction, without reference to their intrinsic desirability...A material or a psychic income may contain 'illth' as an alloy to its wealth." Hobson also indicated the role of a materialistic

impulse: “This charge of materialism made against the more advanced industrial communities...[is] based on an over-stimulation of certain instincts for physical satisfactions...[leading to] a hasty exploitation of newly roused tastes that absorb too much of human nature in economic processes...Getting and spending, we lay waste our powers.”<sup>12</sup> In this sense, materialism is fostered and embedded in a society by “over-stimulating” individuals’ material “instincts”. For both Ruskin and Hobson, the explicit pursuit of intrinsic value is essential for the promotion of welfare, and regarding material accumulation as its own destination is not merely misguided, but potentially harmful. Richard Henry Tawney, another early 20<sup>th</sup>-century economist elaborates on the implications of a materialism regime for society:

As long as individuals think the attainment of moderate material comfort [is] the chief end of life...believing that the principal aim of man, what should be taught to children, what should serve as a rough standard of merit, what merits approbation and respect, is the attainment of a moderate – or even immoderate – standard of comfort, and that moral questions arise only after this has been attained; then they must be content to go without religion, literature, art, and learning. These are not hard to find for those who really seek them, or who seek them first. But if they are sought second they are never found at all...What I mean is that the failure of society to make the changes which are obviously important when regarded in bulk is due to the fact that individually we all have a false philosophy of life. We assume that the greatest misfortune which can befall a man is poverty - and that conduct which leads to the sacrifice of income is unwise, impractical, etc.; in short that a man's life should be judged by its yield of income, and a nation's life by its production of wealth.<sup>13</sup>

Tawney is describing materialism as a paradigm, where the pursuit of material accumulation is the goal, and all of society’s notions about status, progress and worth are reconceived

accordingly. He also points out that the pursuit of material accumulation does not enhance the intrinsic sources of well-being, rather, it necessarily displaces them. These must be pursued on their own merit. John Stuart Mill, the 19<sup>th</sup>-century philosopher and economist also rejected humanity's commitment to the materialistic enterprise: "But the best state for human nature is that in which, while no one is poor, no one desires to be richer...That the energies of mankind should be kept in employment by the struggle for riches...in themselves they are of little importance...I know not why it should be matter of congratulation that persons who are already richer than any one needs to be, should have doubled their means of consuming things which give little or no pleasure except as representative of wealth."<sup>14</sup> Mill effectively re-conceives the object of society and source of prosperity as transcendence over the materialistic impulse, not submission to it. John Maynard Keynes, the 20<sup>th</sup>-century economist, suggests a similar destination where society can do away with what he calls the money-motive:

When the accumulation of wealth is no longer of high social importance, there will be great changes in the code of morals...We shall be able to afford to dare to assess the money-motive at its true value. The love of money as a possession – as distinguished from the love of money as a means to the enjoyments and realities of life – will be recognised for what it is, a somewhat disgusting morbidity, one of those semicriminal, semi-pathological propensities which one hands over with a shudder to the specialists in mental disease...there will still be many people with intense, unsatisfied purposiveness who will blindly pursue wealth – unless they can find some plausible substitute. But the rest of us will no longer be under any obligation to applaud and encourage them. For we shall inquire more curiously than is safe to-day into the true character of this 'purposiveness' with which in varying degrees Nature has endowed almost all of us...But, chiefly, do not let us overestimate the importance of the economic problem, or sacrifice to its supposed necessities other matters of greater and more permanent significance.<sup>15</sup>

Here, Keynes perceives a sort of temporarily useful “money-motive”, where the accumulation of material wealth is acceptable so long as it does not take on intrinsic motivation or displace sources of intrinsic value. Purposiveness is seen as a rather dysfunctional materialistic conception, but one to which we are all susceptible. At some level, materialism is grounded in the lowest common denominator of human reality – material impulse. In this sense it is a potentially universally-applicable paradigm.

Economist Amartya Sen contrasts the materialistic “opulence” concept to the endeavor he has proposed as a source of intrinsic value – the expansion of capabilities: "The market values commodities, and our success in the material world is often judged by our opulence, but despite that, commodities are no more than means to other ends. Ultimately, the focus has to be on what life we lead and what we can or cannot do, can or cannot be. I have elsewhere called the various living conditions we can or cannot achieve our 'functionings,' and our ability to achieve them, our 'capabilities.' The main point here is that the standard of living is really a matter of functionings and capabilities, and not a matter directly of opulence, commodities, or utilities."<sup>16</sup> Sen’s capabilities approach redirects attention and value to intrinsic pursuits, offering a different conception of prosperity in the face of a paradigm of opulence.<sup>§</sup>

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<sup>§</sup> This approach is described in greater detail in the section titled *Intrinsic Value and Capabilities*

*The Problem with Materialism: Aristotle through the Ages*

Aristotle's concepts of chrematistics and pleonexia have influenced thought on economics throughout the centuries. In this tradition, Sismondi rejected a paradigm in economics directed exclusively at material accumulation: "The chremastic [sic] science, or the study of the means of increasing wealth, in setting aside the purpose of wealth, is a false science...When one takes the increase of economic goods as the end of society, one necessarily sacrifices the end for the means. One obtains more of production, but such production is paid for dearly by the misery of the masses."<sup>10</sup> Here Sismondi rejects the widely-held assumption that material growth leads necessarily to well-being.

Herman Daly, an ecological economist, draws a distinction between the origins of economics in chrematistics and oikonomia: "Oikonomia differs from chrematistics in three ways. First, it takes the long-run rather than the short-run view. Second, it considers costs and benefits to the whole community, not just to the parties to the transaction. Third, it focuses on concrete use value and the limited accumulation thereof, rather than on abstract exchange value and its impetus toward unlimited accumulation."<sup>17</sup> It is worth noting that here chrematistics appears to be ill-suited for questions of sustainability given its tendency to favor the short-run. However, Daly demonstrates that economics is not inherently a materialistic science, and it is the operating paradigm that is relevant in the generation of materialistic conclusions: "Unlimited accumulation is the goal of the chrematist and is evidence for Aristotle of the unnaturalness of the activity. True wealth is limited by the satisfaction of the concrete need for which it was designed. For oikonomia, there is such a

thing as enough. For chrematistics, more is always better."<sup>17</sup> Oikonomia is therefore well-being achieved by the pursuit of intrinsic value, whereas chrematistics is the futile pursuit of perpetual accumulation of exchange (or instrumental) value.

Historian Jerry Muller describes the influence Aristotle's economic insights had on Hegel: "Unlike more moral pursuits, [Aristotle] maintained, the pursuit of wealth lacks any natural, intrinsic limit and is hence prone to excess. Those engaged in commerce for money thus have a propensity to pleonexia (greediness or overreaching); they tend to devote their lives to gaining more and more without limit or reflective purpose."<sup>18</sup> Here, pleonexia is the materialistic impulse in full fruition. In this context, Hegel explained the self-generating nature of the system: "Hegel saw the market as creating new wants that are perceived by the individual as 'needs.' Indeed, the market was a want-creating machine." The system characterized by a materialistic paradigm induces wants and in so doing, converts individuals to materialism and sustains itself. However, the implications for well-being are negative: "The result could degenerate into the continual, irritable search for more and more, without satisfaction in any level of attainment— psychic misery in the midst of material excess. When consumer goods are chosen merely on the basis of ever new induced wants, rather than because they fit in with a rational life plan, the result would be what Hegel called a 'bad infinity.'"<sup>19</sup> Furthermore, Hegel saw sources of intrinsic value as the welfare buffer to bad infinity: "Without a firm mooring in institutions like the family or the professional association, and unguided by cultural frameworks that provided an independent notion of



appropriate wants, the individual might be attracted to one commodity after another, in an endless round of joyless consumption."<sup>20</sup>

These insights offered by philosophers and economists throughout the centuries, especially of the modern era, point to the existence of a coherent paradigm. This paradigm is characterized by the reduction of human reality to its material aspects, the privileging of material interpretations of value, interest, progress and human purpose, and the displacement of intrinsic pursuits. In short, the materialism paradigm dictates that *the necessary destination of all human endeavor is self-interested material accumulation*. And in virtually no other discipline is the materialism paradigm so embedded as economics.

### ***The Materialism Paradigm: Enter Economics***

The materialism paradigm is deeply-embedded in the operating frameworks in economics relating to the human being and the nature of human reality. Here, Adam Smith's lasting contributions from *The Wealth of Nations* are instructive. His introduction of the concept of the "invisible hand" states:

As every individual, therefore, endeavours as much as he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value; every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own

interest he frequently promotes that of the society more effectually than when he really intends to promote it.<sup>21</sup>

Adam Smith thus elevates the pursuit of self-interest to true virtue, and abstracts away from any considerations for community or social well-being at the level of the individual. He elaborates on the role of self-regarding behavior as the essential foundation of modern society: "It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own self-interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages."<sup>22</sup> It becomes clear that the virtue of self-interest, as the ultimate mediator of interactions between individuals, is referred to in its material dimensions.

Countless economists and others have commented on the pervasiveness of this concept of "Homo economicus— that selfish, materialistic creature that has traditionally inhabited the economic textbooks."<sup>23</sup> Some have noted that human beings are viewed as excessively atomistic<sup>24</sup>, devoid of their social components. Others have pointed out that this view precludes the impetus (or need) for true cooperation<sup>25</sup> and casts other-regarding behavior or that which is directed toward the public good outside the bounds of rationality<sup>26</sup>. Moreover, acquisitive self-interest is unlimited<sup>27</sup>, should go unrestrained<sup>26</sup>, and in fact, is the basis upon which economic theory should be built<sup>26</sup>. This limited conception of a human being has hampered economic understanding of non-material and social reality.

Some economists suggest that economics is essentially blind to anything that cannot be quantified<sup>28</sup>, monetized<sup>29</sup>, or otherwise "brought under the measuring rod of calculating

self-interested individuals.”<sup>30</sup> This has led to the conclusions that this framework corrodes moral considerations, particularly toward others<sup>31</sup>, and does not recognize the critical contributions community and social reality make to human welfare.<sup>26</sup> Others note that “the primacy of the relations among people, which characterized traditional society, gave place to the primacy of the relations between people and things”<sup>4</sup>, indicating that this economic framework displaced preexisting value systems that favored the social over the material. As a result, this inability to account for well-being deriving from non-material sources embedded in social relations has not been costless. The price has been paid repeatedly in the form of diminished welfare as a result of deterioration of community.<sup>32-35</sup> At best, “social costs can be considered only as externalities and are actually little considered even under that heading.”<sup>34</sup> Further to this, social welfare is seen merely as “the summation of the increase of goods and services acquired by the individual members. The society as such does not appear...There is no way to conceive of a collective good - only of the possibility that there can be improvement for some without costs to others.”<sup>34</sup> This directly implicates any pursuits to ensure global prosperity. The inconsistency between this economic version of reality and the aspirations of society has been further articulated: “How, then, can we resolve the paralyzing contradiction that, on the one hand, we desire a world of peace and prosperity, while, on the other, much of economic and psychological theory depicts human beings as slaves to self-interest?”<sup>36</sup>

Economic logic has responded by encouraging and relying upon the mobilization of materialistic self-interest as an immediate and efficient means to elicit the behaviors thought

to conduce to optimality, and eventually, development: “economists and policy makers [see] social policy as the goal of improving social welfare by devising material incentives that induce agents who care only for their own personal welfare to contribute to the public good.”<sup>23</sup> Unlike Hobson’s indictment of the over-stimulation of materialistic instincts, the approach in economics has been to embrace this as the instrument of choice to bring about prosperity.

### *Economic Notions of Prosperity*

The assumptions operating in economics also determine its conclusions about the aims of human society. Mill stated in 1844 that “Political Economy considers mankind as occupied solely in acquiring and consuming wealth; and aims at showing what is the course of action into which mankind, living in a state of society, would be impelled, if that motive...were absolute ruler of all their actions. Under the influence of this desire, it shows mankind accumulating wealth, and employing that wealth in the production of other wealth.”<sup>37</sup> The economic idea of human progress is strictly limited to material accumulation as it “makes entire abstraction of every other human passion or motive.”<sup>37</sup> Informed by the principle of Smith’s invisible hand, conventional economic theory also indicates that purely by pursuing one’s “self-interested acquisitive nature,” prosperity will be achieved.<sup>38</sup>

So entrenched are these principles that Karl Polanyi equated the consuming pursuit of economic gain to “the most violent outburst of religious fervor in history”, “a motive rarely acknowledged as valid in the history of human societies, and certainly never before raised to

the level of a justification of action and behavior in everyday life."<sup>4</sup> Many have supported the assertion that this idea of progress is unprecedented<sup>4, 39</sup>, and has, in the past, been otherwise considered illegitimate by society at large.<sup>27</sup> The ideas about progress as articulated in economics are therefore artificially conceived and assumed within the bounds of the discipline's own constructs. This has led to the idealization of wealth maximization at the aggregate level<sup>40</sup>, with material accumulation so pervasive in culture that it is taken to be the "surest perceived route to personal happiness, social status, and national success...that leads people to find meaning, contentment, and acceptance."<sup>41</sup> These beliefs about prosperity have been propagated throughout the development enterprise as well.

Development has functionally become "blind imitation" of the materialism characterizing developed countries<sup>42</sup>, with the developing world "increasingly enamored of the materialistic values that create a 'thing oriented society'."<sup>43</sup> These materialistic pursuits may incur significant ecological and social costs, but these have been subordinated as the "price to be paid for economic 'progress'."<sup>44</sup> The "package deals" of materialistic development<sup>45</sup> have been effective at conveying their paradigm – the value system has been found operating throughout the world in countries of varying levels of economic development.<sup>8, 41, 46</sup> This effective exportation of materialism has characterized the history of the development enterprise.

Arturo Escobar considers the figure of the economist in development history as of particular importance in this process. He is unequivocal about the intention of development to proselytize the prevailing economic construct of reality along with its associated ideology:

“the axioms of development economics in its early years reveals one basic fact: From the very beginning, development was not a process which involved only the material conditions of living...More than that, development was, inevitably and perhaps more significantly, a mechanism through which a whole rationality was to be learned. For development to occur, the rationality of ‘Economic Man’...had to be brought to the peoples of the Third World.”<sup>44</sup> And these “Third World peoples” from multiple countries, cultures, and traditions, were only seen in their material dimension of impoverishment and therefore considered to be essentially the same.<sup>47</sup> Escobar describes an intent, widely-articulated in policy documents from the time of the inception of development, to “transform drastically two-thirds of the world in the pursuit of the goal of material prosperity and economic progress.”<sup>48</sup> This consuming material identity extended to the reconstruction of an individual’s universe in which “the material aspects would be not the goal and the limit but a space of possibilities for broader individual and collective endeavors.”<sup>49</sup> Human aspiration, self-concept and location within reality were thus contracted to an exclusively-material space.

