Perspectives on Inequality and Social Protection

Perspectives on Inequality and Social Protection

Göran Holmqvist

UNIVERSITY OF GOTHENBURG
SCHOOL OF GLOBAL STUDIES

Abstract

The dissertation consists of an introductory chapter and four separate articles. Two of the articles investigate the links between income inequality and two increasingly salient development problems, particularly in Latin America and Africa: violent crime and HIV. These two articles connect to a broad literature on how income inequality is related to various social and political outcomes. Previous econometric findings are reviewed, replicated and in some cases questioned. Alternative theories on mechanisms that constitute the link from inequality to these social outcomes are formulated and some preliminary steps are taken to test them against each other. The last two articles focus on specific issues related to the provision of social protection in the form of social transfers: the impact of social pensions on fertility in sub-Saharan Africa and the potential use of external financing to relax the affordability constraint for introducing social transfers in low-income countries. Findings are presented in support of the assumption that the introduction of social pensions would tend to reduce fertility, also in sub-Saharan Africa. The last article discusses and problematizes the use of external financing for social transfers. It points out risks as well as opportunities and suggests innovative aid modalities.

Keywords: income inequality, social transfers, HIV, crime, fertility, social protection, aid, aid modalities

List of publications

This dissertation consists of an introduction and four self contained publications:

1. "Latin American Crime and the Issue of Inequality", *Iberoamericana, Nordic Journal of Latin American and Caribbean Studies*, Vol XXX:2 2000.

2. "HIV and Income Inequality – If there is a link what does it tell us?" International Policy Centre for Inclusive Growth/UNDP, Working Paper 54, April 2009.

3. "Fertility Impact of High-coverage Public Pensions in sub-Saharan Africa" *Global Social Policy (forthcoming)*.

4. "External Financing of Social Protection – Opportunities and risks", *Development Policy Review (forthcoming).*

Contents

Paper 1: Latin American Crime and the Issue of Inequality

Paper 2: HIV and Income Inequality – If there is a link what does it tell us?

Paper 3: Fertility Impact of High-coverage Public Pensions in sub-Saharan Africa

Paper 4: External Financing of Social Protection – Opportunities and risks

Acknowledgements

This dissertation takes the form of a collection of articles. The four articles address research questions that are separate but connected in the sense that they present different perspectives on inequality, its consequences and on the policy instruments with a potential to address it.

I started my PhD programme more than 20 years ago, in 1990, at the Department of Economics at Stockholm University, while I was on a World Bank-financed study leave from the Swedish aid agency, Sida. I left the university and the PhD programme in 1992 after completing a *fil.lic*, as I was eager to take on new duties in Central America. Most of my professional life since then has been outside academia, serving as a *doer* in the field of international development. Luckily, I have also had the privilege of enjoying a few academic sabbaticals, the last one with the Nordic Africa Institute in Uppsala as my base. Being a doer for so many years both widens and narrows your academic perspectives. It widens them in the sense that your respect for the traditional boundaries between academic disciplines is undermined. At some point during these years, I started to refer to myself as a social scientist rather than as an economist. The experience of being a doer also narrows your scope, in the sense that your interest is increasingly focused on burning issues of more immediate relevance for policy and action.

The first article – "Latin American Crime and the Issue of Inequality" – was written while I was temporarily based at the Institute of Latin America Studies at Stockholm University, having prior to that spent five years in different Central American countries in Sida's employ. The rampant crime

that affected, and still affects, Central American countries was widely discussed in development circles, among whom engagement in Central America was very much driven by concerns over conflict, poverty and governance. Was crime a post-conflict phenomenon, a poverty issue or a reflection of weak law enforcement? My travels around the continent gave me an impetus to seek deeper explanations. During my short leave from Sida spent at the Latin America Institute, I was given the opportunity to approach the issue from an academic angle, and became acquainted with the multifaceted literature on the links between inequality and various social ills.

The second article – "HIV and Income Inequality: If there is a link what does it tell us?" – was written after my focus had shifted from Latin America to sub-Saharan Africa. In development circles, HIV was the social ill on everybody's lips, just as crime had been in Latin America. Was it a disease of poverty and backwardness, or a gender issue? The HIV map of sub-Saharan Africa, where some of the most advanced countries are also the most affected ones, did not fit very well with many of the standard explanations. I am grateful to the Institute for Futures Studies in Stockholm for financing a short break during which I was given an opportunity to do research on this topic.

The third article – "Fertility Impact of High-coverage Public Pensions in sub-Saharan Africa" – was written while I was based at the Nordic Africa Institute, where the main focus of attention was the increasingly vibrant debate on social protection in the context of development. The inspiration for this article came when I realised that concern about the fertility impact of child-related social transfers was often strong among policy-makers in developing countries in the South. Meanwhile in the North, particularly in certain European countries, there was the opposite concern that pension systems would reduce the incentives to have children to a point where these systems would become unsustainable. Apparently, there was a gap in this literature on the fertility impact of old age pensions in Africa, perhaps because there is little recognition that a handful of countries in sub-Saharan Africa now have social pension systems that cover the great majority of the elderly.

The fourth article, "External Financing of Social Protection-Opportunities and Risks", was originally written as a background paper to the European Report on Development, which in 2010 focused on social protection. Its motivation was a very practical one: social transfers have

appeared on the policy agendas of low-income countries where affordability is a key concern while aid dependency is high. So is there a sensible way in which external financing can contribute to overcoming this affordability constraint?

The four articles should be read as separate contributions. However, the theme that overarches all of them is our understanding of the social costs produced by income inequality and the debates over potential policy instruments to address this inequality. What they also have in common is that they relate to issues that should be of relevance to policy-makers and social actors concerned about people's wellbeing in developing countries.

I thank Beatrice for support and Sebastian for being my son.

Göran Holmqvist
Stockholm

Introduction

All of the four separate articles collected in this volume have as their point of departure research questions that are relatively straightforward and concrete:

- Does income inequality produce more crime and HIV in a society, and if so through which mechanisms?
- Does the introduction of pensions in sub-Saharan Africa – pensions that provide old age security to a majority of the population – reduce fertility?
- Is it feasible to use external financing to relax the affordability constraint when low-income countries expand their social protection systems?

These are questions that may surface in the world of doers and policy-makers, but they also connect to a broad literature in the social sciences.

The articles are to be read as separate contributions. However, a broader theme they all connect to is the social costs produced by income inequality and the assessment of potential policy instruments that may be used to address it. These are themes that have engaged various academic disciplines, as is reflected in the interdisciplinary reading that has inspired these articles. The research question in three of the articles has a clear quantitative dimension, which has dictated the quantitative approach that has been chosen.

Most branches of the social sciences approach the issue of income inequality from one angle or another. Innumerable contributions exist on its conceptualisation and measurement, the structural determinants that can explain it, the socio-political outcomes it produces and the potential policy interventions to address it. Given that these studies are found in all the social sciences, it is fair to characterise income inequality as a topic of interdisciplinary inquiry.