Analyzing the legacy of development in Colombia, Escobar notes that this “developmentalization” was applied extensively to peasants, women and the environment<sup>50</sup>, much like the methods of fragmentation and abstraction observed in economics generally. Similarly, development programs were designed exclusively within a reductionist paradigm on the premise that “Only through material advancement could social, cultural, and political progress be achieved.”<sup>47</sup> The primacy assigned to spreading the “dominant economic rationality of the West” through development also “dictated the marginalization and

disqualification of non-Western knowledge systems"<sup>48</sup>, implying an active displacement of any alternative paradigms to materialism. In this context, only material considerations could provide sufficient justification for programs designed to improve agriculture<sup>51</sup>, nutrition<sup>51</sup>, or promote women's human capital development.<sup>50</sup> Escobar's assessment of these programs show that they tend to exacerbate deprivation and undermine well-being, particularly in the case of rural development throughout the decades of Integrated Rural Development and Structural Adjustment programs.<sup>51</sup>

### *The Impacts of Materialism – Lessons from Economics*

Research in economics has been useful for understanding the social dynamics that take place in a materialistic regime as countries become more "developed". Richard Easterlin's famous study looking at the relationship between income and happiness found that within countries there is a strong positive association between the two – individuals in higher status groups were happier than those in the lowest status group. Between countries, however, the positive relationship between income and happiness was less clear, leading him to conclude that relative status may be the factor determining individuals' happiness.<sup>52</sup> These findings, termed "Easterlin's paradox", imply that material sources of happiness are inherently constrained. Scitovsky explains how happiness derived from material notions of status and value has negative social effects, whereas that derived from intrinsic sources may resolve Easterlin's paradox:

The demand for the comfort [status] yields...is satiable when people seek recognition for excellence in their job or profession, in a sport, game, or hobby, or in their expert appreciation of food, wine, music, painting, or any other of the many good things of life. Thanks to the great multiplicity possible in such aims and the standards set for them, full status satisfaction in such form is within many people's reach. By contrast, when people seek status not in other people's recognition of their specific accomplishments, but in a general token, like income, which is supposed to express the value society places on their services, then status becomes a matter of ranking on a one-dimensional scale, and the seeking of status becomes a zero-sum game. This means that one person's gain in status is automatically matched by an equal loss of status suffered by those he now outranks. A gain in status by anyone becomes merely a change in ranking, which changes only the distribution of status satisfaction but leaves unchanged the sum total of such satisfactions...Such limitation of the supply of status satisfaction, however, imposes no limits on people's demand for status, nor on the amount of money they may spend in seeking it. Money income as a measure of one's success in life has the drawback that knowledge of it is seldom in the public domain. Therefore, to enjoy not only one's high income, but also the esteem it can secure, one must make it known through appropriate spending behavior."<sup>53</sup>

Scitovsky draws a distinction between the desire to rank and the desire to belong. The latter is “a deep-seated and very natural drive whose origin and universality go beyond man and are explained by that most basic of drives, the desire to survive.”<sup>53</sup> People may pursue rank in their desire to belong, but its scope is limited when it is tied to material wealth. This is apparent from the results Easterlin observed. If human beings instead attempted to satiate this desire with the more “beneficial” and “noble” pursuits of status arising from intrinsic value to society, it is clear that total social happiness would be higher as well as self-reinforcing instead of internally constrained and zero-sum. In reflecting on relative wealth as a source of happiness, Stephen Marglin also notes that in this regime, people’s participation in production and consumption is maintained at levels that are artificially higher than



optimality would dictate: “Bringing everybody’s consumption down a notch is like making the crowd at a football game sit down. We see as well as when we are all standing, and with less effort.”<sup>54</sup> Clearly, non-material conceptions of status and value would be more effective at generating lasting, shared, prosperity.

### *Materialism as a Paradigm*

The way materialism has influenced economics – and through economics, development – is best understood as a paradigm. Understanding the nature of paradigms will lend insight into how materialism, as a mode of “knowing reality”, behaves, entrenches itself and propagates.

Psychology research by Kilbourne et al looks at how a slightly more restricted notion of materialism behaves as a Dominant Social Paradigm (DSP) in seven industrialized countries they examine.<sup>h</sup> The authors explain that a DSP is essentially a “worldview, or overarching system of beliefs, for achieving progress,” that it is ubiquitous, embedded in society’s institutions, internalized by individuals, and constitutes conventional practices. It also “simultaneously legitimizes its own existence and reinforces its premise.”<sup>55</sup> Materialism, which sees self-interested material accumulation as the necessary destination of all human

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<sup>h</sup> In their model, “materialism refers to a mode of expressive behavior by individuals in that it is consumption for purposes other than instrumental value, or the immediate utility, provided by the object possessed.” This values orientation, based upon the reassignment of intrinsic value to material accumulation, is consistent with the materialism paradigm outlined here, though it is limited to material accumulation exclusively in the form of consumption.

endeavor, acts as the DSP being propagated by mainstream economics in sustainable development.

Keynes was perhaps among the first to assert that the materialistic potential for “purposiveness” is endowed by Nature in almost all of us. Since then, several psychologists have indicated a ubiquitous susceptibility in human beings to materialistic impulse so that “all of us to some extent take on or internalize materialistic values.”<sup>56</sup> Others have noted that while human beings have long attributed special significance to material possessions, “Only in modernity has this wealth of material artefacts been so deeply implicated in so many social and psychological processes”<sup>57</sup>, that contrary to previous societies, the current regime has “made an institution of...materialistic ‘impulses’.”<sup>58</sup> Escobar also argues that the materialistic take on development is now so pervasive that this economic view “is embedded in the most basic practices of individuals and societies.”<sup>4</sup>

The current ubiquity of materialism can be explained by its self-justifying and self-generating nature. John Kenneth Galbraith explained rampant materialism by stating that modern society “evaluates people by the products they possess...The urge to consume is furthered by the value system.”<sup>59</sup> Scitovsky describes it as a system that “gives rise to both a need and its satisfaction”<sup>60</sup>, and many others have pointed out that the culture of materialism actively constructs people as materialistic “in order to keep the system going”<sup>8</sup>, especially as the premise of development.<sup>9</sup> Psychologists have identified an even more complex dynamic. Tim Kasser explains that dissatisfaction arising from adherence to materialistic values may motivate an individual to pursue these values even more strongly in an effort to offset the

unhappiness incurred. This has the effect of reinforcing the value system as well as the unhappiness that feeds it.<sup>61</sup>

Frameworks in economics are particularly adept at fashioning society in its own image: "Economics is not only descriptive; it is not only evaluative; it is at the same time constructive - economists seek to fashion a world in the image of economic theory."<sup>62</sup> Several scholars have noted the generative tendency of economic frameworks.<sup>34, 38</sup> This poses a problem because much of the inefficacy or harm caused by economic theory is not "visible" to the theory – it arises from neglect or hostility toward those aspects of reality that the theory has turned into abstractions. These frameworks are thereby incapable of accounting for their failures, and overestimate their success, allowing them to persist.<sup>34</sup> This is why Marglin insists that "we have to be careful how we structure our institutions, our economic institutions in particular, so that they serve, not undermine, our basic values."<sup>62</sup>

Materialism, as it is conceived here, has also behaved as a DSP – it is a set of beliefs that has ubiquitously informed notions of progress, permeated human reality, recast societies, and reinforced itself in multiple ways. This has been particularly evident in the realm of development, which to some extent, is an active project to deploy a different vision of society: "As is well known, the dominant model of development depends on a society of vigorous consumers of material goods. In such a model, endlessly rising levels of consumption are cast as indicators of progress and prosperity. This preoccupation with the production and accumulation of material objects and comforts (as sources of meaning, happiness and social acceptance) has consolidated itself in the structures of power and

information to the exclusion of competing voices and paradigms."<sup>36</sup> As a system inculcating a set of ideals, modifying behavior of individuals and institutions, and aligning societies with predetermined notions of prosperity, materialism, in its functioning as a paradigm, has been particularly successful. Though its universal application would imply a belief in its efficacy, the question still remains of whether this is an effective approach for sustainable development.

### *Psychology's Insights*

The consensus in psychology is clear: "materialistic values undermine well-being."<sup>63</sup> The dynamics of materialism have negative effects on health, happiness and social welfare, and in one instance, was even found to have indirect negative effects on economic growth.<sup>64</sup> Materialism is "a system driven by anxiety"<sup>57</sup>, and has given rise to a "social recession."<sup>65</sup> Its assertions about what constitutes progress are largely at odds with the "factors—family, friendship, health, peer approval, community, purpose—known to have a strong correlation with reported happiness."<sup>66</sup> Unfortunately, "People have a good grasp of the things that make them happy but a poor grasp of how to achieve these things,"<sup>66</sup> allowing the dictates of the materialism paradigm to fill in the gaps.

The great deal of psychology research that has been dedicated to studying the existence and effects of materialism constitutes our most complete source of understanding about this phenomenon. In their study, Richins and Dawson identify three components of materialism:

1. *Acquisition Centrality*: "Materialists place possessions and their acquisition at the center of their lives...Materialism thus lends meaning to life and provides an aim for daily endeavors."

2. *Acquisition as the Pursuit of Happiness*: "One of the reasons that possessions and their acquisition are so central to materialists is that they view these as essential to their satisfaction and well-being in life...While most individuals are probably involved to some extent in the pursuit of happiness, it is the pursuit of happiness through acquisition rather than through other means (such as personal relationships, experiences, or achievements) that distinguishes materialism."

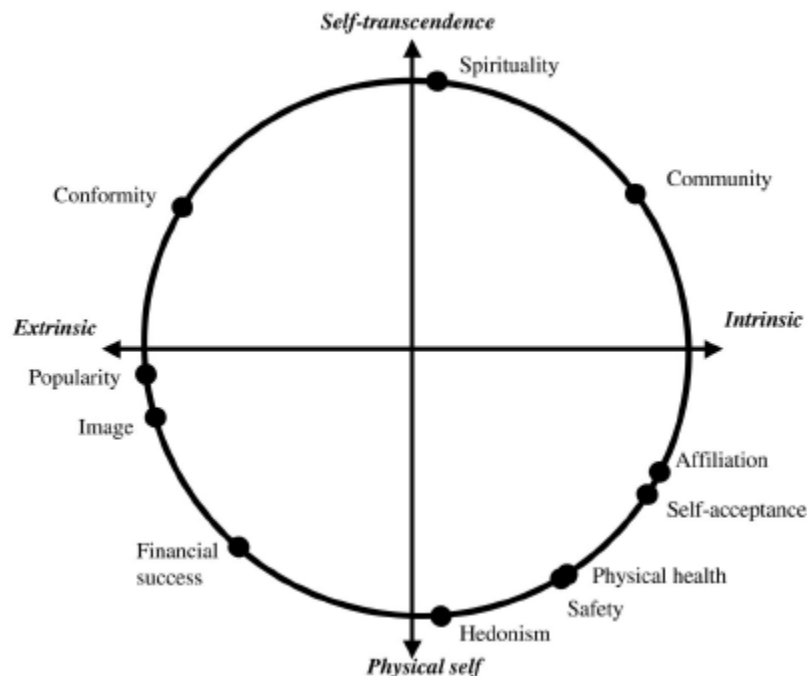
3. *Possession-defined Success*: "Materialists tend to judge their own and others' success by the number and quality of possessions accumulated."<sup>67</sup>

Therefore, not only is the belief – that material accumulation is the necessary destination of all human endeavor – aligned with psychologists' understanding of the phenomenon, but it is also perceived to be a source of meaning, well-being and status, confirming the concept of a paradigm. This is consistent in much of the literature. One psychologist describes materialism as "evaluat[ing] our own well-being and accomplishment not by looking inward at our spirit or integrity, but by looking outward at what we have and what we can buy,"<sup>68</sup> and another describes "materialism as an enduring belief in the desirability of acquiring and possessing things."<sup>46</sup> Given this limited paradigmatic conception of purpose, Tim Kasser sums up much of psychologists' learning about materialism, noting: "If we agree that the highest personal and social goals are to create great material wealth...if wealth and seemingly limitless consumption form our vision of prosperity...there is no doubt that the materialistic goals...have brought about prosperity in one sense of the word, [but] we must also recognize that if a different set of values are applied to evaluate our current personal and social

circumstances...[they] must be considered remarkably less successful, if not unmitigated failures."<sup>43</sup> Kasser describes how materialism fares as a framework for prosperity, given a different set of intrinsic values: "Humanity has become ensnared in a vision of prosperity that has elevated financial profit, material wealth, and consumption to the highest good. While such a vision has fulfilled its promise of creating wealth, goods, and services, it has failed to provide optimal levels of happiness, social cohesion, and ecological sustainability; indeed, some evidence suggests it has damaged these aspects of 'the good life.'"<sup>43</sup> Psychologists have contributed a great deal of insight into how these intrinsically valuable outcomes are undermined.

Circumplex research has been particularly useful in determining the psychological relationship between different types of motivations. Based on survey responses collected from around the world, circumplex models capture the degree to which goals are experienced either as consistent with each other or in conflict with each other. In the circumplex below, the closer two goals are together, the more compatible they are:

Figure 21: Circumplex representation of goals <sup>69</sup>



Kasser explains that based on analysis of the circumplex, adherence to materialistic values undermines the ability of an individual to realize the intrinsic goals of “growing as a person, intimately connecting with other people, and contributing to the world at large...[which] are also the very values and goals that empirical research demonstrates promote personal happiness, positive social involvement, and ecologically sustainable behavior.”<sup>43</sup> Psychologists have thus demonstrated that materialistic goals displace intrinsic pursuits which are more conducive to human well-being. The model also suggests that stimulating the materialistic motivation for a particular pursuit is incompatible with the intrinsic motivation for those pursuits, thus robbing them of their intrinsic value. Here it is again evident that materialism behaves as a paradigm, actively shaping individuals’ conceptions of reality and self.

*The Impacts of Materialism – Lessons from Psychology*

The harm materialism causes is extensive, affecting physical, mental and social well-being. First, efforts to pursue material accumulation often have severely health-degrading effects. Studies from around the world have yielded observations “from low life satisfaction and happiness, to depression and anxiety, to physical problems such as headaches, and to personality disorders, narcissism, and antisocial behavior.”<sup>70</sup> Research has even demonstrated the direct effects of materialism on increased cortisol (a hormone related to stress) secretion. The same research found that less-materialistic behavior can conversely result in positive health effects.<sup>71</sup> Not only is materialism associated with physical illness<sup>72</sup> and psychological disorders<sup>70, 73</sup>, but “high materialists” also indicate a “lower satisfaction with [their] 'health and physical condition'.”<sup>74</sup>

Second, materialism also affects happiness and satisfaction more generally. Possibly the most consistent finding, studies have shown that the more individuals subscribe to the frameworks of materialism, the more they report being unhappy, anxious, depressed, less satisfied and even angry, as well as having few pleasant emotions.<sup>43, 66, 70, 73, 75</sup> Even the psychological needs empirically associated with quality of life that are directly related to material consumption – such as safety, security, and sustenance – are “relatively unfulfilled when people hold materialistic pursuits as central in their value systems.”<sup>56</sup> This suggests that while these pursuits are related to one’s material state, they possess an intrinsic value that is not acquired from an exclusively materialistic orientation. This is also evident from the



circumplex above (figure 1). While the needs in the lower right quadrant are not as opposed to the materialistic values in the lower left quadrant as the socially-oriented goals are (upper right), they still are more closely related to intrinsic motivation than purely materialistic aims.

Third, materialism is associated with negative social orientations. Several multi-nation studies have indicated that materialistic individuals have more negative and unsuccessful relationships, place less value on relationships and contribution to their communities, and treat people like objects of instrumental value.<sup>76</sup> Kasser explains that as materialistic aims grow in importance, individuals have been found to “become less concerned with fully understanding others’ subjective experience, feelings, and desires...people exist largely to reflect well on ourselves and to be used and manipulated to obtain what we want...we move farther and farther from what makes us civilized. We treat each other in less humane ways.”<sup>77</sup> One study expands on this dynamic: “materialism is not just a selfish pursuit of self-gratification but also a demonstration of mastery and control over the material world...those high in materialism may favor objects over people because these possessions give them mastery and control over others. Thus, materialistic individuals appear to be not only hedonistic pleasure seekers but also power-hungry control seekers.”<sup>72</sup> Furthermore, in materialistic societies where people’s relative position plays a prominent role in their aspirations, elites may “feel that education of the poor threatens the political status quo.”<sup>78</sup> Not only does materialism erode social relations and promote power-seeking, it may be actively antagonistic toward societal welfare.

The negative impact materialism has on social endeavors incurs a compounded cost. Materialistic individuals are less invested in their relationships and communities, and less interested in contribution to the common good. This leads to “low-quality relationships characterized by little empathy and generosity, and by objectification, conflict, and feelings of alienation,”<sup>76</sup> which devastates personal well-being. Materialism thus has multiple negative effects on social reality: it breeds selfishness, undermines the possibility for coordination<sup>76</sup>, degrades established patterns of cooperation<sup>62</sup>, and causes “greater misery coming from less harmonious social relationships.”<sup>66</sup> These, combined with the negative impacts on health and happiness, demonstrate that the materialism paradigm is not merely an ineffective one for sustainable development, it is actually harmful. Much like the “developmentalization” process described by Escobar, psychologists have found that materialism degrades the non-material aspects of reality that were previously sources of intrinsic value, leading to diminished human welfare.

Another social dynamic psychologists have identified is related to the intergenerational transfer of materialism. Children of materialistic parents are exposed to more messages encouraging and reinforcing materialistic values. Their parents are also likely to be less nurturing, spend more time dedicated to materialistic pursuits, and convey their bond with material things. This transmits a system of beliefs that wealth and possessions “are of primary importance...perhaps of more importance than family,” and the children have subsequently been found to value these things more highly.<sup>77</sup> Adherence to materialism undermines the family structure and it also reliably results in the intergenerational

transmission of materialistic values – instilling psychically the inability "of future generations to meet their own needs."

### *Materialism and Environmental Sustainability*

Also closely related to the pursuit of sustainable development, the tendency in economics to abstract away from the aspects of human reality unrelated to self-interested material accumulation has implications for the discipline's view of nature. John Stuart Mill noted:

...solitude in the presence of natural beauty and grandeur is the cradle of thoughts and aspirations which are not only good for the individual, but which society could ill do without. Nor is there much satisfaction in contemplating the world with nothing left to the spontaneous activity of nature; with every rood of land brought into cultivation, which is capable of growing food for human beings; every flowery waste or natural pasture ploughed up, all quadrupeds or birds which are not domesticated for man's use exterminated as his rivals for food, every hedgerow or superfluous tree rooted out, and scarcely a place left where a wild shrub or flower could grow without being eradicated as a weed in the name of improved agriculture. If the earth must lose that great portion of its pleasantness which it owes to things that the unlimited increase of wealth and population would extirpate from it, for the mere purpose of enabling it to support a larger, but not a better or a happier population, I sincerely hope, for the sake of posterity, that they will be content to be stationary, long before necessity compel them to it.<sup>14</sup>

Even in the mid-nineteenth century the threat of displacement of the intrinsic value of nature was apparent to this economist. For Mill, nature may serve material ends, but it cannot realize its full potential contribution to human prosperity without regard for its intrinsic value. In fact, the preservation of the intrinsic value of nature should (or eventually

will) take precedence over additional material accumulation. Unfortunately, many scholars have since indicated that the thrust of the operating paradigm has left little consideration for nature outside the materialistic economic regime.

### *Economic Anthropocentrism*

There is a consistent notion that economics generates a fragmented picture of reality, where “On the one side there are human beings, the satisfaction of whose wants is the single end of economic activity. On the other side there is everything else, all of which comes into consideration only as means to the end of satisfying human wants...nature in general, [has] disappeared from view. Economics as a discipline floats free from the physical world.”<sup>29</sup> This is akin to what Karl Polanyi called “disembedding” the economy and subordinating the “substance of society...to the laws of the market”<sup>4</sup>, or what Daly calls the “subsumption” of nature under the “property-relation”.<sup>29</sup> Much in the same way that economics is not equipped to “see” community, it likewise is ill-suited to account for nature, leading to the “symbolic death” of nature<sup>50</sup>, or the “destruction” of the physical world.<sup>29</sup> The aspects of nature that it can “see” are the ones assigned value, a phenomenon Escobar calls “the crematistic (sic) valorization of nature”, particularly as carried out by economists in the context of development.<sup>50</sup> Some have even gone so far as to suggest that “The strains we are imposing on the natural world mean that more and more decisions about it are guided by economics rather than by other considerations. The luxury of deciding to preserve some feature of the natural environment for any noneconomic reason - ...because its existence and

the fact that humans did not make it gives it intrinsic worth - is fast disappearing.”<sup>79</sup> In this sense, economic approaches to the environment are potentially hostile toward its intrinsic value.

This view is consistent with an anthropocentric approach to nature.<sup>29</sup> Some consider the anthropocentric approach to be the operative one in mainstream sustainable development thinking (as articulated by the Brundtland Commission), describing it as follows: "The essence of the anthropocentric approach to the natural world is that humankind is above nature and has the right - divine or otherwise - to subjugate it... the anthropocentric approach to the human condition within the natural world is based on materialism and the pursuit of wealth...explanations of life are reduced to the material."<sup>44</sup> Others have concurred that the Commission's "undeviating materialism contrasts sharply with this practical eco-centrism...[of] upholding the pre-eminent importance of biological over material wealth, of natural capital over human capital."<sup>80</sup> Even the discourse on sustainable development is compromised by its materialistic confines. Tools of economic valuation of nature arising out of this discourse are criticized as well: "Commodification and pricing deny intrinsic value and permit extinction or contamination without regard to future consequences. Economic utilitarianism precludes the simple recognition that nature's subsidies are unquantifiable."<sup>80</sup> Economics either denies the intrinsic value of nature that lies outside the economic system, or materializes its value in order to incorporate it and align it with the fundamentally flawed assumptions of a materialistic framework. These approaches

contrast starkly with frameworks that place the intrinsic value of nature at the center of its understanding.

*Biocentrism, Ecological Economics and the Importance of Community*

Opposite this anthropocentric approach is the biocentric approach, which Dick Richardson described as “anti-materialist in that it eschews the pursuit of wealth as a goal in itself and seeks to enhance the non-material...dimension of human experience. There is emphasis on the quality of life as distinct from the quantity of material possessions, on feelings and values, on the inner rather than the outer self. Partly this is a question of recognizing the wholeness of the self (material and non-material) as well as the wholeness of the planet.”<sup>44</sup> This alternative approach to reality and prosperity requires “respecting the intrinsic value and life of the non-human world and the natural environment,” an intrinsic value which extends so far as to exist “independent[ly] of human life” altogether.<sup>44</sup> The associated approach to sustainability advocates for the de-materialization of the economy or “the production and sale of de-materialised ‘services’, rather than material products,” in recognition of the imperative to preserve intrinsic ecological value.<sup>81</sup>

For economists Herman Daly and Stephen Marglin, such a posture toward the intrinsic value of nature is synonymous with an expanded concept of community that includes all of creation, and here confronts incompatibility again with standard economic constructs.<sup>30, 82</sup> Escobar offers an example: “Within the Andean worldview...the peasant world is conceived of as a living being, with no separation between people and nature,

between individual and community, between society and the gods. This live world continually re-creates itself through mutual caring by all living beings. This caring depends on an intimate and ongoing dialogue between all living beings (including, again, people, nature, and the gods), a sort of affirmation of the essence and will of those involved."<sup>50</sup> Clearly, the perception of nature driving economic and mainstream sustainable development discourse differs markedly from those operating in communities throughout the world. Furthermore, there is substantial evidence that this discourse is ill-suited to address the challenges of sustainable development.

Again, Daly's perspective as an ecological economist is instructive here. Like Mill and Keynes before him, Daly identifies a material prosperity threshold, but one that has implications for the environment: "When the economy grows...it grows into the finite, non-growing ecosystem and incurs the opportunity cost of displaced natural capital and ecological services. Beyond some point growth in production and population will begin to increase social and environmental costs faster than it increases production benefits, thereby ushering in an era of uneconomic growth – growth that on balance makes us poorer rather than richer, that increases 'illth' faster than wealth, and that is likely to be ecologically unsustainable."<sup>83</sup> This concept of welfare-damaging uneconomic growth requires the perception of the intrinsic value of nature, which is largely impaired by an economic paradigm that privileges material accumulation above all else. Further to this point, Daly (invoking arguments originally put forward by Nicholas Georgescu-Roegen<sup>84</sup>) explains how conventional economic constructs of nature lead inescapably to uneconomic growth because

of an inability to account for the role of entropy: "there is also a flaw in our very understanding of production as a physical process...value added by labor and capital in production is added to nothing, not even valueless neutral stuff. But value cannot be added to nothing. Neither can it be added to ashes, dust, rust, and the dissipated heat energy in the oceans and atmosphere. The lower the entropy of the input the more capable it is of receiving the imprint of value added by labor and capital. High entropy resists the addition of value. Since human action cannot produce low entropy in net terms we are entirely dependent on nature for this ultimate resource by which we live and produce."<sup>85</sup> The logic of the entropy-uneconomic growth argument is related to the criticism of economics' fragmentation of reality, where nature possesses no value ex-ante or ex-post its incorporation into material processes. The discourse of ecological economics reveals the fundamental incapacity of a materialism paradigm to cope with the exigencies of sustainable development.

Not only are materialistic conceptions of nature a threat to sustainability, but the economic disregard for social reality poses one as well. Marglin explains how the economic dissolution of community – even in its more limited sense – threatens sustainability:

Contrary to the economic conception of knowledge...under conditions of uncertainty, decision makers do not and cannot mobilize the apparatus of calculation and maximization. Without something to peg probabilities on, individuals necessarily fall back on quite different methods - on intuition, conventional behavior, authority - in short, on a different system of knowledge from that which drives maximizing behavior. This is a system of knowledge that is embedded in community, in the nexus of relationships that bind people to one another...and coping with uncertainty is - I insist - predominantly a matter of experiential knowledge, and will remain so no matter how adept at climbing decision trees or manipulating subjective probabilities we might become.<sup>86</sup>



Given the tremendous uncertainty related to climate change, water scarcity, social upheaval and various other concerns of sustainable development, "experiential knowledge" - arising from the social relations currently under threat by materialism - is critical. The collective well-being prescribed by the concept of sustainable development is undermined by only preserving "economic conceptions of knowledge".

Psychology research on environmental attitudes indicates that the role of materialism as a value system is just as harmful to sustainability as materialism used to frame the theoretical constructs discussed above. Tim Kasser notes that a materialistic orientation leads "individuals to make the environmental and competitive choices that cause the tragedy of the commons" or that "are often unconcerned with, or actively hostile toward, nature."<sup>77</sup> Such individuals are likely to personally consume more, less likely to engage in "ecologically-responsible behaviors", and have larger ecological footprints overall.<sup>43</sup> Others have similarly found a negative relationship between materialism and environmental beliefs, and one that is rather insidious: "as beliefs in materialism increase, perceptions of environmental problems would decrease through processes of selective perception and distortion."<sup>87</sup> These psychological dynamics occurring at the individual level are strikingly similar to those shaping the economic discourse at a more theoretical level, where information inconsistent with the operating paradigm becomes abstract and recedes out of the realm of consideration. This regime of materialism puts the aims of sustainable development just that much further out of reach.

### *Alternative Conceptions of Prosperity*

These failures to meet the needs of the current generation as well as those in the future constitute a pressing need to identify alternative paradigms. The conclusion psychologists have come to is that a new pattern of behavior and belief grounded in the pursuit of intrinsic values is essential for human well-being: "Intrinsic values are based in people's real psychological needs, support their growth and development, and...lead us to engage in behaviors and have experiences that satisfy our underlying psychological needs. As these needs are satisfied, our well-being increases."<sup>63</sup> Also, as individuals experience increased need satisfaction, they are likely to regenerate the value they attach to those experiences and diminish attachment to materialistic aims. Various frameworks have been created to outline those pursuits with intrinsic value.

### *Intrinsic Value and Capabilities*

In the context of development, the capabilities discourse is most aligned with – and inspired by – the promotion of intrinsic value. Amartya Sen has offered a reformulation of the development question where a suite of freedoms or capabilities form "the primary end and the principal means of development,"<sup>88</sup> redirecting the discourse to the fundamental non-material components of prosperity. For Sen, poverty is cast as capability deprivation instead of the more common narrow conception of income-poverty, specifically in order to capture intrinsic over instrumental value.<sup>89</sup> Development is then "an expansion of people's 'capabilities'. This approach focuses on what people can *do* or can *be*, and development is

seen as a process of emancipation from the enforced necessity to 'live less or be less'."<sup>90</sup>

Martha Nussbaum has formalized Sen's approach in the following 10 capabilities<sup>91</sup>:

1. *Life*. Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
2. *Bodily Health*. Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.
3. *Bodily Integrity*. Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.
4. *Senses, Imagination, and Thought*. Being able to use the senses, to imagine, think, and reason—and to do these things in a "truly human" way, a way informed and cultivated by an adequate education, including, but by no means limited to, literacy and basic mathematical and scientific training. Being able to use imagination and thought in connection with experiencing and producing works and events of one's own choice, religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences and to avoid non-beneficial pain.
5. *Emotions*. Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by fear and anxiety. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)
6. *Practical Reason*. Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. (This entails protection for the liberty of conscience and religious observance.)
7. *Affiliation*.
  - Being able to live with and toward others, to recognize and show concern for other humans, to engage in various forms of social

interaction; to be able to imagine the situation of another. (Protecting this capability means protecting institutions that constitute and nourish such forms of affiliation, and also protecting the freedom of assembly and political speech.)

- Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others. This entails provisions of non-discrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, national origin and species.
8. *Other Species.* Being able to live with concern for and in relation to animals, plants, and the world of nature.
9. *Play.* Being able to laugh, to play, to enjoy recreational activities.
10. *Control over one's Environment.*
- *Political.* Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association.
  - *Material.* Being able to hold property (both land and movable goods), and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure. In work, being able to work as a human, exercising practical reason and entering into meaningful relationships of mutual recognition with other workers.

Many others have proposed similar frameworks<sup>28, 63, 92</sup>, and echoed similar sentiments: “the transition to sustainable consumption and production [is] part of a global enterprise which enables all individuals to fulfill their dual purpose, namely to develop their inherent potentialities and to contribute to the betterment of the wider community.”<sup>36</sup> From this list of capabilities, it becomes clear that a materialistic orientation is ill-suited to the development objective of capability expansion. In fact, the promotion of the materialistic

impulse – employed widely as a strategy to achieve development objectives – is not just unlikely to bring about an expansion in capabilities, but is likely to stifle the realization of some of them (2, 6, 10) if not displace the pursuit of them altogether (5, 7, 8). Sudhir Anand and Sen point out that material wealth does have instrumental value to the promotion of capabilities, but it is “nonunique” in this respect.<sup>40</sup> They also, while acknowledging the material benefits of intrinsic human development, reject this as the motivating objective, as well as the reduction of human beings to their material functions. Additionally, Sen warns against the convenient exclusive focus on “material capabilities” in economics.<sup>93</sup> Insofar as economics only “reads” material aspects of reality, it is missing major aspects of both the ends and means of development.