Such concerns date back to Adam Smith, perhaps the most classical of development economists, who pondered how worship of the rich and neglect of the poor could corrupt "our moral sentiment", thereby undermining the free market system of which he was a proponent: "No society can surely be flourishing and happy, of which the far greater part of the members are poor and miserable".[1] A fair share of the studies on inequality are also found in the fields of peace and conflict/peace and development studies, in which structural inequalities have been studied both as a source of insecurity and as a more general development obstacle. "Structural violence", a key concept associated with Johan Galtung, is intrinsically linked to social injustice and inequality, with "cultural violence" constituting the imprints on our mindsets (ideology, religion, art, etc.) that perpetuate these violent structures (Galtung 1969, Galtung 1990). Inequality, and the marks it leaves on a society, is thus by no means an alien topic either in the field of development studies or in peace and conflict studies.

This thesis is presented under the subject area Peace and Development Research. It is a research field which is interdisciplinary and problem-oriented. Its coverage is wide, ranging from studies of immediate causes of conflicts and wars to the wider conditions for economic and political development. The exact borders of the discipline are not clearly defined, and should not be expected to be so given that the concepts of "peace" and "development" – their meaning, how they are used, by whom and why – are contested and subject to much research and debate also within the discipline. Preoccupation with the exact meaning of "peace" or "development" is not something which has marked the writing of the four articles that follow. They have rather been guided by a conviction that violent crime, HIV and lack of social protection constitute human living conditions which are both serious and relevant enough to warrant

---

[1] Quotation from Adam Smith, *Wealth of the Nations,* 1776. An exposé of Adam Smith's concern for justice, as expressed in *"The Theory on Moral Sentiment",* is found in Sen 2009.

attention within this field of research, irrespective of the conceptual difficulties involved in our often divergent views on how concepts such as "peace" and "development" are to be understood.

The four articles that follow may be seen as just small, separate pieces to be fitted into this much larger income inequality puzzle. Two of them investigate the links between income inequality and two increasingly salient development problems, particularly in Latin America and Africa: violent crime and HIV. These two articles connect to a huge literature, with contributions from all the social sciences, on how income inequality is related to various social and political outcomes. Public health problems, crime, social distrust, institutional weaknesses, unwillingness to pay taxes, civil war and unhappiness are examples from a long list of social and political problems where a suspected link to income inequality has attracted the interest of social scientists.

The last two articles focus on two specific issues related to the provision of social protection in the form of social transfers, a group of policy instruments with a direct impact on income distribution that are being increasingly debated, including in developing countries. The impact of social transfers on fertility in a sub-Saharan African context is the topic of one of the articles. It connects an old debate on the determinants of the demographic transition to a more recent debate on the introduction of social protection instruments in developing countries.

The potential use of external financing to relax the affordability constraint for introducing social transfers in low-income countries is the topic of the last article. The piece brings together elements from the social protection literature and the literature on aid effectiveness and the political economy of aid with a view to formulating policy options for donors and partner countries.

Inequality and peace and development studies

The concept of inequality is widely used across the social sciences. There are obviously a number of dimensions and distinction that can be made in relation to it, often reflecting different theories and approaches among disciplines. A few of them are pointed out below.

One distinction concerns an "*inequality in what*" question, i.e. across incomes, assets, political influence, social conditions, cultural status etc.

Even though these dimensions are different it is often reasonable to expect them to have some degree of correlation, so that one may think of inequality as something that is expressed in multiple dimensions where one dimension sometimes may serve as a proxy for another. In quantitative studies the inequality between incomes is probably what is most studied, particularly among economists, and it is also the dimension where one would find international statistics most easily.

Secondly, there is also an "*inequality between what*" question. What is sometimes labeled "vertical inequality" relate to differences between individuals in a given population while "horizontal inequality" refer to differences between the averages of groups. Ordinary income inequality indicators found in statistical publication normally refer to inequality in the vertical sense. Horizontal inequality between identity groups is a theme that has received particular interest within the field of conflict studies (Stewart 2008).

Finally, there is also an "*inequality how measured*" question, with a number of possible ways of mathematically transforming a ray of numbers into one single indicator reflecting how "unequal" these numbers are (GINI-indexes, Polarization-indexes, Theil indexes etc.).

In studies of peace, conflict and development the links between inequality and violent conflicts are among the oldest concerns; the earliest citations date all the way back to Plato who warned that if the greatest plague of all – civil war – is to be avoided then "extreme poverty and wealth must not be allowed to arise in any section of the citizen body" (Cramer 2005, p 1).

There is an abundance of theories on how, and why, inequality might be linked to conflict. In the case of Johan Galtung, and his concepts of positive peace and structural violence, the link to inequality (and social justice) follows as by definition: "…the absence of structural violence is what we have referred to as social justice, which is a positively defined condition (egalitarian distribution of power and resources)" (Galtung 1969, p 183). Another early contributor to the peace and conflict research who developed theories on the link between inequality and conflict is Ted Robert Gurr. Gurr's concept of relative deprivation, which is used to explain violent conflicts, captures the tension between what your actual state is and what you feel you should be able to achieve, i.e. perceived discrepancy between "value expectations" and "value capabilities" (Gurr

1970). Rising inequalities between groups in a society is something which obviously may fuel this perceived discrepancy.

Studies that have tried to establish an empirical link between inequality and conflict by use of statistical indicators also abound. When it comes to vertical income inequality and conflict the results appear to be rather mixed (see Cramer 2005 or World Bank 2011 for overviews). A number of more recent contributions have explored the statistical link from horizontal inequalities between identity groups to violent conflicts, identifying it as an important conflict risk (Stewart 2008). The interest in horizontal inequalities has to some extent been stimulated by new datasets which permit the elaboration of horizontal GINI coefficients. In the study of horizontal inequalities there is also an inspiration dating back to Gurr's theories on relative deprivation (Stewart 2008, p 287).

Linking income inequality to social outcomes (papers 1 and 2)

In any two countries with comparable average incomes, you would expect income poverty to be higher in the country where incomes are more unequally distributed. This also means that any social outcome assumed to be determined by poverty (or other expressions of absolute levels of deprivation) should also be expected to link to income inequality. If the income inequality studies referred to in these articles were only about this kind of relationship, the story would be a trivial one. However, the finding that has attracted attention among social scientists is that income inequality of itself, that is after controlling for absolute levels of poverty or resource deprivations, seems to be linked to a number of social phenomena. Public health studies have been among the frontrunners in this regard. Large numbers of contributions in this field have, through quantitative analysis, pointed out an independent link between income inequality and various diseases and mortality categories, findings that have recently been summarised and popularised by Richard Wilkinson in *The Spirit Level* (Wilkinson and Pickett 2009). Criminologists have produced similar findings in their field, as have sociologists, economists and political scientists.