### *The Contribution of Intrinsic Value to Well-Being*

Psychologists have found that these intrinsic value orientations are conducive to well-being: “values that might act as a counterweight to the materialistic values...are the same set of values that are associated with high levels of personal well-being, the same set of values that conduce towards civil social behavior, and the same set of values that promote ecological sustainability. In a way, then, the basic strategy...is clear and simple: Work against the insalubrious effects of materialistic values by enhancing the likelihood that people can behave in ways that express intrinsic values.”<sup>43</sup> These conclusions are based on evidence from a wide body of research indicating that those adhering to a framework informed by intrinsic

value instead of materialism both experience and contribute more to well-being, creating a dynamic reinforcement in the welfare promotion of society and the individual.<sup>63</sup>

Even approaches to consumption can be informed by a restoration of intrinsic value. Scitovsky distinguishes between what he calls “defensive” consumption and “creative” consumption. The former serves chiefly material ends of providing comfort and the latter is an instrument for stimulation, where "One of the main forms of human satisfaction is stimulus enjoyment."<sup>94</sup> He notes that creative consumption is skill-intensive, providing positive externalities and defensive consumption is resource-intensive, creating negative externalities. The skills of creative consumption are directed at intrinsic cultural pursuits, which are a potentially unlimited source of satisfaction: “We must acquire the consumption skills that will give us access to society's accumulated stock of past novelty and so enable us to supplement at will and almost without limit the currently available flow of novelty as a source of stimulation.”<sup>95</sup> He underscores the social implications of the difference between the two: “The individual consumer's choice, therefore, between comfort and stimulus has a social significance that transcends his personal welfare...if one of these commodities provides comfort and the other, at the same market price, provides stimulus, then they may give the consumer the same satisfaction, but the total satisfaction they provide for society as a whole is likely to be very different.”<sup>60</sup> This approach to consumption, directed at intrinsic pursuits, has recently been demonstrated by psychologists to be more effective in promoting happiness as well.<sup>96</sup>

Psychologists make a similar distinction between material consumption, “made with the primary intention of acquiring a material good: a tangible object that is kept in one’s possession,” and experiential purchases, “made with the primary intention of acquiring a life experience: an event or series of events that one lives through.”<sup>97</sup> Experiential purchases, akin to creative consumption, made individuals happier than material ones. Psychologists have explained this by suggesting that experiential spending is “inherently more social,” and “almost anything we do to improve our connections with others tends to improve our happiness as well—and that includes spending money.”<sup>96</sup> Several studies have confirmed the conclusion that socially-oriented spending is a greater source of happiness than spending to acquire material possessions.<sup>73, 97, 98</sup>

Psychologists distinguish welfare-enhancing forms of consumption on the basis that they facilitate the intrinsic value of social relations and interaction. Scitovsky makes the distinction on the basis that the consumption requires appreciation of the intrinsic value of material-independent sources of stimulation. Neither of these forms of consumption derives their benefit from an acquisitive nature, and both are experience-based (over material-based).

Beyond experiential purchases, psychologists have identified a strong and consistent relationship between prosocial spending and well-being.<sup>96, 99</sup> Much of this research on prosocial behavior deals with adherence to materialistic values—where prosociality places less emphasis on self-interested material accumulation. Not only do individuals who spend more on others experience greater happiness, but researchers have also found that spending

on oneself was not associated with happiness<sup>99</sup>, contrary to much of economic shorthand where utility, the principal component of welfare, is conventionally reduced to a function of consumption. Psychologists also note that materialistic impulses can swiftly subvert prosocial behavior, making people “less likely to help acquaintances, to donate to charity, or to choose to spend time with others, precisely the kinds of behaviors that are strongly associated with happiness.”<sup>100</sup> Dismantling the materialism paradigm is imperative.

As is characteristic of a paradigm, materialism is deeply-entrenched in the assumptions, institutions and interactions permeating human reality. Scholars across the disciplinary spectrum have acknowledged this and assert that the underlying materialistic logic and frameworks must be dismantled in order to reconstruct reality and prosperity upon a different basis. One targets economics, advocating “questioning and confronting the misguided scientism, the rampant materialism, and naturalism that has long inspired orthodox economists,” warning that “Sidestepping values like justice, community, equality, dignity, the guidance of economic policy may very well operate to corrode these very values and create an individualistic and overly competitive society with an ever-worsening craving for power and the acquisition of consumer goods.”<sup>101</sup> Another says, “Preventing the collapse of human civilization requires nothing less than a wholesale transformation of dominant cultural patterns.”<sup>41</sup> Yet another insists that policy must be directed not at the “outcome of cultural processes” but rather at the “process that engenders materialism in the first place. That is, the institutions of the DSP of society.”<sup>55</sup> Still another calls for “an organic change in the structure of society itself so as to reflect fully the interdependence of the entire social



body—as well as the interconnectedness with the natural world that sustains it.”<sup>36</sup> Above all, it is abundantly clear that attempting to manipulate the end-product outcomes of human well-being while maintaining ambivalence toward the underlying dynamics sustaining the materialism paradigm is ultimately a fruitless and possibly harm-exacerbating endeavor.

### *Equilibria, Preferences and Incentives*

The promotion of materialism is antithetical to the goal of sustainable development, and the solution is to restore intrinsic value. While material wealth can promote some capabilities, *materialism* has been found to erode them. This requires the systematic unraveling of the beliefs and inclinations that perpetuate materialistic logic combined with vigilant adherence to an intrinsic value-promoting framework which has demonstrated contributions to well-being. Economics has instead been notoriously indifferent toward individuals’ preferences as drivers of their behavior.

Traditionally, economics posits that the tastes and preferences guiding individuals’ behavior are static and exogenous to the system in which the behavior is taking place. Furthermore, it assumes that individuals are the best “rational” judge of what choices they should make, and their behavior is a perfect reflection not only of their preferences, but also of what will contribute most to their well-being. These assumptions “seemed to rule out - as a logical impossibility - any conflict between what man chooses to get and what will best satisfy him. Economists today consider the two synonymous. They accept unquestioningly the consumer's judgment of what is best for him...Economists will not analyze the

motivation of consumer behavior."<sup>102</sup> The problem, of course, lies with the fact that preferences can be learned, and they may be harmful for the well-being of individuals, the environment and society – especially since psychologists consider people to have a “poor grasp” of how to achieve the things that will make them happy. Marglin explains that in order to cope with this assumption of static preferences, economists further assume “unbounded wants” – part and parcel of Hegel’s bad infinity<sup>19</sup> – and impute this quality to universal human nature.<sup>54</sup> Additionally, economics assumes that “human behavior is driven in all settings entirely by external material inducements and sanctions,”<sup>103</sup> but its associated “values, habits, and social norms [are] taken as given and beyond analysis and the reach of public policy.”<sup>104</sup> Economics may have only intended to concern itself with means, but in “preferring to remaining silent” on “the important choice of ends,”<sup>101</sup> it inadvertently offered up its means as the only ends worth pursuing.

Economic logic has actively generated people’s materialistic preferences, particularly through the use of incentives. By further defining “the utility of an action solely in terms of the consequences of this action,”<sup>105</sup> economics’ ability to recognize the displacement of intrinsic value along with its associated harmful effects is compromised. Furthermore, with respect to the promotion of well-being through the restoration of intrinsic value, economics has determined that it is totally unconcerned. It is difficult to see how mainstream economics with its materialistic, generative assumptions and lack of consideration for the origins of human motivation, is equipped to provide guidance on a collective enterprise to “meet the needs of the present without compromising the ability of future generations to meet their

own needs.” This is especially hard to conceive in light of the significant welfare reductions associated with materialism combined with economics’ impaired self-awareness of how it is implicated in this process.

It is puzzling that a paradigm that has so undermined human well-being in multiple ways should persist, especially one that was meant to deliver global prosperity. Materialism, like other fictitious constructs, can persist despite its empty promises. Work by Hoff and Stiglitz demonstrates that a paradigm operative in a culture influences both perceptions and behaviors of individuals, even if the paradigm is based on a fiction or is otherwise suboptimal. Fictitious social constructs can be “hierarchized and given precedence over other aspects of belief systems in which [the social construct] might be viewed as unacceptable. [The social construct is] entrenched and embedded in individuals’ minds through ritual and protocol.”<sup>106</sup> They also explain that these constructs can become established regardless of the preexisting economic reality: “If ideologies change, the equilibrium can change, with no change in the ‘fundamentals.’” These ideologies then unconsciously shape how people understand the information they encounter, which in turn dictates their preferences. The introduction of a materialistic paradigm in development is akin to an ideological shift of this sort. Though it is clearly ill-suited to the purposes of sustainable development, materialism has effectively been instituted through the development enterprise and has become sustained in an equilibrium, functioning as a paradigm. The “external material inducements and sanctions” driving human behavior mentioned previously have generated an interesting body

of work that examines their effect on human behavior and the premise of static and exogenous preferences.

Every aspect of human endeavor can derive its motivation intrinsically or extrinsically. Economists have informed a great deal of social policy to provide extrinsic (material) incentives to individuals in order to induce them to behave in a particular way. Several scholars have studied the impact of such incentives and have found that they often tend to “crowd-out” positive behavior. Richard Titmuss famously posited that due to provision of incentives to encourage blood donation in Britain, voluntary contributions had instead gone down, as had the quality of the blood donated.<sup>107</sup> Elinor Ostrom has also found that overuse of common property resources occurs when the state institutes fines and subsidies to encourage conservation. Ostrom explains that this approach to social policy is based on materialistic assumptions “that only short-term selfish actions are expected from ‘the common people’,” and “solving collective-action problems requires public policies that are based on externally designed and monitored inducements.”<sup>103</sup>

People often voluntarily behave in a particular way, yet upon the introduction of extrinsic rewards to promote that behavior, paradoxically reduce that behavior instead. Economists have hypothesized that this “crowding-out” occurs because the non-material social value driving people’s motivation is displaced by a value confined only to a material payment.<sup>108</sup> The intrinsic value one assigned to blood donating has been displaced by a material value assigned to blood selling. Since total donation declined, it becomes clear that the overall intrinsic value society placed on such contributions to the public good is greater

than the resulting material extrinsic value that replaced it. In some way, bringing an endeavor within the parameters of the materialism regime – or as psychologists have described it, “moving behaviors from the social realm into the economic realm”<sup>99</sup> – destroys overall value for society. Tim Kasser explains that “rewards do decrease people’s motivation, interest, and enjoyment for what are initially intrinsically motivating activities,”<sup>109</sup> thus robbing people of the intrinsic benefits associated with non-material endeavors. Elizabeth Dunn et al have also noted that merely thinking about money may generate the dynamics that lead to crowding out.<sup>96</sup> This would indicate that any nurturing of materialistic impulse is destructive of intrinsic value and its associated contributions benefiting society.

Crowding-out generates negative social dynamics as well. When individuals perceive that others are behaving cooperatively, they themselves are motivated by commitment, honor and duty to contribute to public goods, generating a cooperative equilibrium. With the introduction of incentives, the intrinsic value individuals derive from cooperation, demonstrations of altruism and material sacrifice for the common good are undermined by appeals to their materialistic self-interest. When this occurs, if some individuals respond with diminished contributions to the public good, “reciprocity dynamics will induce still others to contribute less, thereby inducing others to do the same. This new noncooperative equilibrium that results is likely to be impervious to the subsequent removal of material incentives.”<sup>110</sup> Society has thus become entrenched in a materialistic regime. This regime is characterized by the destruction of trust between individuals who are now unwilling to contribute voluntarily to public goods that benefit all.<sup>110, 111</sup> Rather than promoting the

endeavor one already considers intrinsically valuable, introducing extrinsic material motivation erodes the likelihood that the behavior will be sustained by individuals or collectively. Material incentives, as instruments of the materialism regime, do not behave surgically and cannot simply be removed. They intimately reorder the value and motivation assigned to other aspects of life.

Taking the crowding-out argument one step further, some have suggested that preferences themselves are formed endogenously. Providing incentives does not merely alter the behavior of individuals and their perceptions of intrinsic value, but it actually transforms their underlying preferences. This type of analysis differs from the analysis of crowding-out because it “focuses on the possibility that monetary incentives may induce a change in the underlying preference profile. The outcome of such a preference shift may indeed change the relative importance of intrinsic motivation and of extrinsic monetary rewards.”<sup>112</sup> And research shows that it is people with materialistic values for whom the relative importance of extrinsic monetary rewards is higher.<sup>109</sup> The circumplex research on the compatibility of different goals supports this idea of preference change. Designing programs intended to actively stimulate materialistic motivation impairs people's ability to pursue goals upon a different basis. This interpretation would also be consistent with the tendency of materialism to operate as a paradigm.

Oren Bar-Gill and Chaim Fershtman developed a model of a society with socially-minded and non-socially-minded individuals who respond to subsidized contributions to a public good.<sup>112</sup> In an encounter, the non-socially-minded individuals take advantage of the

socially-minded ones. Eventually, this causes convergence to an equilibrium with fewer socially-minded individuals and a decline in social incentives. In essence, the previously socially-minded players "learn" to be materialistic. Not only do the material incentives cause "the disappearance of the social incentives," but they are also not sufficient to offset this, "result[ing] in a lower level of the public good."<sup>113</sup> They also point out that these new preferences can proliferate not just by "learning" but also by transmission: "Preferences may evolve as a result of cultural transmission by which a socialization process transmits preferences across generations or through an imitation process by which individuals imitate other more 'successful' individuals."<sup>113</sup> These multiple modes of endogenous preference formation could lead to the ideological equilibrium described by Hoff and Stiglitz, with incentives establishing materialism as convention.

The crowding-out literature indicates that material incentives rob activities of their intrinsic value and the preference formation literature indicates that these individuals also have learned to care less about social rewards. Taken together, it becomes apparent how Hobson's "over-stimulation" of these material "instincts" causes individuals to adopt materialistic attitudes and simultaneously experience diminished satisfaction from activities that no longer possess intrinsic value. Bar-Gill and Fershtman explain the implications of their findings: "in designing an optimal public policy, it is not enough to consider the possible reaction of individuals to that policy; we should take into account as well the effects of different policies on the formation of preferences and subsequently on behavior."<sup>112</sup> In other words, the economic convention of ambivalence toward human motivation is

unacceptable. Economics, particularly in its role to inform social policy, must be willing to deviate from its conventional thinking if it is to promote human welfare.

### *The Psychology of Incentives*

Research examining the impacts of incentives on human psychology explains these results further. Systematic review of the psychology literature reveals that incentives like the ones used by economists directly undermine intrinsic motivation for the behaviors they are designed to elicit.<sup>114</sup> Recent neurological<sup>115</sup> and business<sup>116</sup> research confirm these findings. This result has multiple causes, all of which are consistent with a materialistic premise. With the introduction of an incentive, the material reward becomes what is compelling about the activity. If the incentive conveys the belief that the behavior would not take place without the reward, the behavior then requires inducement. The activity is therefore diminished in value and requires an opportunity for reward in order to rally the necessary motivation. Finally, the activity may be reduced to the opportunity to acquire a material reward which not only diminishes intrinsic value, but may actually assign some negative value to the activity.<sup>114</sup> Conversely, “when people are induced to engage in an activity with little or no extrinsic reward, they come to value the activity more highly, that is, they come to believe that their actions were intrinsically motivated.”<sup>111</sup> Kasser explains that welfare is lost with these decreases in intrinsic motivation: “Materialistic values lead people to enter into activities focused on rewards. As a consequence, those who believe in the importance of such pursuits are unlikely to experience the deeper internal satisfactions that occur when they are



intrinsically motivated. Their concern with money and praise distracts them from the interesting, enjoyable, and challenging aspects of what they are doing.”<sup>109</sup>

The economic incentives that have been designed for use in development (discussed in the next section), are those described by psychologists as: expected, tangible, completion-contingent, non-verbal, exogenous rewards. They are "rewards introduced [before] task performance, such that participants [expected] them while working on the target activity”, “given for completing one or more tasks”, “are not an inherent part of the task", and not contingent upon the participants performing well. This particular type of reward was in all respects found "to undermine intrinsic motivation, assessed with both [behavior and attitudes]"<sup>114</sup>, meaning that the materialistic impulses associated with the incentives subverted the activity’s intrinsic value both in terms of the participant’s stated as well as revealed preferences. There is also some evidence to suggest that “the phenomenon of extrinsic tangible rewards undermining intrinsic motivation is not merely transitory.”<sup>114</sup>

Additionally, these sorts of incentives are perceived to be controlling, which is also linked to diminished intrinsic motivation. Psychologists have found that the way an incentive affects an individual’s feelings of autonomy is the most important consideration in understanding the impact of the reward on the individual. The psychological need of autonomy is what drives intrinsic motivation, and “Events that allow need satisfaction tend to increase intrinsic motivation whereas those that thwart need satisfaction tend to decrease intrinsic motivation.”<sup>114</sup> Kasser indicates that materialistic values undermine these very needs directly.<sup>109</sup> Some indications of this coercive dynamic involve individuals exerting effort only

in the dimensions that are monitored, and potentially reducing effort in the dimensions that are not.<sup>103</sup> The problems with coercion complicate the use of incentives as a means to induce individuals to behave in certain ways: “Although rewards can control people's behavior—indeed, that is presumably why they are so widely advocated...[when they] focus on the short term and opt for controlling people's behavior, they may be having a substantially negative long-term effect...Thus, if people use tangible rewards, it is necessary that they be extremely careful if they are concerned about the intrinsic motivation and task persistence of the people they are rewarding.”<sup>114</sup> Such incentives may be appealing to economists because they appear to provide an efficient and effective impetus for an individual to behave optimally. However, this efficiency is based on coercion that is not costless in the long-run, is inherently unsustainable, and does not lead to intrinsic improvement of the activity tied to the incentive.

Other research indicates that the introduction of materialistic impulses even in one narrow sphere of human existence can cause materialistic preferences to proliferate throughout an individual's behavior and society. Samuel Bowles explains that preferences are generalized in one's behavior: "However acquired, preferences are internalized: there is considerable evidence that preferences learned under one set of circumstances become generalized reasons for behavior. Thus economic institutions may induce specific behaviors – self-regarding, opportunistic, or cooperative, say – which then become part of the behavioral repertoire of the individual...'likes' or habits initially induced by exposure or repetition become permanent reasons for behavior."<sup>111</sup> One of the drivers of this is the psychological

tendency for dissonance reduction, where individuals seek coherence between the different aspects of their lives, thereby causing them to align and converge. Therefore, a materialistic change in preferences in one sphere affects the orientation of individuals in the other aspects of their lives. Bowles also explains the role of conformist transmission: “the prevalence of a trait in a population may enhance the replication propensity of each representative of that trait, independently of the payoff to those exhibiting the trait.”<sup>111</sup> By nurturing materialistic impulses through the use of something like incentives, the subsequent drive for dissonance reduction combined with conformist transmission proliferates materialism throughout the reality of the individual and society, constituting an “ideological shift”, and establishing a materialism paradigm in equilibrium. Materially-poor contexts like those encountered in development may be particularly susceptible to these dynamics. Research has shown that individuals whose circumstances have been characterized by insecurity and material deprivation have a higher propensity toward adopting materialistic tendencies when messages in their environment promote those aspirations.<sup>117</sup>

### *Material Incentives in Development*

Much of the legacy of development has been guided by the materialistic assumptions present in economics. The current development trends are no different, and offer a study of how the materialism paradigm may be introduced and what its effects are. Despite all that is known about the harm of materialism and the coercive nature of material incentives, many development programs currently rely upon these incentives to drive human behavior and

improve outcomes. Development programs currently pay (or otherwise materially-incentivize) people in order to promote ecological conservation<sup>i</sup>, discourage corruption<sup>j</sup>, encourage school enrolment and health system access, care for orphans and vulnerable children and increase health and education services in underserved areas, among others. This section examines the justification offered for such programs and what the preliminary findings have been.

### *Conditional Cash Transfers (CCTs)*

Conditional cash transfers are programs that target poor households and provide material incentives for behaviors related to health and education such as school enrolment, nutrition monitoring, and regular health unit visits. CCT programs appear to be the new “wave” in development, having operated in only 3 countries in 1997 to at least 30 just over a decade later throughout the Americas, Africa, Asia and the Pacific.<sup>118</sup> In some Latin American countries, they serve millions of households and constitute the largest social assistance program.<sup>118</sup> Some have even said they are “as close as you can come to a magic bullet in development.”<sup>118</sup> The widespread implementation of these incentive-based programs suggests that Keynes’ “‘purposiveness’ with which in varying degrees Nature has

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<sup>i</sup> See Appendix A

<sup>j</sup> See Appendix B

endowed almost all of us,” is in fact seen to be a universal trait – potentially elicited in a variety of social, cultural and geographical contexts.

The rationale behind CCTs is to act as a subsidy for particular action, thereby inducing “optimal” behavior through increased supply of the action.<sup>119</sup> CCTs are top-down in their design, with the conditionality predetermined and imposed from the outside. CCTs are widely regarded favorably,<sup>118, 120</sup> and the World Bank assessment of CCT programs concluded that: “Our review of the CCT experience so far confirms that the programs have been effective in the sense that there is solid evidence of their positive impacts in reducing short-term poverty and increasing the use of education and health services. Those achievements should not be minimized because they are powerful proof that well-designed public programs can have significant effects on critical social indicators.”<sup>118</sup> Others, however, have not been so optimistic. Nicholas Freeland has linked CCTs to the legacy of the development approaches mentioned earlier: “It is redolent of the ‘conditionalities’ imposed by IMF, World Bank and other donors when making loans or implementing budget support programmes, a perpetuation of the mind-set that imposed ‘structural adjustment’ and enforced ‘poverty reduction strategies’.”<sup>121</sup> Like those programs, CCTs are founded upon a materialistic logic.

CCT design is embedded in a framework that sees human development as an instrument of material ends. Consistent with the previous eras in development, the framework motivating the design of CCTs regularly justify activities of intrinsic value in terms of what material benefits they might generate. Health and education are seen primarily in terms of material “returns to these investments,”<sup>118</sup> and cost-benefit analyses

exclusively “value the benefits” of improved health and education in terms of “increased future earnings.”<sup>118, 122</sup> This reinforces the notion that the promotion of human development is only worthwhile to the extent that it facilitates material ends. Notably, the intrinsic value of pursuing programs for the purpose of increasing future wages never receives justification. One author further notes that “Education and human capital have been treated as though they were synonymous. The basic stated aim of transfers conditional on school attendance is to increase the human capital of beneficiaries. The predominance of income as a proxy for well-being, however, neglects the intrinsic value of education.”<sup>123</sup> Similarly, the choice to pursue education has been framed as a question of trading-off present for future welfare in terms of future earnings.<sup>118</sup> The logic of the justification of CCTs taken to its natural conclusion seems to imply that if there were no clear material return on these investments in human capital, then human development would simply not be worth pursuing.

Material compensation paradoxically has the potential to signal either acknowledgment and appreciation of intrinsic value by society, or recognition of the need to provide incentive because of insufficient intrinsic value. Which of these opposing interpretations dominates is dependent upon the context in which the compensation takes place and what justifications are provided. That these payments all take place in the context of “incentives” and the justifications for the programs are not based on the intrinsic value of the behaviors they encourage, suggests that material value needs to be provided because some other source of sufficient value does not already exist. This is confirmed by the psychology research mentioned previously indicating that the design of these incentives is

particularly damaging to intrinsic motivation. CCTs are therefore embedded in a paradigm of economic and materialistic logic which is at odds with the intrinsic value of the activities they are meant to promote.

In its review of CCTs, the World Bank is surprisingly direct about utilizing material inducements to elicit certain behaviors rather than promoting their intrinsic value to the recipients: “Suppose that, for some reason, potential beneficiaries are poorly informed about the future returns to education...the optimal policy intervention is to address the information problem—say through a publicity campaign. But processing information may be costly: Being convinced about the health benefits of greater schooling, for instance, may require time and effort to process the evidence.”<sup>118</sup> The report then proceeds to assert that “inaccurate beliefs may result from the insufficient availability of information or from difficulties in processing the information that is available. If parents are poorly educated, it may limit their ability to process the information on education complementarities or on rates of return.”<sup>118</sup> Because of this “limited ability” on the part of recipients, CCTs essentially convert health and education into opportunities to acquire cash, as conveying the intrinsic value of health and education is simply too difficult. These analyses assume, of course that preferences are static and exogenous,<sup>118, 124</sup> and by attaching a conditionality to the transfer, there is an implicit detachment from participants’ belief in the intrinsic value of the activity meant to be enhanced. These programs are therefore ambivalent toward the intrinsic motivation of these endeavors, and regard the value attached to the cash transfer as the only necessary source of motivation. If the purpose of human endeavor is to serve material ends,

the design of development programs will embody this, and elicit this sort of behavior. In the case of CCTs, this might be viewing the purpose of the program as an opportunity to acquire cash.

The research on crowding out and endogenous preference formation suggest that CCTs may be less desirable approaches to sustainable development. By design, these programs see both the causes of the “problem” and benefits of the program as exclusively material. An approach that is unconcerned with intrinsic improvement is likely to be ineffective in generating such improvement, and focusing on material benefit – both in terms of cash transfers to participants and the cost effectiveness of the program – does not expand capabilities and instead promotes materialistic motivation.

### *Initial Findings*

Inherent to the dynamics of materialism<sup>61</sup> and incentives<sup>112</sup>, it is possible to observe some short-term gains in optimal behavior or increased welfare, with these disappearing in the long-run, often reverting individuals back to a level of well-being lower than their initial state. It may therefore be too early to assess the full long-term individual and social impacts of CCT programs in most countries. However, the initial results are still consistent with what one would expect for programs informed by a materialistic paradigm. While CCTs appear to be effective tools for material poverty reduction, their performance in terms of health and education outcomes is inconsistent, particularly in dimensions not tied to the conditionality.



Given that intrinsic improvements in health and education are presumably the basis for the conditionality, the impact of these programs is limited.

Consistent with the materialism regime more generally, CCTs are effective in their function to promote material accumulation, and this is the basis of much of the praise it has received.<sup>118</sup> CCTs have been effective buffers against adverse economic impacts and are capable of acting as “counter-cyclical economic and social stabilizers.”<sup>125</sup> More specifically, the Mexican CCT Progresa (now Oportunidades), has recently been demonstrated to act as an effective insurance mechanism against exogenous income shocks for rural households.<sup>126</sup> However, cash transfers generally are used as poverty-reduction measures that enable households to smooth their consumption. The advantage of these programs is meant to arise specifically from their contributions to human development.

Child labor is the economic dimension that is at the interface with human development and is arguably the most relevant to the design of CCTs. The rationale that these programs are meant to ease the “trade-off between present and future welfare” is based on the idea that child labor is a major barrier to school enrolment, and necessitates the existence of a cash transfer conditioned on child education. However, these incentives have been ineffective at reducing child labor.<sup>124, 127</sup>

CCTs have similarly demonstrated little improvement in human development directly. While school enrolment has been shown to go up rather consistently (mostly when pre-program enrolment rates were low)<sup>118, 128</sup>, attendance and retention improvement is inconsistent<sup>129</sup>, and learning outcomes (once in school), have not improved.<sup>118, 128, 129</sup> Even the

enrolment statistics mask other underlying dynamics: one CCT that “reduce[d] the price of girls’ education compared with that of boys’ education” resulted in “a 29 percent decline in boys’ enrollment in program schools.”<sup>124</sup>

The impact on health has been similar. Health service utilization appears to have increased, though not as clearly as school enrolment<sup>118</sup>, improvements in nutrition are inconsistent<sup>118, 128</sup>, and both immunization coverage<sup>130</sup> and health status have not clearly improved.<sup>118, 128, 130</sup> In some cases, health has actually been negatively affected.<sup>131</sup> Interestingly, whatever improvements there may be in outcomes do not appear to be due to the incentive at all. Neither the cash component<sup>118</sup>, nor the existence of the conditionality<sup>125</sup> appear to be the “keys to success,” but rather “the information [and] awareness programmes provide.”<sup>125</sup>

Although the impact of CCTs on intrinsic motivation has not been measured, CCTs are precisely the sort of incentive design psychologists have determined to be the most detrimental to intrinsic motivation. Additionally, it is possible to assess the impact of these programs on participant autonomy which psychologists have found to be the most important factor in determining intrinsic motivation (as discussed previously).

Autonomy is undermined when participants perceive an incentive to be controlling, and studies have revealed repeated accounts of coercive dynamics in CCTs.<sup>124, 127, 132-134</sup> The CCT in Brazil had initially demonstrated a negative impact on nutrition because “mothers may have kept children underweight under the mistaken belief that they would lose their benefits if children gained too much.”<sup>129</sup> In Honduras, the CCT altered reproductive trends

(fertility rose 2-4%) because subsidies went to pregnant women.<sup>134</sup> In many cases, the CCTs have been used as a tool of political manipulation.<sup>127</sup> Clearly, CCTs can undermine the autonomy of participants by controlling their behavior with incentives.

There have also been particularly worrying trends with cash transfers that have a significant social protection mandate – orphans and vulnerable children (OVC). These have become quite common in AIDS-endemic regions in particular. While only some of these are CCTs in the conventional sense, they all require the recipient to be caring for an orphan, and thus behave as an incentive. A South African OVC program offering a cash transfer that is considerably higher than other cash transfer programs led poor families to place their children in other people's care.<sup>135</sup> The OVC program in Zambia has had even more disconcerting impacts:

*What [OVC programs] didn't think about was the fact that in local culture AIDS orphans, all orphans in fact, are naturally absorbed into the extended family. The idea of orphan didn't even really exist. But once the NGOs started singling out these children and their caregivers, they created a social and economical reality that hadn't existed before. Families, desperate for money would begin to withhold their care for these orphans unless paid and all sorts of social problems arose.<sup>136</sup>*

This example demonstrates that preferences can change radically as a result of incentives tied to endeavors of intrinsic value. Here, a long-standing value system, arguably more sustainable than that offered by materialism, was rapidly dismantled, and in direct response to the presence of an incentive. Mobilizing the materialistic impulse is not costless and can undermine community as well as individual well-being.

Even Desmond Tutu has indicated that CCTs are characterized by unjust power dynamics: “Conditionalities attached to social transfers tend to prevent the poorest families – the very people who most desperately need income support – from accessing grants.”<sup>121</sup> Because the cost of conditionality is highest for the most vulnerable,<sup>121</sup> these programs, directed at the poorest, are inherently coercive: “it is morally highly questionable whether a government (often encouraged by donors) can, on the one hand, proudly tell its citizens that social protection is their basic ‘human right’; and then, on the other hand, threaten to deprive the neediest among them of that very ‘right’ if they fail to meet certain ‘conditions’.”<sup>121</sup> Because of the extreme economic and often social vulnerability of the intended recipients of CCTs, incentives are particularly coercive and likely to inculcate materialistic values.<sup>137</sup>

The World Bank report has also alluded to the coercive dynamics of CCTs, saying: “By pushing poor households to do something that they would otherwise not be doing, CCTs might be imposing costly distractions on people who are trying to do the best thing for their families under conditions of severe scarcity.”<sup>118</sup> Elsewhere the report even likened CCTs to bribes: “it is possible to set a CCT level too high, thus encouraging children to a rate of service use that is greater than optimal. This situation is evocative of anecdotes about children wasting valuable time in classrooms where they learn nothing instead of helping their parents in the field, or of children taken to unsanitary health facilities that act as disease contamination foci because parents have been bribed to take the risk.”<sup>118</sup> However, the author reconciles this ethical quandary by calling CCTs “higher-risk/higher-return policy

instruments.”<sup>118</sup> In other words, CCTs are tools that are rather transparently intended to mobilize people’s materialistic impulses – where education quality is irrelevant and recipients would go so far as to undermine the health objective so long as they appear to comply with it superficially in order to receive payment – and incorporate a risk-return construct which holds health and education as equivalent (if not inferior to) material accumulation. Loss of the incentive clearly poses a threat that coerces participants into taking risks.