Both violent crime and the HIV epidemic are two specific social ills for which a number of quantitative studies have pointed to income inequality as a determinant. These studies have normally reached their results based

on some form of regression analysis, which exploits the variation in aggregated incidence rates within different samples (cross-country, regions within countries, over time, or some combination of these). The results of some recent studies in this vein are reviewed in the two articles below. What these reviews reveal is a fairly consistent picture. Links between crime and inequality, and between HIV and inequality, have been established in quantitative studies from different academic disciplines, and results have been based on national as well as international or regional samples. They also seem to remain robust even after the introduction of a whole range of control variables and statistical tests.

Since my articles were published (2000 and 2009), there have been a number of additional contributions in similar vein. On the crime-inequality link, it is interesting to note that in the steady flow of new articles on this topic there have lately also been an increasing number of results from the developing world, based on improved and more sophisticated data and quantitative methods. Some of these studies use cross-country panel data (Fajnzylber, Lederman and Loayza 2002), while others base their results on data from particular crime-affected countries, such as South Africa (Demombynes and Özler 2005), Brazil (Carvalho and Lavor 2008) and Colombia (Bourguignon and Torres 2003). All of them coincide in pointing out income inequality as an important determinant of crime, and they are also able to shed additional light on how this link is to be interpreted. Fajnzylber et al. contribute by showing that the link remains strong even after controlling for reverse causality, measurement errors and alternative measures of inequality. Carvalho and Lavor replace the often questioned crime statistics by data from Brazilian crime victimisation surveys, while reproducing results similar to those in previous studies. Bourguignon and Torres contribute by disaggregating the income inequality measure, thereby identifying what part of the distribution is the most relevant to explaining crime in Colombia (i.e., the lowest segment). The role of income inequality in explaining the extreme levels of crime in Latin America, the issue that motivated my article of 2000, has once again been underscored in Soares and Naritomi (2010).

The discussion of a link between HIV and income inequality is more recent. Despite of this additional contributions have been published since my study was made in 2008. The social determinants of HIV in sub-Saharan Africa, and the puzzling role of income inequality, are subject to continued

debate in public health journals (Fox 2010). A study by two economists (Durevall and Lindskog 2010) is, to my knowledge, the first to explore the link between community-level inequality (using wealth indices) and the risk of HIV infection at the individual level, an approach that avoids some of the criticisms that could be directed at cross-country regressions based on aggregate data. The study, which uses survey data for Malawian women aged 15-24, establishes a substantial effect of inequality on HIV, as well as on sexual risk behaviour.

The debate on a possible link between income inequality and crime and income inequality and health is still far from settled. Recent contributions questioning that the link between income inequality and health is causal are reviewed in Leigh, Jencks and Smeeding (2009). There are also several recent contributions questioning the inequality-crime literature (Gibson and Kim 2007 and Brush 2007 are two examples). Key aspects of the critique relate to data errors, the control of biases resulting from reverse causality and the omission of relevant control variables, but there has also been a questioning of the theoretical foundations.

It is of interest to note that, as the papers in this volume show, researchers in different academic disciplines have produced parallel empirical findings within this subject field, based on similar data and statistical techniques, but often with theoretical interpretations that tend to be coloured by the mainstream assumptions of the particular discipline they represent. When economists find a link between income inequality and crime or HIV, such a result is typically seen as confirming theories on the "economics of crime" or "economics of sexual behaviour", in terms of which individuals are assumed to make choices based on rational utility optimisation. For a public health scholar, such a link might rather be interpreted as indicating psychosocial stress symptoms at the individual level, which are assumed to be more frequent in unequal societies. A political economy student might, on the other hand, interpret the same links as the result of the weaknesses of the public sector in unequal societies, as such societies are assumed to be less inclined to raise taxes and invest in public goods. To a sociologist, finally, the same empirical finding might be interpreted in terms of undermined social capital and the impaired ability of societies marked by social divides to establish common norms.

The interdisciplinarity of development studies has the advantage of calling for openness to all these alternative theories. The two articles

below have this in common: both are based on such an interdisciplinary reading of alternative interpretations. They also take some initial, albeit far from conclusive, steps to assess what kind of theory is best supported by data. Both articles provide some preliminary evidence indicating that the "economics of crime" or the "economics of sexual behaviour" do not provide a sufficient understanding of the link, as the data suggest that social relations, norms and attitudes also come into play.

In understanding both HIV and crime, the role of "social capital" is frequently pointed out, and since the articles were written there have been a number of contributions arguing that the effect of income inequality transits through social capital-related factors. Lederman et al. (mainly World Bank-affiliated economists) present evidence, based on cross-country data, showing the link from income inequality to violent crime as it transits via social capital (understood as "trust"), while also having a strong independent effect (Lederman, Loayza and Menéndez 2002). A strikingly similar result was recently presented by two psychologists in the *European Journal of Public Health* (Elgar and Aitken 2010). Similarly, there are a number of recent contributions exploring the role of social capital as a determinant of HIV in sub-Saharan Africa (Agardh et al. 2010, Pronyk et al. 2008). Hence, income inequality may not only stimulate "demand" and "supply" related to certain "transactions" that risk harming society (such us crime or risky sexual behaviour), but may also, through various mechanisms that are imperfectly understood, reduce the capacity for the collective actions needed to address these social problems.

The need for a better understanding of the mechanism that links income inequality to various social outcomes needs to be underscored: without a proper understanding of that mechanism it is difficult to move towards policy recommendations. The main contribution by the two articles – apart from reviewing and shedding additional light on the statistical relations – is an interdisciplinary review of theories on such mechanisms and some preliminary steps to test them against each other. However, there are still far too many contradictory findings to claim that a satisfactory degree of understanding has been achieved. A pertinent remark was recently made in an overview of the academic debate on inequality and health: "This is a field with too many theories for the number of available data points" (Leigh, Jencks and Smeeding 2009). Even if we are still far from a full understanding of the mechanisms that link

income inequality to social outcomes such as crime and HIV, a key conclusion that follows from the two articles in this volume is that there are high costs associated with unequal societies. That is also a conclusion highly relevant to the study of development and to the study of peace understood in its positive sense.

Social protection (papers 3 and 4)

Millions of people living in poverty have in recent decades been included in social protection schemes of various types, a change that has even been described as a "silent revolution" (Barrientos and Hulme 2008). Latin American countries are known for their conditional cash transfer schemes, in which transfers are conditional on the children being sent to school or taken to the clinic. Of these schemes, Brazil's Bolsa Familia is one of the largest, reaching some 12 million households. In seven countries in sub-Saharan Africa, non-contributory old age pension schemes now cover the vast majority of the elderly. In their design, these schemes actually have some similarity to the public pension system introduced in Sweden in 1913. We hear less about Ethiopian famines – which often topped the news in the 1980s – but in articles with smaller headlines one can read of a combined transfer-and-public-works scheme that involves some 7.5 million Ethiopians. A similar scheme in India gives the rural poor a right, guaranteed by the constitution, to 100 days of employment, benefiting some 44 million households annually.[2] Many of these initiatives have been launched as a form of emergency response in the wake of crises – in Latin America in the 1990s, in Asia in the early 2000s, in Ethiopia after famines – and have then developed into a permanent feature of national policies. In a few cases, international development assistance has provided the initial impulse and financing, as in the Ethiopian case, but this is the exception. In most cases, when systems have been institutionalised and become national in scope, both the initiatives and the funding sources have been domestic.