CCTs are increasingly popular, but this may be because they suit the needs of donors quite well compared to those of recipients:

Conditional cash transfer programs also serve the direct purpose of imposing donor preferences when tastes over allocations differ...Conditional cash transfer programs are thus suitable tools for aid agencies to move toward the announced objectives, although the exclusive focus on measurable dimensions of performance may come at the expense of more comprehensive and efficient development policies, whose impacts are difficult to assess...the temptation to implement programs that perform better only on the verifiable dimension may be high. This may lead to conditional cash transfer programs that enhance efficiency but worsen equity or that yield immediate gains but impose long-run costs.<sup>124</sup>

This suggests that the dynamic of coercion may be operating at multiple levels in the design of these programs, where funding acts as its own incentive for agencies to comply with donor priorities. This example is akin to the coercive dynamic typical of incentives discovered in the psychology research (cited previously), where individuals only exert effort in the dimensions that are monitored, and may simultaneously diminish their pursuit of the

objective with intrinsic value in other ways. Clearly, the autonomy of both participants and country agencies has been compromised in the pursuit of CCT programs.

CCTs have been found to be somewhat effective at increasing rates associated with their conditionalities (e.g. school enrolment, health unit visits). However, they have been inconsistent in terms of outcomes which are more closely associated with meaningful, intrinsic improvements in health and education. Additionally, questions about sustainability and intergenerational benefits are widely noted.<sup>123, 127</sup> Despite acknowledging all this, reports overwhelmingly conclude that “In contrast to many development programs, the recent expansion of conditional cash transfer programs is based on fairly solid evidence of program impact.”<sup>138</sup> This leads one to suspect whether the intrinsic value of health and education was ever at the heart of CCT thinking to begin with. Improved school enrolment or health system access rates would be meaningful indicators of human development if they occurred in a context where the intrinsic value of these contributions to well-being was intact. When programs choose to elicit behavior with material inducements and are ambivalent toward the intrinsic value of health and education, they are emphasizing that the cash transfer is what is valuable, leading recipients to focus primarily on that. Furthermore, by touting these inconsistent results as definitive success, proponents of CCTs are implicitly content with reducing the value and purpose of health and education to opportunities to acquire cash.

A cash transfer conditioned on adherence to certain health or education behaviors would appear initially to assign intrinsic value these endeavors. It becomes clear, however, that much of the justification and design of these programs rests on a materialistic

foundation, where efficacy relies on the responsiveness of beneficiaries to materialistic impulses, not merely “providing funds to help overcome some financial barriers to access.”<sup>134</sup>

The programs also appear to make only superficial gains in health and education, revealing a rather limited value of these endeavors inherent in the design of CCTs. They are furthermore presented in the framework of “incentives”, and evidence of their coercive dynamics suggests a punitive perception of cash transfers, not a socially-valued one. In the tension between promoting intrinsic value and depleting it, these programs deplete it.

### *Conclusion*

The UK Sustainable Development Commission recently determined that “Prosperity itself – in any meaningful sense of the word – is under threat. Not from the current economic recession, but from the continuing surge of materialism, and from the economic model that perpetuates it.”<sup>65</sup> Economists and philosophers have, for centuries, articulated concern about the relationship between a materialism regime and human well-being. The antidote they all identified is the same – the restoration of the intrinsic value of non-materialistic endeavors. Collective subscription to the belief that self-interested material accumulation is the necessary destination of all human endeavor has shaped disciplines, ideas about the place and purpose of human beings in the world, and humanity’s way forward. As a philosophy to promote prosperity for the current generation and into the future, it has proven itself “lamentably defective” by any reasonable standards of well-being.

Materialism is a paradigm that has characterized virtually every aspect of human reality. Mobilizing its impulses are a powerful tool to motivate human behavior, but only serves to spread its influence or further entrench people in its logic. In stripping other endeavors of their intrinsic value, materialism is debilitating and crushes self-actualization and human flourishing. As it has been applied to development, it is neither “meeting the needs of the present,” nor is it likely to enable “future generations to meet their own needs.” There is evidence to suggest that it has the potential to do great harm to the individual and the collective, the extent of which may not be apparent for some time. Recognizing the existence and operation of the materialism paradigm is the first step in dismantling it.

### *Ways Forward*

Hoff and Stiglitz explain that while paradigms are pervasive and even fictitious ones manage to sustain themselves, they are subject to the laws of equilibrium.<sup>106</sup> This suggests that an ideological shift, motivated by the restoration of intrinsic value, has the potential to cast society into a different paradigmatic equilibrium. Scholars have identified various domains of society in which people optimize something other than their material reality, or act as sources of knowledge of intrinsic value. These include: culture,<sup>95</sup> community,<sup>62, 103, 139</sup> religion,<sup>42, 140</sup> and sometimes all three.<sup>36</sup> However, because of its pervasiveness, the materialism regime may co-opt culture,<sup>57</sup> community,<sup>53</sup> and religion.<sup>141</sup> The integrity of these institutions must therefore be viewed in terms of the extent to which they have not been compromised by materialistic ideals. Still, they have served as humanity’s codification of



non-materialistic value systems throughout the ages, and may provide the only true sources of “knowing” intrinsic value.

Many have advocated for a different system of measurement as a way to formalize those human endeavors of intrinsic value: "Efforts to change governmental measures of 'prosperity' and 'progress' are a...path towards helping people and society disengage from materialistic pursuits and focus on intrinsic values concerns...all levels of government would do well to develop and adopt metrics that do not privilege materialistic values but instead account for how successful a society is with regard to intrinsic values."<sup>43</sup> There needs to be a general acknowledgment of the inadequacy of an exclusively material paradigm to bring about prosperity.

Great progress toward this goal has already been made by the Commission on the Measurement of Economic Performance and Social Progress.<sup>142</sup> Built on the premise that “Producing better, truer, ways of measuring economic, environmental and social performance is a critical step in making progress towards building a better world,”<sup>143</sup> The Commission has made a significant effort to account for the aspects of human endeavor that are intrinsically important, recognizing that well-being includes “the full range of factors that make life worth living, reaching beyond its material side.”<sup>142</sup> This includes even those activities conventionally seen to possess value that is exclusively material, such as work or employment. The Commission report serves to re-center the focus of the discourse on sources of intrinsic value as definitions of progress and prosperity.

The capabilities approach championed by Amartya Sen, Martha Nussbaum and others, is based on an inherent acknowledgment of the intrinsic value of the non-material aspects of human prosperity. An immediate and accessible policy correction would be to focus on capabilities expansion as a path to the restoration of intrinsic value. And in cases where the introduction of financial incentives is useful<sup>k</sup>, they should be community-defined and allow a context of intrinsic value to inform their framing.

Richard Henry Tawney addressed the following to his "Acquisitive Society": "These times are not ordinary, and in such times it is not enough to follow the road. It is necessary to know where it leads and, if it leads nowhere, to follow another. The search for another involves reflection, which is uncongenial to the bustling people who describe themselves as practical...But the practical thing for a traveler who is uncertain of his path is not to proceed with the utmost rapidity in the wrong direction: it is to consider how to find the right one."<sup>13</sup>

The purpose of this paper has been to provide a coherent understanding of the rampant paradigm of materialism – to point out its ubiquity, how it behaves, what harm it causes, and how the constructs it presents might be reconceived. Above all, the hope of the author has been to undermine ambivalence toward the logic of materialism. Given its endemicity, development policy-makers, program designers, practitioners and theoreticians must be vigilant and cannot afford passivity in the face of this global disease. We should always be asking ourselves (1) whether our operating frameworks are grounded in materialistic assumptions about the nature of human progress, (2) whether we are

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<sup>k</sup> See Appendix A

undermining the intrinsic value of non-material endeavors or displacing non-materialistic value systems and (3) whether our efforts promote the intrinsic value derived from non-material sources of well-being and purpose. In short, we must tirelessly call all of us, citizens of humanity, to our higher selves in the pursuit of true, global, ever-advancing prosperity.

*Appendix A - Incentives Done Right: Coalition for Rainforest Nations*

Incentives that are perceived to be controlling undermine autonomy and rob endeavors of their intrinsic value. However, Elinor Ostrom posits that subsidies and fines designed at the community-level are autonomy-enhancing. In an example of farmer-managed irrigation systems, the incentives are designed by the participants themselves and were found more likely to be enforced and the rules more likely to be followed than programs imposed by an external entity. In fact, the program “crowded-in” cooperation instead of crowding it out.<sup>103</sup> In another example, discussing cooperative behavior in the siting of a polluting facility, Dan Kahan explains how a bottom-up alternative (compared to the standard top-down compensation approach) could be effective and autonomy-promoting:

Imagine the...case of a community whose residents start off with the belief that society’s resources are being inequitably distributed as a result of a fundamentally unjust political system...in this kind of political climate, there is at least some potential for compensation to work. Not only does compensation help to offset the material inconveniences...the very offering of it conveys a degree of respect that previously had been denied them by powerful institutions and interests. Case studies suggest that compensation is most likely to have this positive effect when incentives are part of a negotiated, ‘bottom-up’ siting process rather than a centrally administered ‘top-down’ one...When voluntary acceptance is solicited, however, communities that historically have been disadvantaged are likely to feel respected and empowered; compensation is no longer seen as degrading. In addition, the process of negotiation is likely to create a climate akin to the face-to-face discussions in public goods games: When they are able to discuss the situation with remote political authorities, and are granted veto power, local communities are likely to be assured that others are willing to contribute their fair share to dealing with the problem. Accordingly, they reciprocate positively by showing greater receptivity...The key to solving NIMBY, in short, is trust. Various sources of evidence suggest that individuals can be made receptive...if they can be made to believe that society is committed to treating their interests with respect. Appropriately structured bottom-up,

negotiated-compensation schemes—ones framed to emphasize respect for the interests and autonomy of prospective host communities—are one way to reverse deep-seated resentments and thus excite a reciprocal openness.<sup>110</sup>

The Coalition for Rainforest Nations as a bottom-up negotiated effort, characterized by efforts to rectify what is an unjust system, is precisely the sort of endeavor that could succeed. The Coalition is made up of dozens of developing countries who have designed a proposal to receive carbon offset payments for existing (and new) forested land.<sup>144</sup> It is essentially an intrinsically-motivated incentive to encourage forest conservation in rainforest nations.

The disproportionate burden likely to fall on developing countries from the effects of climate change (relative to their contribution to the problem), as well as the effective global ecological service rainforest nations are providing in the form of carbon sequestration, constitute a regime of injustice of massive proportions. The proposal put forward is akin to the one described above – it conveys a degree of respect for these nations that had previously been denied them by powerful interests; it appears to be one of the only autonomy-enhancing, bottom-up approaches (at least relative to the global-level policy-making) in sustainable development policy; and it is based on a reciprocal relationship with fellow nations predicated on the trust that others are making an effort to contribute their fair share. It constitutes an appeal to the global community to demonstrate the intrinsic value of the world's rainforests. It may even go some ways to forging less-exploitative relationships between countries than those that have existed in the past.

Not taking the Coalition of Rainforest Nations' proposal seriously is not just a matter of ignoring yet another idea – and one that appears to prefer the interests of developing nations – to combat climate change. It would reject the opportunity to institute a conservation incentive program designed on the right basis that could foster the sort of trust and cooperation among the community of nations that must characterize the next era of a culture toward global prosperity.

*Appendix B - Paying Leaders not to be Corrupt: The Mo Ibrahim Prize*

The Mo Ibrahim Foundation Prize is awarded to a democratically-elected African head of state who leaves office according to the country's constitutional requirements and has contributed to the welfare of his or her nation. The prize is the largest in history – \$500,000 per year for 10 years and \$200,000 per year thereafter.<sup>145</sup> The program is designed as an incentive for good governance.

Skeptics of the prize are primarily concerned that it is misdirected - in terms of the actual causes of corruption and poor governance<sup>146</sup>, or in terms of the urgency of the problem as it relates to development.<sup>147</sup> Some are concerned that it “fuel[s] the public perception that African leaders are so corrupt they will leave power only when offered a monetary incentive.”<sup>146</sup> Arguments against it are thus limited to the concern that it is a suboptimal or inefficient approach to promoting development in Africa or that it reinforces prejudices from the outside, but it is otherwise harmless. This is not the case – like other material incentives directed at promoting “optimal behavior”, the prize threatens the integrity of the intrinsic purpose of governance and public service. It formalizes and lends legitimacy to the tragic misconception underpinning corruption around the world – what Richard A. Joseph called “prebendalism”.<sup>148</sup> It is the notion that the very purpose of holding public office is “to generate material benefits for themselves and their constituents and kin groups.”<sup>149</sup>

The logic underpinning such “performance-based incentive programs for LDC public officials” is fundamentally economic: “Corruption may lead to terribly inefficient economic outcomes...LDC [less-developed country] citizens should prefer a well-functioning, clean

government whose public officials expect to be well compensated for good performance over a poorly functioning, corrupt government whose public officials simply steal whatever they can get away with...What is of utmost importance is to establish clean governance conducive to sustained economic growth.”<sup>150</sup> This reasoning not only reinforces the idea that the primary purpose of public office is to enrich oneself, it also deprives the function of governance of the intrinsic value of public service.

Those who advocate for such incentives are somehow oblivious to the materialistic foundation of corruption: “While it is most likely that any intensified competition for political power brought about by the introduction of an incentive program would drive current politicians to clean up their act and might also lead to more capable and honest individuals deciding to enter politics, it is possible that no such beneficial effects would come to pass. Instead, the incentives might attract those who would try to manipulate the political process in their favor...[but it is a] slim potentiality.”<sup>150</sup> Not only would stripping governance of its intrinsic value to society render this argument completely erroneous, but the demonstrated impacts incentives have on preferences is particularly worrying in this context as well. The intrinsic value argument diverges here. Are more “capable and honest individuals” those who would only decide to enter politics in the context of financial incentives?

The qualitative difference of work pursued in service to one’s society cannot be affected by mere materialistic inducements, nor is it equivalent to a thin veneer of good behavior resulting from the pursuit of materialistic goals. This rests on the conviction that



the individuals who would promote good governance are intrinsically different from those who would be successfully motivated primarily by materialistic incentives – the two are incompatible. Research on the circumplex of values affirms this. In the model, goals directed toward financial success (to be wealthy and materially successful”) are consistently opposed to goals directed at community (“to improve the world through activism or generativity”), meaning that these two sets of motivations are incompatible or in direct conflict with each other.<sup>69</sup> This suggests that stimulating materialistic motivation does not allow for the pursuit of goals directed at the common good, the primary function of governance. Kasser explains this incompatibility in greater detail:

...acceptance of others as equals and concern for their welfare interferes with the pursuit of one’s own relative success and dominance over others...When powerful people hold strong material values, the whole of society bears some of the costs. Research [shows] that materialistic values are associated with making more antisocial and self-centered decisions involving getting ahead rather than cooperating. As a result, others in the community are treated as objects to be manipulated and used. Materialistic values also conflict with concern for making the world a better place, and the desire to contribute to equality, justice, and other aspects of civil society.<sup>77</sup>

Therefore it is reasonable to believe that the desirable deciding factor for “honest and capable” people who go into public service over some similarly-compensating profession is a non-material one. This makes a case for offering slightly less (than market) material compensation for such professions that benefit from its workers’ intrinsic motivation, so as to self-select those individuals who possess community-oriented goals (i.e. those who perceive that the form of employment possesses non-material intrinsically-valuable forms of

compensation). The fact that society demonstrates its intrinsic value for professions in terms of wages does not go unacknowledged – what is more critical is that in order for society to reap the full benefit of these endeavors, the overriding motive for individuals in such professions must be that of contributing to the intrinsic well-being of society, not personal material benefit. By structuring public service in such a way that assumes the only value of these professions lies in the potential material benefit it poses to public servants does a disservice to both them and to society. Furthermore, psychologists have found that socially-oriented rewards do not undermine intrinsic value (in this case, they constitute it). However, “social aspects of reward are fragile and a social reward can easily be made into a non-social extrinsic reward by merely mentioning monetary circumstances.”<sup>151</sup> The very suggestion of a materialistic motive may therefore undermine those operating on the basis of intrinsic motivation.

More so than employment generating primarily economic benefits to society, true governance is impossible without transcending materialistic considerations. In fact, society would probably do better to have leaders for whom materialistic considerations were totally irrelevant, and who were motivated exclusively by service to the common good. John Ruskin offered a similar sentiment: “I strongly suspect that in a well-organized state, the possession of wealth ought to incapacitate for public office,” and “one of the most important conditions of a healthy system of social economy, would be the restraint of the properties and incomes of the upper classes within certain fixed limits.”<sup>11</sup>

Even for something so widely understood to have its roots in materialism as the problem of corruption, the Mo Ibrahim prize is yet another demonstration of the motive-indifferent, materialism-promoting approach currently supported in development discourse. Paying heads of state to leave office reinforces the idea that stepping down is against their (narrowly-defined) self-interest and requires additional inducements. This implies inherent acceptance and reinforcement of the idea that public office is for personal enrichment and people who hold it should be motivated by materialistic interests.

*References*

1. Carlyle, T. (1843)
2. Laffont, J.-J. and D. Martimort. (2002)
3. World Commission on Environment and Development. (1987)
4. Escobar, A. (2005): 139-175.
5. Scitovsky, T. (1986): 47-69.
6. Scitovsky, T. (1986): 70-82.
7. Scitovsky, T. (1986): 160-182.
8. Illich, I. (1978): 3-53.
9. Illich, I. (1978): vii-xiii.
10. Simonde de Sismondi, J. C. L., as quoted in Smith, G. A. (1993): 183-210.
11. Ruskin, J., as quoted in Smith, G. A. (1993): 183-210.
12. Hobson, J. A., as quoted in Smith, G. A. (1993): 183-210.
13. Tawney, R. H., as quoted in Smith, G. A. (1993): 183-210.
14. Mill, J. S. (1848)
15. Keynes, J. M. (1930): 358-373.
16. Sen, A. (1988)
17. Daly, H. E., et al. (1994): 138-158.
18. Muller, J. Z. (2003): 3-19.
19. Muller, J. Z. (2003): 139-257.
20. Muller, J. Z. (2003): 388-406.

21. Smith, A. (1776): 184.
22. Smith, A. (1776): 14.
23. Gintis, H., et al. (2005): 3-40.
24. Prugh, T., et al. (2000): 87-128.
25. Gintis, H. (2005): xi-xii.
26. Daly, H. E., et al. (1994): 1-21.
27. Daly, H. E., et al. (1994): 85-96.
28. Daly, H. E., et al. (1994): 121-137.
29. Daly, H. E., et al. (1994): 97-117.
30. Marglin, S. A. (2008): 36-57.
31. Daly, H. E., et al. (1994): 44-61.
32. Marglin, S. A. (2008): 223-244.
33. Daly, H. E. (2007): 64-81.
34. Daly, H. E., et al. (1994): 159-175.
35. Scitovsky, T. (1986): 160-182.
36. Contribution to the 18th Session of the United Nations Commission on Sustainable Development. (2010)
37. Mill, J. S. (1844): 137-138.
38. Smith, G. A. (1993): 183-210.
39. Jackson, T. (2009): 1-16.
40. Anand, S. and A. Sen. (2000): 2029-2049.

41. Assadourian, E., et al. (2010): 3-20.
42. Schumacher, E. F. (1993): 173-182.
43. Kasser, T. (2007)
44. Richardson, D. (1997): 43-60.
45. Illich, I. (1978): 54-67.
46. Ger, G. and R. W. Belk. (1996): 55-77.
47. Escobar, A. (1995): 21-54.
48. Escobar, A. (1995): 3-20.
49. Escobar, A. (1995): 55-101.
50. Escobar, A. (1995): 154-211.
51. Escobar, A. (1995): 102-153.
52. Easterlin, R. A. (1974): 89.
53. Scitovsky, T. (1976): 106-132.
54. Marglin, S. A. (2008): 199-222.
55. Kilbourne, W. E., et al. (2009): 259-278.
56. Kasser, T. (2002): 23-28.
57. Jackson, T. (2009): 87-102.
58. Prugh, T., et al. (2000): 65-86.
59. Galbraith, J. K., as quoted in Daly, H. E. (1994): 92.
60. Scitovsky, T. (1976): 133-146.
61. Kasser, T. (2002): 43-60.

62. Marglin, S. A. (2008): 1-19.
63. Kasser, T. (2002): 97-116.
64. Beugelsdijk, S. and S. Smulders. (2003)
65. Jackson, T. (2009): 143-156.
66. Jackson, T. (2008): 45-60.
67. Richins, M. L. and S. Dawson. (1992): 303-316.
68. Ryan, R. M., as quoted in Kasser, T. (2002): ix-xiii.
69. Grouzet, F. M. E. and T. Kasser. (2005): 800.
70. Kasser, T. (2002): 5-22.
71. Dunn, E. W., et al. (2010a)
72. Rindfleisch, A. and J. E. Burroughs. (2002): 348-370.
73. Van Boven, L. (2005): 132-142.
74. Ryan, L. and S. Dziurawiec. (2001): 185-197.
75. Belk, R. W. (1985): 265.
76. Kasser, T. (2002): 61-72.
77. Kasser, T. (2002): 87-96.
78. Caldwell, J. C. (1986): 171-220.
79. Prugh, T., et al. (2000): 1-14.
80. Clark, J. G. (1995): 225-248.
81. Jackson, T. (2009): 121-142.
82. Daly, H. E., et al. (1994): 190-206.

83. Daly, H. E. (2007): 55-59.
84. Georgescu-Roegen, N. (1971)
85. Daly, H. E. (2007): 36-49.
86. Marglin, S. A. (2008): 116-152.
87. Kilbourne, W. and G. Pickett. (2008): 885-893.
88. Sen, A. K. (1999): 35-53.
89. Sen, A. K. (1999): 87-110.
90. Sen, A. (1984): 510.
91. Nussbaum, M. C. (2000): 78-80.
92. Jackson, T. (2009): 35-48.
93. Sen, A. (1984): 74-90.
94. Scitovsky, T. (1976): 80-105.
95. Scitovsky, T. (1976): 224-247.
96. Dunn, E. W., et al. (2010b)
97. Van Boven, L. (2003): 1193.
98. DeLeire, T. and A. Kalil. (2010): 163-176.
99. Anik, L., et al. (2009)
100. Dunn, E. W., et al. (2008): 1687-1688.
101. Lutz, M. A. (1999)
102. Scitovsky, T. (1976): 3-12.
103. Ostrom, E. (2005): 253-276.



104. Aaron, H. J., as quoted in Bar-Gill, O. and C. Fershtman (2000)
105. Falk, A. and U. Fischbacher. (2005): 193-214.
106. Hoff, K. and J. E. Stiglitz. (2010): 141-146.
107. Titmuss, R. M. (1970): 339 p.
108. Smith, E. A. and R. B. Bird. (2005): 115-148.
109. Kasser, T. (2002): 73-86.
110. Kahan, D. M. (2005): 339-378.
111. Bowles, S. (1998): 75-111.
112. Bar-Gill, O. and C. Fershtman. (2000)
113. Fershtman, C. and O. Bar-Gill. (2005): 841-857.
114. Deci, E. L., et al. (1999): 627-668.
115. Murayama, K., et al. (2010)
116. Grant, A. and J. Singh. (2011)
117. Kasser, T. (2002): 29-42.
118. Fiszbein, A. and N. Schady. (2008)
119. DeJanvry, A. and E. Sadoulet. (2004)
120. Yablonski, J. and M. O'Donnell. (2009)
121. Freeland, N. (2007): 75-78.
122. Aguero, J., et al. (2007)
123. Rojas, M. (2009)
124. Das, J., et al. (2005): 57-80.

125. Fajth, G. and C. Vinay. (2010): 1-6.
126. Vicarelli, M. (2010)
127. Rose, P. and C. Dyer. (2006)
128. Adato, M. and L. Bassett. (2008)
129. Adato, M. and J. Hoddinott. (2007)
130. Pantoja, T. (2008)
131. Fernald, L. C. H., et al. (2008): 2250-2257.
132. Schubert, B. and R. Slater. (2006): 571-578.
133. Adato, M., et al. (2010)
134. Lagarde, M., et al. (2007): 1900-1910.
135. UNICEF. (2007)
136. Specialist at a Zambian youth education foundation. (2008)
137. Kasser, T. (2002)
138. Rawlings, L. B. and G. M. Rubio. (2005): 29-55.
139. Prugh, T., et al. (2000): xi-xvi.
140. Daly, H. E., et al. (1994): 382-406.
141. Scitovsky, T. (1986): 35-82.
142. Stiglitz, J. E., et al. (2010)
143. Stiglitz, J. (2008)
144. Stiglitz, J. (2007): 7-9.
145. Dowden, R. (2006): 31.

146. Mangala, J. (2006): 37-44.
147. Duodu, C. (2007): 58.
148. Joseph, R. (1983): 21-38.
149. Joseph, R. (1996): 193-200.
150. Skladany, M. (2009): 160.
151. Heyman, J. and D. Ariely. (2004): 787-793.

## Bibliography

- Adato, M., et al. Understanding use of health services in conditional cash transfer programs: Insights from qualitative research in Latin America and Turkey. *Social science & medicine*. 2010; **In Press, Accepted Manuscript**.
- Adato, M., J. Hoddinott. Conditional cash transfer programs: A "magic bullet" for reducing poverty? : *IDRC*; 2007.
- Adato, M., L. Bassett. What is the Potential of Cash Transfers to Strengthen Families affected by HIV and AIDS?: A Review of the Evidence on Impacts and Key Policy Debates. *IFPRI*; 2008
- Addison, T. *Aid and Conflict*. London ; New York: Routledge; 2000.
- Aguero, J., et al. The impact of unconditional cash transfers on nutrition: The South African Child Support Grant. University of California at Riverside; 2007.
- Anand, S., A. Sen. Human Development and Economic Sustainability. *World Development*. 2000; **28**(12): 2029-49.
- Anik, L., et al. Feeling Good about Giving. *Harvard Business School Working Paper*; 2009.
- Arrow, K., et al. Are we consuming too much? *Journal of Economic Perspectives*. 2004; **18**(3): 147-72.
- Asheim, G.B. Sustainability : ethical foundations and economic properties. *Policy research working papers 1302*. Washington, DC: The World Bank Policy Research Department Public Economics Division; 1994.
- Baker, S. *The Politics of sustainable development : theory, policy and practice within the European Union*. London ; New York: Routledge; 1997.
- Bar-Gill, O., C. Fershtman. *The Limit Of Public Policy: Endogenous Preferences*; 2000.
- Belk, R.W. Materialism: Trait Aspects of Living in the Material World. *Journal of Consumer Research*. 1985; **12**(3): 265.
- Beugelsdijk, S., S. Smulders. Bridging and bonding social capital: which type is good for economic growth? *European Economic Association and Econometric Society Conference*. Stockholm; 2003.
- Billon, P.L. The Political Ecology of War: natural resources and armed conflicts. *Political Geography*. 2001; **20**: 561-84.

Bowles, S. Endogenous preferences: The cultural consequences of markets and other economic institutions. *Journal of Economic Literature*. 1998; **36**(1): 75-111.

Caldwell, J.C. Routes to low mortality in poor countries. *Population and Development Review*. 1986; **12**(2): 171-220.

Carbone, G.M. Continuidade-na-renovacao? Ten years of multiparty politics in Mozambique: roots, devolution and stabilisation of the Frelimo-Renamo party system. *Journal of Modern African Studies*. 2005; **43**(3): 417-42.

Carlyle, T. *Past and present*. London: Chapman and Hall; 1843.

Central Intelligence Agency. The World Factbook: Mozambique. Updated January 13, 2011.

Chao, S., et al. *Improving health for the poor in Mozambique : the fight continues*. Washington, D.C.: World Bank Africa Region; 2002.

Clark, J.G. Economic Development vs. Sustainable Societies: Reflections on the Players in a Crucial Contest. *Annual Review of Ecology and Systematics*. 1995; **26**(1): 225-48.

Committee of Counsellors. Agenda 2025: The Nation's Vision and Strategies. Mozambique; 2003.

Community 1 Resident. Interview. In: Nwachuku, A.K., editor. Sofala, Mozambique; July 20, 2006.

Community 2 Resident. Interview. In: Nwachuku, A.K., editor. Gaza, Mozambique; June, 2006.

Baha'i International Community. Contribution to the 18th Session of the United Nations Commission on Sustainable Development. *Rethinking Prosperity: Forging Alternatives to a Culture of Consumerism*; 2010.

Daly, H.E. *Ecological economics and sustainable development : selected essays of Herman Daly*. Cheltenham, UK ; Northampton, MA: Edward Elgar; 2007.

Daly, H.E. Economics In A Full World. *Scientific American*. 2005; **293**(3): 100-07.

Daly, H.E. *For the common good : redirecting the economy toward community, the environment, and a sustainable future*. 2nd ed. Boston, MA: Beacon Press; 1994.

Daly, H.E. *Misplaced Concreteness: Homo economicus*. 2nd ed. Boston, MA: Beacon Press; 1994.

- Daly, H.E., K.N. Townsend. *Valuing the earth : economics, ecology, ethics*. Cambridge, Mass.: MIT Press; 1993.
- Das, J., et al. Reassessing conditional cash transfer programs. *The World Bank Research Observer*. 2005; **20**(1): 57-80.
- Dasgupta, P. The Foundations of Social Capital: Handout I. *Two lectures at Columbia University*; 2007.
- Dasgupta, P. The Foundations of Social Capital: Handout II. The Economics of Social Capital. *Two lectures at Columbia University*; 2007.
- Deci, E.L., et al. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*. 1999; **125**(6): 627-68.
- DeJanvry, A., E. Sadoulet. Conditional cash transfer programs: Are they really magic bullets? Department of Agricultural and Resource Economics: University of California at Berkeley; 2004.
- DeLeire, T., A. Kalil. Does consumption buy happiness? Evidence from the United States. *International Review of Economics*. 2010; **57**(2): 163-76.
- Demographic and Health Surveys: Mozambique; 1997, 2003.
- Deputado da Renamo assassinado na Beira. *Diário de Moçambique*; March 10, 2006.
- Donor Agency Senior Health Specialist, Former Director in the Ministry of Health. Interview. Nwachuku, A.K., editor. Maputo, Mozambique; July 4, 2006.
- Dowden, R. On offer: a huge prize in a land of poverty ; EDITORIAL & OPINION. *1ST Edition*. 2006; Sect. 31.
- Dunn, E.W., et al. If Money Doesn't Make You Happy Then You Probably Aren't Spending It Right. *Journal of Consumer Psychology*. 2010b.
- Dunn, E.W., et al. On the Costs of Self-interested Economic Behavior. *Journal of Health Psychology*; 2010a.
- Dunn, E.W., et al. Spending Money on Others Promotes Happiness. *Science*. 2008; **319**(5870): 1687-88.
- Duodu, C. Mo Ibrahim prize: A case of misplaced priorities? *New African*. 2007; (469): 58.

Easterlin, R.A. Does Economic Growth Improve the Human Lot? Some Empirical Evidence. *Nations and households in economic growth: essays in honor of Moses Abramovitz*. 1974: 89.

Ekosse, G. General health status of residents of the Selebi Phikwe Ni-Cu mine area, Botswana. *Int J Environ Health Res*. 2005; **15**(5): 373-81.

Escobar, A. Economics and the space of modernity. *Cultural Studies*. 2005; **19**(2): 139-75.

Escobar, A. *Encountering development : the making and unmaking of the third world*. Princeton, N.J.: Princeton University Press; 1995.

*Essays in Persuasion*. New York: W.W.Norton & Co.; 1930.