Social protection systems have also been afforded a prominent place on the global development agenda. G20 meetings and UN conferences on the Millennium Development Goals have called for increased action. The

---

[2] A recent overview of social transfer programmes around the developing world is found in the European Report on Development 2010 (EC 2010)

multilateral agencies of the UN system, including the World Bank, have agreed on an initiative called the "Social Protection Floor", which advocates a minimum package of social protection covering old age pensions, child benefits, public works and basic health. The African Union has agreed on a social policy framework in which social transfers are an important element, with goals similar to the UN's "Social Protection Floor". Some of the emerging economies – Brazil, India and South Africa in the so-called IBSA Group – have engaged in South-South cooperation, sharing among themselves and others their experiences with their social protection schemes (EC 2010).

Despite this momentum for social protection in the developing world, there are still many factors that constrain the expansion. There are also doubts about the wisdom of such expansion, given the abundance of other needs and priorities. Entering the social protection debate is a bit like entering a room crowded with people struggling with similar questions, but who have arrived through separate doors that tend to mark out their different perspectives. Some have entered the room with an emergency relief perspective. These are people who have seen that delivering cash could be smarter than delivering food and that a predictable cash flow may work as disaster prevention. Others have entered the room with the perspective of the UN Millennium Development Goals and of chronic poverty. They are looking for the most efficient instrument to reduce poverty by 2015. In this room, you also find advocates for various vulnerable groups – the elderly, children, AIDS orphans, the sick and the unemployed – who are eager to take a step away from charity to rights. Some are late arrivals after the global financial crisis, pushed into the room by the G20 meeting's call for protection of the poor in insecure times. Yet another group has been in the room for decades and is somewhat uneasy with all the newcomers and their poverty discourse. They are the ones doing comparative research on welfare states and their historic roots. In a less visible corner of this room you will also find a handful of low- and middle-income countries that are already regularly delivering social transfers on a notable scale to their populations. Finally, outside the room, one may hear the voices of the doubters: "low-income countries cannot afford this"; "poor people misuse the money, drink it up and become lazy"; "investment and growth is what is needed", "hand-outs make people dependent"; "this is just a new fad among donors and UN agencies".

It appears to be a broad, and not necessarily unified, coalition of forces and interests that have brought social protection to a prominent place on the development agenda. One may detect concerns over an ungoverned globalization process in all this: The world order crisis "underlines the need not only for financial regulation, but also for global social policy" (Hettne 2009, p 122). There are also the new emerging economies making their voices heard on social issues and the various advocacy groups who now engage in debates at the global level. But one may also recognize century old elements from the history of the developed nations of today; as a society urbanizes, changes its demography, modernizes and democratizes there is also pressure to reform the way social protection is provided to its citizens.

Researchers from various disciplines have been increasingly active in delivering inputs into this debate. A research agenda has evolved most contributions to which can be grouped under the following headings, each representing a critical factor in the expansion of social transfers in developing countries:

• Impact: What do we know about the impact of this type of intervention, including unintended side-effects and longer term effects on economic growth and social cohesion?

• Affordability: Can low-income countries really afford this and what can be done to solve the financing constraints?

• Political economy: What makes these programmes feasible in some political contexts and not in others? How is political sustainability achieved?

• Design aspects: How are such systems to be designed? In this debate, the role of conditions and targeting vs. universality often features.

• Administrative capacity: Can low-income countries with weak institutions manage such systems?

• External financing: Risk as well as opportunities.

The second set of articles below is easily inserted into their proper place on this research agenda. The article on social pensions and fertility relates to the literature on unintended side-effects, in which most attention has been given to the possible reduction in labour supply in response to social transfers. The last article deals exclusively with the issue of external financing. Such financing is an important source of revenue in many low-income countries, but with modalities and a term structure that may be difficult to reconcile with the need to finance schemes that have an open-ended timeframe.

Theories built on the assumption that the choice of family size is influenced by concerns about old age security have existed for decades. The third article in this volume relates to this literature. A number of empirical studies on fertility development in advanced economies have pointed out old age pensions as a contributing factor, so the theory is by no means without empirical support. There seems, however, to be a gap in this literature when it comes to sub-Saharan Africa. In this region, and perhaps less well known, a handful of countries have introduced non-contributory old age pensions that cover a clear majority of the older population. These countries thus fall into a distinct group in relation to the other countries of the region, where public old age security arrangements, if they exist at all, are largely confined to the formal sector. In such contexts, children become an important source of income support for those reaching old age. A People's Security Survey carried out by the ILO in Ghana – a country without high-coverage pensions – indicates that approximately half the respondents expect children to be their main source of income in old age (only 4 per cent expected pensions to play that role). It is this "pension insurance" role of children, for which public pensions may be a substitute, that is a key driving force in theories linking pensions to fertility.

While the vast majority of the population in a typical country in sub-Saharan Africa is left uncovered by any publicly provided old age security arrangement, there are a few notable exceptions. These countries, reviewed in the article, introduced their pension systems at different times. South Africa and Mauritius have the oldest systems, dating back more than 50 years, while Lesotho and Swaziland are the most recent recruits. The introduction of these various schemes took place in highly varying political contexts. In South Africa and Namibia, pensions were part

of the policy arsenal of the apartheid regimes, with differing pension benefits based on race. In Mauritius, the non-contributory pension system was introduced as early as 1950, prior to independence, as a temporary measure to be dismantled once a proper contributory pension system could be instituted. However, it survived because it became popular and worked smoothly, and over time it has evolved into a strictly universal system. In the Seychelles, the pension system was introduced after a leftist military coup and as part of a package of progressive policies to extend social protection to all the country's citizens. In Botswana and Lesotho, non-contributory pensions were introduced in the context of multiparty politics, while in Swaziland they were announced by the king. In these three cases, the proximity to South Africa, where pensions have been in place for many years, was a relevant factor, as was the concern about the burden on the older generation arising from the increasing number of AIDS orphans.

Despite the differing political contexts in which these systems were introduced, the schemes share some common features. First, all of them are non-contributory, which is a key feature if coverage is to be extended to the informal and rural sectors. Second, they are reasonably similar in terms of i) coverage rate (all above 80 per cent of the age-qualified population); ii) pension benefit as a share of GDP per capita (mostly in the 15-25 per cent range); and iii) aggregate pension costs (roughly 1-2 per cent of GDP). These countries also illustrate the point that this kind of pension system can be implemented, afforded and sustained politically also in a sub-Saharan African context.