Evian, C., et al. Prevalence of HIV in workforces in southern Africa, 2000-2001. *S Afr Med J*. 2004; **94**(2): 125-30.

Fajth, G., C. Vinay. Conditional Cash Transfers: A Global Perspective. *MDG Insights*. 2010; (1): 1-6.

Fauvet, P. Tete detainees are "political prisoners" -Renamo. *Mozambique News Agency (AIM)*. 2006 June 10, 2006.

Fernald, L.C.H., et al. Cash component of conditional cash transfer program is associated with higher body mass index and blood pressure in adults. *Journal of Nutrition*. 2008; (138): 2250-7.

Fershtman, C., O. Bar-Gill. Public Policy with Endogenous Preferences. *Journal of Public Economic Theory*. 2005; **7**(5): 841-57.

Fiszbein, A., N. Schady. Conditional Cash Transfers: Reducing Present and Future Poverty. *World Bank Policy Research Report*. Washington DC: World Bank; 2008.

Freeland, N. Superfluous, Pernicious, Atrocious and Abominable? The Case Against Conditional Cash Transfers. *IDS Bulletin*. 2007;Sect. 75-78.

Gabathuse, J., Babalola, I., & Ekosse, G. . Radionuclide and mineralogical studies of kimberlite slime and soil samples obtained from the jwaneng diamond mine area, Botswana. *Botswana Journal of Technology [Online]*. 2002 **11**(2): 39-45.

Gakidou, E., G. King. *Determinants of Inequality in Child Survival: Results from 39 Countries*. Geneva: World Health Organization.; 2003.

Gakidou, E., G. King. Measuring total health inequality: adding individual variation to group-level differences. *Int J Equity Health*. 2002; **1**(1): 3.

Gao, H.C., et al. [Study on sexual behavior and HIV/STIs among miners in Yunnan province]. *Zhonghua Liu Xing Bing Xue Za Zhi*. 2006; **27**(1): 5-8.

Georgescu-Roegen, N. *The entropy law and the economic process*. Cambridge, Mass.,: Harvard University Press; 1971.

Ger, G., R.W. Belk. Cross-cultural differences in materialism. *Journal of Economic Psychology*. 1996; **17**(1): 55-77.

Gintis, H., Samuel Bowles, R.T. Boyd, E. Fehr. *Moral sentiments and material interests : the foundations of cooperation in economic life*. Cambridge, Mass.: MIT Press; 2005.

Government of Mozambique. Action Plan for the Reduction of Absolute Poverty (2001-2005) (PARPA). Council of Ministers; 2001a.

Government of Mozambique. Action Plan for the Reduction of Absolute Poverty (2006-2009) (PARPA). Council of Ministers; 2006.

Government of Mozambique. *Conta Geral do Estado no Ano 2004*. Assembleia Nacional da Republica; 2004.

Government of Mozambique. Interim Poverty Reduction Strategy Paper: Incorporating the Action Plan for the Reduction of Absolute Poverty; 2000.

Government of Mozambique. Strategic Plan for the Health Sector (PESS): 2001-2005-(2010). Ministry of Health (MISAU), editor; 2001b.

Grant, A., J. Singh. The Problem with Financial Incentives -- and What to Do About It. *Knowledge@Wharton*. 2011.

Grouzet, F.M.E., T. Kasser. The Structure of Goal Contents Across 15 Cultures. *Journal of Personality and Social Psychology*. 2005; **89**(5): 800.

Gwatkin, D.R., et al. Making health systems more equitable. *Lancet*. 2004; **364**(9441): 1273-80.

Hanlon, J., P.d. Renzio. Contested Sovereignty in Mozambique: The Dilemmas of Aid Dependence. *Global Economic Governance Programme, Oxford University Department of Politics and International Relations*. 2007; **Managing Aid Dependency Project**(GEG Working Paper 2007/25).

Hartwick, J.M. Intergenerational Equity and Investing of Rents from Exhaustible Resources. *American Economic Review*. 1977; **67**(5): 972-74.



Heyman, J., D. Ariely. Effort for Payment: A Tale of Two Markets. *Psychological Science*. 2004; **15**(11): 787-93.

Hirsch, J.L. *Sierra Leone : diamonds and the struggle for democracy*. Boulder, Colo.: Lynne Rienner Publishers; 2001.

Hoff, K., J.E. Stiglitz. Equilibrium Fictions: A Cognitive Approach to Societal Rigidity. *American Economic Review*. 2010; **100**(2): 141-46.

Holtgrave, D.R., R.A. Crosby. Social capital, poverty, and income inequality as predictors of gonorrhoea, syphilis, chlamydia and AIDS case rates in the United States. *Sexually Transmitted Infections*. 2003; **79**(1): 62-64.

Illich, I. *Toward a History of Needs*. 1st ed. New York: Pantheon Books; 1978.

Instituto Nacional de Estatística. *Anuário Estatístico*; 1998, 2001, 2004.

Instituto Nacional de Estatística. Taxas de Mortalidade Infanto-Juvenil e a Esperança de Vida ao Nascimento por sexo, segundo Distritos. In: *Mocambique: Indicadores Socio-Demográficos por Distritos*; 1997.

Instituto Nacional de Estatística. *Projeções Anuais da População por Distritos, 1997-2010*; 1999.

Instituto Nacional de Estatística. População com Deficiência Física e Mental e a que Esteve Doente, Segundo Características Seleccionadas. Mocambique 2000-2001 (em percentagem). In: *Questionário de Indicadores Básicos de Bem-Estar*, 2001.

Jackson, T. *Prosperity Without Growth: The Transition to a Sustainable Economy* (London: Sustainable Development Commission); 2009.

Jochelson, K., et al. Human immunodeficiency virus and migrant labor in South Africa. *Int J Health Serv*. 1991; **21**(1): 157-73.

Jone, C. Press and Democratic Transition in Mozambique: 1990-2000. *Les Nouveaux Cahiers d'IFAS/IFAS Working Paper Series*. 2005.

Joseph, R. Class, state, and Prebendal politics in Nigeria. *Commonwealth & comparative politics*. 1983; **21**(3): 21-38.

Joseph, R. Nigeria: inside the dismal tunnel. *Current History*. 1996; **95**: 193-200.

Kasser, T. *The High Price of Materialism*. Cambridge: MIT Press; 2002.

- Kasser, T. Values and Prosperity - A Thinkpiece. *Redefining Prosperity project*. London: Sustainable Development Commission; 2007.
- Keenan, J.H. Chad-Cameroon Oil Pipeline: World Bank & ExxonMobil in 'Last Chance Saloon'. *Review of African Political Economy* 2005; **104/5**: 395-405.
- Kilbourne, W., G. Pickett. How materialism affects environmental beliefs, concern, and environmentally responsible behavior. *Journal of Business Research*. 2008; **61**(9): 885-93.
- Kilbourne, W.E., et al. The Institutional Foundations of Materialism in Western Societies. *Journal of Macromarketing*. 2009; **29**(3): 259-78.
- Laffont, J.-J., D. Martimort. *The theory of incentives : the principal-agent model*. Princeton, N.J.: Princeton University Press; 2002.
- Lagarde, M., et al. Conditional cash transfers for improving uptake of health interventions in low-and middle-income countries: a systematic review. *JAMA*. 2007; (298): 1900-10.
- Lange, G.-M., M. Wright. Sustainable Development in Mineral Economies: The Example of Botswana. *Environment and Development Economics*. 2004; **9 4**: 485-505.
- Lindelöw, M., et al. Primary Health Care in Mozambique: Service Delivery in a Complex Hierarchy. *World Bank Africa Region Human Development: Working Paper Series*. 2004.
- Lutz, M.A. Distinguishing characteristics of a human economics. *Forum for Social Economics*. 1999.
- Mangala, J. Skepticism over the Mo Ibrahim Prize for Achievement in African Leadership. *Bulletin of the African and African American Studies ....* 2006; **1**(2): 37-44.
- Mansuri, G., V. Rao. Community-Based and -Driven Development: A Critical Review. *The World Bank Research Observer*. 2004; **19**(1): 1-39.
- Marglin, S.A. *The dismal science : how thinking like an economist undermines community*. Cambridge, Mass.: Harvard University Press; 2008.
- Mill, J.S. *Essays on some unsettled questions of political economy*. London: J.W. Parker; 1844.
- Mill, J.S. *Principles of political economy, with some of their applications to social philosophy*. London,: J. W. Parker; 1848.
- Mulenga, E.M., et al. Silicosis and tuberculosis in Zambian miners. *Int J Occup Environ Health*. 2005; **11**(3): 259-62.

Muller, J.Z. *The mind and the market: capitalism in modern European thought*. 1st Anchor Books ed. New York: Anchor Books; 2003.

Murayama, K., et al. Neural basis of the undermining effect of monetary reward on intrinsic motivation. *Proceedings of the National Academy of Sciences*. 2010.

Narayan-Parker, D. Bonds and bridges : social capital and poverty. Washington, DC: World Bank Poverty Reduction and Economic Management Network Poverty Division; 1999. p. 52.

Navarro, V., L. Shi. *The Political Context of Social Inequalities and Health*. 1st ed. San Francisco: Jossey-Bass; 2003.

Newitt, M.D.D. *A history of Mozambique*. Bloomington: Indiana University Press; 1995.

Nussbaum, M.C. *The John Robert Seeley lectures*. Cambridge, U.K. ; New York: Cambridge University Press; 2000.

Obi, C. Oil, Environmental Conflict and National Security in Nigeria: Ramifications of the Ecology-Security Nexus for Sub-Regional Peace. *Arms Control, Disarmament, and International Security (ACDIS) Occasional Paper*. 1997.

Page, M.E., P.M. Sonnenburg. *Colonialism : an international, social, cultural, and political encyclopedia*. Santa Barbara, Calif.: ABC-CLIO; 2003.

Pantoja, T. Do conditional cash transfers improve the uptake of health interventions in low and middle income countries? A SUPPORT Summary of a systematic review. 2008.

Pegg, S. Can policy intervention beat the resource curse? Evidence from the Chad-Cameroon pipeline project. *African Affairs*. 2006; **105**(418): 1-25.

Polgreen, L., C.W. Dugger. Chad's Oil Riches, Meant for Poor, Are Diverted. *New York Times*. 2006;Sect. A.1.

Prugh, T., R. Costanza, H.E. Daly. *The local politics of global sustainability*. Washington, D.C.: Island Press; 2000.

Rawlings, L.B., G.M. Rubio. Evaluating the impact of conditional cash transfer programs. *The World Bank Research Observer*. 2005; **20**(1): 29-55.

República de Mocambique, Ministérios das Administracoes Estatais. *Perfis dos Distritos*, 2005.

- Richins, M.L., S. Dawson. A Consumer Values Orientation for Materialism and Its Measurement: Scale Development and Validation. *The Journal of Consumer Research*. 1992; **19**(3): 303-16.
- Rindfleisch, A., J.E. Burroughs. Materialism and Well-Being: A Conflicting Values Perspective. *Journal of Consumer Research*. 2002; **29**(3): 348-70.
- Rojas, M. Enhancing Poverty-Abatement Programs: A Subjective Well-Being Contribution. *Applied Research in Quality of Life*. 2009.
- Rose, P., C. Dyer. Chronic Poverty and Education: A review of the literature. Chronic Poverty Research Centre; 2006.
- Ross, M.L. What do we know about natural resources and civil war? *Journal of Peace Research*. 2004; **41**(3): 337-56.
- Ryan, L., S. Dziurawiec. Materialism and its relationship to life satisfaction. *Social Indicators Research*. 2001; (55): 185-97.
- Schubert, B., R. Slater. Social Cash Transfers in Low-Income African Countries: Conditional or Unconditional? *Development Policy Review*. 2006; **24**(5): 571-78.
- Scitovsky, T. *Human desire and economic satisfaction : essays on the frontiers of economics*. New York: New York University Press; 1986.
- Scitovsky, T. *The joyless economy : an inquiry into human satisfaction and consumer dissatisfaction*. New York: Oxford University Press; 1976.
- Secretariado Técnico da Administração Eleitoral. *Dados Estatísticos do Processo Eleitoral*; 1994, 1999, 2004.
- Sen, A. *Resources, values and development*. Oxford: B. Blackwell; 1984.
- Sen, A. The Living Standard. *Oxford Economic Papers*. Oxford University Press; 1984
- Sen, A., G. Hawthorn. *The Standard of Living*. Cambridge University Press; 1988.
- Sen, A.K. *Development as freedom*. New York: Anchor books; 1999.
- Skladany, M. Buying our way out of corruption: performance-based incentive bonuses for developing country politicians and bureaucrats. *Yale Human Rights and Development Law Journal*. 2009; **12**(Journal Article): 160.

Smith, A. *An inquiry into the nature and causes of the wealth of nations*. London: Printed by Harrison and Co. for Greenland and Norris; 1776.

Smith, G.A. *The Purpose of Wealth: A Historical Perspective*. Cambridge, Mass.: MIT Press; 1993.

Specialist at a Zambian youth education foundation. Interview. Nwachuku, A.K., editor; 2008.

Spector, B.I., et al. *Corruption Assessment: Mozambique. Final Report*. USAID; 2005 December 16, 2005.

Stiglitz, J. Progress what progress? *OECD Observer*. 2008.

Stiglitz, J. The most global issue. *Our Planet*. 2007: 7-9.

Stiglitz, J.E., et al. *Mismeasuring our lives : why GDP doesn't add up*. France: Commission on the Measurement of Economic Performance and Social Progress; 2010.

Taylor, I., G. Mokhawa. Not forever: Botswana, conflict diamonds and the Bushmen. *African Affairs*. 2003; **102**(407): 261-83.

Titmuss, R.M. *The gift relationship: from human blood to social policy*. London,: Allen & Unwin; 1970.

UNICEF. The Impact of Social Cash Transfers on Children Affected by HIV and AIDS. In: ESARO, editor. Lilongwe; 2007.

United Nations Development Programme. *Human Development Index*. 2004.

United Nations Development Programme., Southern African Research and Documentation Centre. *Mozambique National Human Development Report - Reaching for the MDGs*. Maputo: UNDP; 2005.

University Student. Interview. Nwachuku, A.K., editor. Beira, Mozambique; July 19, 2006.

Utzinger, J., et al. Assessing health impacts of the Chad-Cameroon petroleum development and pipeline project: challenges and a way forward. *Environmental Impact Assessment Review*. 2005; **25**(1): 63-93.

Van Boven, L. Experientialism, Materialism, and the Pursuit of Happiness. *Review of general psychology*. 2005; **9**(2): 132-42.

Van Boven, L. To do or to have? That is the question. *Journal of Personality and Social Psychology*. 2003; **85**(6): 1193.

Vaux, T., et al. Strategic Conflict Assessment: Mozambique. In: DfID, editor.; 2006.

Vicarelli, M. Exogenous Income Shocks and Consumption Smoothing: Strategies among Rural Households in Mexico. New York: Columbia University; 2010.

World Bank. *Mozambique: Better Health Spending to Reach the Millennium Development Goals*. 2006.

World Bank. *PRSP Sourcebook*. 2002.

World Bank. *Quantitative Techniques for Health Equity Analysis: Technical Notes*. 2007.

World Bank. *World development report 2006: equity and development*. Washington, D.C., Oxford: World Bank ; Oxford University Press; 2005.

World Commission on Environment and Development. *Our common future*. Oxford ; New York: Oxford University Press; 1987.

World Health Organization. Special Theme - Inequalities in Health *Bulletin of the World Health Organization Bulletin de l'Organisation mondiale de la santé*. 2000; **78**(1): 1-2.

Worldwatch Institute. *State of the World 2008: Innovations for a Sustainable Economy*. Washington: Worldwatch Institute; 2008.

Yablonski, J., M. O'Donnell. *Lasting Benefits: The role of cash transfers in tackling child mortality*. UK: Save the Children; 2009.