The main contribution of the article is its attempt to trace, despite recognised limitations of the data, what impact these "high-coverage" pension systems may have had on fertility. Cross-country regressions based on sub-Saharan African panel data for 1960-2006, as well as "eye-ball" econometrics, indicate that there has indeed been such an impact, although the results have to be interpreted cautiously. The results remain statistically significant even after introducing various control variables, including time- and country-fixed effects. To my knowledge, this is the first study to have shown the existence of a pension-fertility link in sub-Saharan Africa. The results further indicate that the undesirable side-effects of child-related social transfers on fertility could be balanced if various other social protection measures are introduced simultaneously, such as those advocated by the UN "Social Protection Floor" initiative. The article also

underscores a point that underpins much of the social protection debate: being "unprotected" may create sub-optimum outcomes, such as when the risk-coping strategies of people living in poverty lead to the de-selection of the option with "highest expected return" in favour of the one with a safer return.

Is there a sensible way in which external financing can contribute to overcoming the affordability constraint on social transfers in low-income countries? The fourth article approaches the question by synthesising findings from three research fields: the literature on social protection, on aid effectiveness and on the political economy of aid. From the literature on social protection, the article extracts the findings on what is affordable, doable and politically feasible in the context of development. From the literature on aid effectiveness, the article extracts the analysis of the pros and cons of different aid modalities and of the various restrictions that donors as well as partner countries have to face. From the literature on the political economy of aid, the article mainly brings in the findings related to the use, misuse and limitations of conditionality.

The article departs from the assumption that a successful external financing of social protection would have to meet at least three requirements: i) have political support by donor countries' home constituencies; ii) be based on a credible aid contract, in which the permanent character of transfers have to be reconciled with the time-bound nature of aid; and iii) build on, and avoid disturbing, the political ownership in partner countries. In reviewing how different aid modalities meet these requirements the article distinguish between two cases. The first is labelled "the benign case" where political support in the partner country is not an issue; the issue is rather about how to meet the first two requirements, i.e. formulating a credible aid contract which also can be met by acceptance by the home constituencies of the donors. The third requirement is simply overlooked in this benign case. The second case is where the vision of scaled-up social transfers is not fully "politically owned" in the partner country and external actors might be tempted to exercise some form of "leverage". This "non-benign" case is used to problematize the aid relationship and to illustrate the limitations external actors have in imposing solutions from the outside.

For the benign case an innovative aid contract model that could meet these requirements is discussed, a "cash on delivery" mechanism. Such aid

contract would combine three attractive features. First of all, it would constitute a credible burden-sharing formula over time that provides predictability for partner countries and an exit strategy for donors. Second, it would require a hands-off approach by donors that respects partner countries' ownership of the initiative, including its design and implementation. Finally, it would bring clarity to the results aid money has paid for, which could be communicated to the donors' home constituencies. Such an approach would require long-term engagement by donors, aligned with country-owned strategies and harmonised with a joint-financing mechanism. It would also require a shift in mind-sets of both donors and their partners; as an aid modality for large scale financing it is not really on the menu of available options at present.

The article also reviews the more problematic case in which political ownership is lacking, such as when externally funded social transfers are tolerated politically but domestic political processes do not give them much priority. The option to by-pass governments and to run entirely donor-driven projects in such cases is obviously difficult to reconcile with the requirement for long-run sustainability. In addition, the scope for external actors to use financial leverage to influence political economy dynamics in partner countries is limited. A key message from the literature on aid and conditionality is that externally imposed conditions rarely produce intended policy reforms that last. If this approach ever works, it does so only under quite restrictive assumptions. The article concludes that donors need to recognise their limitations in using financial leverage to reshape political economy constraints in partner countries and that external financing of social transfers is unlikely to succeed if it is imposed on unwilling partners. However, it is an encouraging fact that in a number of developing countries – including those in the low-income category – home-grown social protection schemes have been introduced, despite political, financial and administrative restrictions.

Method

Three of the articles make use of cross-country regression analysis, relying on statistical indicators found in international data bases (income inequality measures based on household surveys, macroeconomic indicators such as GDP per capita, demographic indicators on urbanisation

and fertility, etc.). As regression analysis is known to be replete with pitfalls and is the subject of much criticism, a discussion of this method is justified here, even if, perforce, it only scratches the surface of a huge academic debate. As a method, regression analysis is by no means limited to economists, although it tends to be identified with them. A large number of the articles cited here apply some form of it and have been produced by public health scholars, sociologists, criminologists, political scientists and psychologists as well as economists. The discussion of this particular method should not, therefore, be confused with the frequently aired critique of economics as a branch of the social sciences.

One may distinguish two strands in the critique of regression analysis based on aggregated data. One strand comes from within the research community that shares a clear quantitative orientation: we label it the internal critique. The other strand is external and involves a more fundamental questioning of quantitative research, as such, or of epistemological assumptions often associated with quantitative research.

The shortcomings of regression analysis, as it is mostly applied, in properly identifying causal relationships lies at the heart of the internal critique. These shortcomings could be due to omission of relevant control variables, reverse causality bias and failures to live up to all the statistical assumptions required by increasingly sophisticated statistical testing tools. In the field of development economics, the internal critique has been particularly heated over the last decade, with proponents of what has been labelled "new development economics" – a research orientation that claims to build solid evidence based on randomised controlled trials – seriously questioning the traditional forms of econometrics. References to the claimed success of "Evidence-Based Medicine", which builds on randomised trials, are common. Expectations have also been high: "Creating a culture in which rigorous randomized evaluations are promoted, encouraged and financed has the potential to revolutionize social policy during the 21st century, just as randomized trials revolutionized medicine during the 20th" (editorial quoting Esther Duflo in *The Lancet* 2004).

Regression analysts are by no means unaware of the difficulties in making causal inferences. Indeed, much of their energy is actually spent on trying to overcome them. Omission of unobserved variables can to some extent be dealt with in fixed effect models, which are applied in the

pension-fertility study below, but they are no panacea. Instrument variable techniques are frequently used to control for reverse causality. However, identifying appropriate instruments has proven difficult and studies based on such techniques are frequently challenged. Often, the increased sophistication of techniques has made things obscure to outsiders, opening up doubts about data-mining and arbitrariness. The "endless wrangling over identification and instrumental variables, has led to a search for alternative ways of learning about development" (Deaton 2009).

However, the unreserved enthusiasm for randomised experiments has met with resistance, on various grounds. It has been pointed out that generalising from experiments in one locality to another can be misleading (i.e., the issue of internal vs. external validity). Equilibrium effects may mean that the effect of an experimental intervention may be completely different when a similar kind of intervention is scaled-up. Furthermore, establishing an average treatment effect may not tell the full story about why these effects occur, and how they are distributed among the affected population. Concern has also been expressed that researchers would tend to adapt their research questions to "smaller" issues that are answerable with randomised trials, while shying away from "larger" questions where randomisation is not an option. Some well-known economists (Rodrik 2008, Deaton 2010a, Deaton 2010b) have expressed more nuanced and pragmatic positions. According to them, randomised trials are useful for some but by no means all research questions, while regression analysis based on macro-data, despite the difficulties, may also have something to contribute. Both methods can be misleading if improperly applied. These economists have also called for a move away from an exclusive "what works" perspective to efforts to better understand "how things work", to an investigation of *mechanisms*.

As illustrated by the two studies below on income inequality and crime/HIV, the macro-findings have inspired a rather open-ended discussion of alternative mechanisms that might be in play. It also seems to be the case that these links can be supported by quantitative analysis based on macro- as well as on micro-data (Durevall and Lindskog 2009 being an example of the latter). There are also recent examples of randomised trials that in fact lend some support to a link between income inequality and HIV. In a randomised study in Malawi (a study which for ethical reasons I find highly questionable), financial incentives were offered to men and women to maintain their negative HIV status for a

year. No effect was found on HIV status and sexual behaviour as compared to the control group during that year. However, once the rewards were paid out at the end of the year, men receiving the cash became more likely, and women less likely, to engage in sexual risk behaviour (Kohler and Thornton 2010). The result would indicate that income inequality, overlapping with gender inequality, might be a dangerous mix, at least in the context in which this study was carried out. Here is an example where macro- and micro-studies may serve as sources of mutual inspiration.

Obviously, the recognition that cross-country regression analysis has serious shortcomings is important and needs to colour how confidently conclusions are formulated. The study of the effect of old age pensions on fertility, one of the studies below, is a case where there are few apparent alternatives to quantitative analysis based on macro-data (which does not mean that other approaches may not provide important complementary findings). It is very hard to imagine how randomised trials, or individual case studies, could be realistically used to study the magnitude of that effect. Filling up the pension accounts of a randomly selected part of the population, making sure that they really trust that pensions will be paid out in the distant future, and then studying fertility rates over a decade or so, does not appear to be realistic. Survey data and deep interviews could give a clue about whether concerns over children and old age security are present in people's minds, and such survey data do exist. For instance, as noted above, a recent ILO People Security Survey in Ghana reports that as many as 48 per cent of respondents stated they expected children to be their main source of income in old age (ILO 2002). When directly asked in surveys, people have also indicated that old age security is an important motive for having children (Nugent 1985 refers to 13 such surveys in sub-Saharan Africa). Such findings are important underpinnings for the theoretical assumptions. However, even if it were possible to generalise from such survey results, or from deep interviews for that matter, this would go only half-way to establishing a pension-fertility link. We would still be left to do the best we could with the available macro-data, producing results that may reinforce in us the belief that such a link exists but without providing anything like final evidence.

It is of some interest to note that many of the arguments in this rather internal debate among economists on randomised versus non-randomized studies seem to replicate some of the arguments in the broader debate

among social scientists on quantitative versus qualitative research methods. It is also noteworthy that this debate has led many scholars to take eclectic positions. This has been the case not least in the field of poverty studies, where increased attention has been paid to using mixed qualitative and quantitative methods, or "Q-squared" methods. A number of conferences, articles and books have been devoted to the issue, arguing that value is added by combining quantitative and qualitative methods (Addison, Hulme and Kanbur 2008).

The complementarities between different approaches have been underscored by these "Q-squared" proponents. It has, for instance, been pointed out that insights from qualitative research may improve the design of household surveys, contribute to a better understanding of the conceptual categories used in them and to the interpretation and explanation of quantitative results. Qualitative studies may also facilitate the analysis of locally meaningful categories of social differentiation, suggest directions of causality and reveal dynamic dimensions (Kanbur and Shaffer 2007). Similarly, the macro view of things may inspire qualitative research to refute, to support or to refine theories, just as qualitative studies may inspire quantitative research in the same manner.

What is often perceived as a divide between qualitative and quantitative research approaches can be reduced to different dimensions. Kanbur 2003 proposes a typology of five such dimensions:

- Type of data, non-numerical vs. numerical

- Population coverage, specific case vs. more general

- Population involvement, active vs. passive

- Inference methodology, inductive vs. deductive

- Disciplinary framework, broad vs. narrow
  (i.e., from neo-classical economics to broad social sciences).

It is quite clear that many of these perceived divides can be overcome and that approaches may be combined to provide mutual enrichment. This does not mean that each individual contribution necessarily combines

quantitative and qualitative approaches – researchers choose method depending research question and what they believe to be their comparative advantage, something which hold also for the papers presented in this volume – but it is a call for openness to dialogue and to results produced by alternative methods. Whether data are numerical or not is in itself not something that should lead to insurmountable difficulties. Insights from case studies may benefit more general studies, and vice versa. Large quantitative studies do not permit participatory approaches, but could obviously benefit from insights produced by such studies. The inductive/deductive distinction does not have to be a divide at all, considering that the iterative process that marks much scientific work is a moving back and forth between theory and observation, and hence contain elements of both. Finally, the disciplinary distinction between the neo-classical economics and "the rest" seems to disregard important quantitative traditions in other social science disciplines (Kanbur and Shaffer 2007).

So where are the difficulties, if all the divides mentioned above can be dealt with? One thing to have emerged from these discussions is a recognition that the deeper difficulties in integrating quantitative and qualitative perspectives relates rather to different perspectives on epistemology, ontology and normative theory. Much quantitative research places importance on the intersubjective observability of "brute data" in establishing validity (and qualitative research might do so as well), but if the central role of intersubjective observability is rejected, an excessive concern with measurements appears misplaced. If the core unit of knowledge is rather "meanings ascribed to social phenomena by members of a particular society" (Kanbur and Shaffer 2007), what then can be learnt from, for instance, cross-country comparisons of income inequality? Similarly, if any attempt to describe social phenomena using uniform statistical measures "defined from above" and without local participation – across cultures, history, classes – is regarded as fundamentally suspect, then that creates tensions for any attempt to integrate with quantitative research methods. These are divides that are not easily dealt with. It is at this level that different social sciences do have difficulty in speaking to one another. The issue is not really methods and techniques, but, rather, the different views of what "the reality" is, how we are able to "know" anything about it and how we position ourselves to influence it.

If one were to characterise the methodological approach used in the four articles that follow, it would primarily be in terms of pragmatic every-day beliefs, rather than in terms of any advanced epistemological orientation.

First, there is a *normative starting point*: Themes have been chosen because they are believed to be of relevance to people's wellbeing and for policy-makers and social actors who care about that wellbeing. To make a difference in terms of human wellbeing is a normative starting point that has inspired the choice of themes as well as methods. The "making a difference" perspective has also led to a focus on the consequences of different policy options and hence on the causal mechanisms that may operate along the path from policy to outcome.

Second, in terms of *ontology* the articles are oriented to the everyday belief that a reality exists that is independent of us as observers. The image we create of that reality might be distorted by a long list of human limitations, including the conceptual frameworks and prejudices that come with the social context we happen to live in, but it is a reality that is real enough to provide meaningful friction against our image of it. That is a friction which is to be sought, that is, it calls for an empirical orientation. Furthermore, and as a consequence of our limitations as observers, that friction should preferably be sought in ways that can be replicated by other observers to support or to spread doubt about any findings. Statistical aggregates are far from flawless, but they are sometimes meaningful enough to provide that friction. They also have the advantage of allowing others to replicate.

Finally, in terms of *disciplinary orientation,* the articles are marked by disrespect for borders between academic disciplines. Findings as well as theories have been picked and chosen wherever they happen to have been published.

Concluding remarks

The articles that follow contain some implications for future research efforts, as well as some useful insights for the world of *doers* and policy-makers that I come from, and to which I will return. As discussed above, and in the articles, there are limitations to how general and confident conclusions one may draw based on quantitative studies of this kind. Such limitations are by no means unique to quantitative studies; qualitative

case-studies have their limitations as well. But it is a recognition that calls for the right balance between doubt and confidence when conclusions and recommendations are formulated.

A first insight concerns the high social cost that is paid by unequal societies. Statistical evidence of strong links between income inequality and various social ills, crime and HIV being just two examples, is abundant. The evidence is perhaps not conclusive – statistical evidence rarely is – but it is sufficiently consistent to be convincing.

A second insight is about the openness that is called for in interpreting this link between income inequality and social outcomes. Understanding this link is important to understanding the way our societies operate. The main contribution by the first two articles is a critical review of alternative interpretations of this link that have been proposed by different academic disciplines. One may divide them into at least three categories.

One category of interpretation, typically associated with economists, is driven by *"demand/supply"* for behaviours that produce these social ills. For instance, higher income inequality could result in more rich persons being able to afford the multiple parallel partnerships that are pointed out as an important driver of the HIV epidemic, while poorer persons are drawn into such partnerships for reasons of income security. Similarly, higher income inequality may result in a larger pool of rich persons to rob, and more poor persons calculating that the loot offsets the risk of being caught. Such mechanisms, as outlined in the literature on the economics of crime or sexual behaviour, rest on an assumption of rational utility optimisation by the individuals involved.

A second category of interpretation of this link focuses on the stories of how unequal societies are less able *to solve collective undertakings*: less able to establish trust or norms and to provide various forms of public goods. Trust, reciprocity and establishing shared values, norms and public institutions are key elements in such interpretations.

A third category of interpretation identifies mechanisms that operate at the individual level through *psychosocial factors* such as isolation, stress, insecurity, which are assumed to be more frequent in unequal societies. This category of interpretation is typically found within the field of medical sciences.

To assess which of these interpretations is best supported by data is a major challenge, better left for future research efforts. There is nothing to suggest these different mechanisms do not work in parallel, or with

different strengths, depending on which inequality-induced "social ill" we study. Understanding these mechanisms is crucial, as it is through improved understanding of them that the way is opened for more concrete recommendations on policy and action. The articles below cannot claim to provide any final evidence on this topic, but they map the terrain, present some indicative results and point out directions for future research.

A third message of these articles relates to the social protection debate and the concerns about an undesirable fertility impact of social protection instruments, such as child-related social transfers. If social transfers come in the form of old age pensions, or in combined packages, the fertility impact story might be a different one. Theories assuming that the choice of family size is influenced by concerns about old age security would predict that pensions reduce fertility. This effect is supported by empirical evidence from developed countries, based on historical data. The findings presented here, based on data from sub-Saharan Africa, indicate that such a pension link also operates in a sub-Saharan context. This lends further support to the view that concerns over increased fertility rates should not stop low-income countries from exploring how to expand the use of social transfers. It also provides an additional argument, although by no means the most important one, for the need by low-income countries to also pay increased attention to the old age security concerns of their citizens.

A fourth message is about the feasibility of external financing of social transfers in low-income countries. The message is mildly encouraging, despite the various risks involved in relying on time-bound external financing of programmes that are meant to be permanent. The relevant article explores and argues for aid contract models that could sidestep some of these risks and difficulties, as long as donors and partner countries share some common ground on objectives and are ready to enter into long-term engagements. However, when it comes to the potential for external financing of social transfers when political ownership is weak – a case which is problematized and discussed in the article - the limitations of aid are recognized.

References

Addison T., Hulme D. and R. Kanbur, eds. (2009), Poverty Dynamics: Interdisciplinary Perspectives, Oxford University Press

Agardh A., Emmelin M., Muriisa R. and P. Östergren (2010), "Social Capital and Sexual Behavior among Ugandan University Students" in *Global Health Action* v.3

Barrientos, A. and D. Hulme (2008), *Social Protection for the Poor and the Poorest in Developing Countries: Reflections on a Quiet Revolution*, Brooks World Poverty Institute, Working Paper 30

Bourguignon F., J. Nunez and F. Sanchez (2003), "A Structural Model for Crime and Inequality in Colombia" in *Jrnl of the European Economic Association,* vol. 1 No 2/3

Brush J. (2007), "Does Income Inequality Lead to more Crime?" in *Economics Letters* vol 96 Issue 2

Carvalho J. and S. Lavor (2008), *Repeat Criminal Victimization and Income Inequality in Brazil,* Proceedings of the 36th Brazilian Economics Meeting/ANPEC

Cramer C. (2005), *Inequality and Conflict – A Review of an Age-Old Concern,* Identities, Conflict and Cohesion/Programme Paper 11, UNRISD

Deaton A. (2010a), "Instruments, Randomization, and Learning about Development", *Journal of Economic Literature,* 48(2)

Deaton A. (2010b), "Understanding the Mechanisms of Economic Development", *Journal of Economic Perspectives* Vol. 24:3

Demombynes G. and B. Özler (2005), "Crime and Local Inequality in South Africa" in *Jrnl of Development Economics,* vol 76 Issue 2

Durevall D. and A. Lindskog (2010), *Economic Inequality and HIV in Malawi,* Working Papers in Economics No 425, University of Gothenburg-School of Business, Economics and Law

EC (2010), *European Report on Development: Social Development for Inclusive Development – Forging a New European Approach,* European University Institute

Elgar F. and N. Aitken (2010), "Income Inequality, Trust and Homicide in 33 Countries" in *The European Journal of Public Health,* June

Fajnzylber P., Lederman D. and N. Loayza (2002), "Inequality and Violent Crime" in *Jrnl of Law and Economics*, vol 45 No 1

Fox A. (2010), "The Social Determinants of HIV Serostatus in Sub-Saharan Africa: An Inverse Relationship between Poverty and HIV?" in *Public Health Reports,* 125(Suppl 4)

Galtung J. (1969), "Violence, Peace and Peace Research", *Jrnl of Peace Research*, vol 6 No 3

Galtung J. (1990), "Cultural Violence", *Jrnl of Peace research*, vol 27 No 3

Gibson J. and B. Kim (2007), "The Effect of Reporting Errors on the Cross Country Relationship between Inequality and Crime" in *Jrnl of Development Economics* 87

Gurr T. (1970), *Why Men Rebel,* Princeton: Princeton University Press,

ILO (2002) People Security Survey-Ghana, downloaded at: https://www.ilo.org/dyn/sesame/pss.pss_files

Kanbur R. (2003), Q-squared? A commentary on qualitative and quantitative poverty appraisal. In R. Kanbur (ed.), *Q-squared: Qualitative and Quantitative Poverty Appraisal*, Dehli: Permanent Black.

Kanbur R. and P. Shaffer (2007), Epistimology, Normative Theory and Poverty Analysis: Implications for Q-squared in Practice, *World Development* Vol 35, No 2

Kohler H.P. and Thornton R. (2010), *Conditional Cash Transfers and HIV Prevention: Unconditionally Promising?,* mimeo, University of Michigan.

Leigh A., Jencks C. and T. Smeeding (2009), "Health and Economic Inequality" in *The Oxford Handbook of Economic Inequality,* Oxford University Press

Lederman D., Loayza N. and A. Menéndez (2002), "Violent crime: Does Social Capital Matter?" in *Economic Development and Cultural Change* Vol 50 No 3

Nugent J. (1985) 'The Old Age Security Motive for Fertility', *Population and Development Review*, 11, 1, 75-97

Pronyk P., Harpham T., Morison L., Hargreaves J., Kim J., Phetla G, Watts C., and J. Porter (2008), "Is Social Capital Associated with HIV Risk in Rural South Africa?" in *Social Science and Medicine* vol 66 issue 9

Rodrik D. (2009), "The New Development Economics: We shall Experiment but How Shall We Learn? In *What Works in Development? Thinking Big and Thinking Small,* ed. Cohen J. and W. Easterly, Washington D.C.: Brookings Institution Press

Sen A. (2009), "Capitalism Beyond the Crisis" in *The New York Review of Books,* 26 March 2009

Soares R. and J. Naritomi (2010), "Understanding High Crime Rates in Latin America: The Role of Social and Policy Factors" in Di Tela R., Edwards S. and E. Schargrodsky eds., *The Economics of Crime: Lessons for and from Latin America,* University of Chicago Press

Stewart F. ed. (2008), *Horizontal Inequality and Conflict,* New York: Palgrave

Wilkinson R. and K. Picket (2009), *The Spirit Level,* New York: Bloomsbury Press

World Bank (2011), *World Development Report – Conflict, Security and Development,* The World Bank

Paper 1

LATIN AMERICAN CRIME AND THE ISSUE OF INEQUALITY[*]

Göran Holmqvist

I. INTRODUCTION: CRIME AS A STRATEGIC DEVELOPMENT ISSUE IN LATIN AMERICA[1]

Crime is an increasingly worrying social phenomenon in the developing world in general, and in Latin America in particular. As shown in Figure 1[‡], the crime rate (measured by homicide/100 000, as reported to the UN crime surveys by national police authorities) has virtually exploded since mid 1980s in Latin America, Sub-Saharan Africa and Eastern Europe. Latin America clearly stands out as an exceptional case. Annually in Latin America, approximately 140 000 people are murdered (Londoño and Guerrero 1999:27). Using other sources does not really change this picture. Figure 2 confirms the exceptional position of Latin America, where the source in mortality statistics is collected from national health authorities instead of the police. Indicators of crime other than homicide are less reliable for international comparison, but estimates point in the direction of Latin America being way above the average for any other region of the world (Bourguignon 1999, Table 1). It has been estimated that 28 million Latin American families are victims of theft or robbery every year (Londoño and Guerrero 1999:3).

Crime and violence are now viewed as a development issue of importance, which was probably not the case two decades ago. Development agencies such as the World Bank and Inter-American Development Bank (IDB) have quite recently initiated ambitious research projects on crime and violence. Projects directed to the judicial system or police authorities have increased their share in the project portfolio of multilateral as well as bilateral development cooperation agencies. More importantly, crime is becoming a major concern in the daily life of an

---

‡ Editor's Note: All tables and figures are located at the end of the article.

increasing number of citizens in the developing world, manifesting itself in national political agendas, in higher crime related expenditures and, not the least, in human suffering.

There are several reasons to regard crime as a social phenomenon with strong and complex ties to the development process in general. In Latin America, crime is a potential threat to what most people would regard as encouraging development trends, especially after "the lost decade" of the 1980s, in terms of democratization and resumed growth. The following examples may illustrate how continuous progress in these areas is being made more difficult by the increasing crime levels:

Crime and Political Development

In El Salvador, concern over violence and crime is becoming the number one electoral issue as reflected in public opinion polls, replacing economic issues and peace (IUOP 1998:4). Similar trends have been noted in the opinion polls in other countries (Londoño and Guerrero 1999:6). For obvious reasons this is likely to affect the political agenda as well as the choice of candidates, paving the way for populism and "strong men". In the news media one often reads about the resurgence of a phenomenon that resembles the death squads of the 1980s, but only now under the banner of 'social cleansing' (*limpieza social)* with delinquents as their major target rather than political opponents – Guatemala, El Salvador, Brazil, Colombia are some examples. Public opinion polls indicate that an alarmingly large portion of the population in crime stricken urban areas under some circumstances justify social cleansing and the use of torture by the police (Loñdono and Guerrero 1999:36)[2]. Reports from offices of the Human Rights Ombudsman reveal that one of the most important categories of abuse stems from charges made by victims of crime, or victims of abuse by the police or the judiciary when dealing with crime. In Honduras, the army on several occasions has been called out to the streets to assist the police in crime prevention, while the process of "demilitarization" of the police forces has been affected by delays. All these examples illustrate how crime is a potential obstacle to good governance, rule of law, less authoritarian rule, respect for human rights and a modernized role of the military forces.

Crime and Economic Development

Crime is costly. A number of attempts have been made to estimate the cost of crime and violence in relation to GDP, involving a series of difficulties in terms of concepts and data. Table 1 shows a "best estimate" made in a research project on violence in Latin America funded by the IDB. The cost of violence in urban areas is estimated to be approximately 14 percent of urban GDP. About half of this amount

is categorized as "intangibles", estimated from willingness to pay studies. (The study is not explicit about how the risk of double-counting is avoided when mixing estimates based on direct costs and estimates based on willingness to pay). El Salvador and Colombia stand out with costs estimated at 25 percent of GDP. In Mexico and Brazil (comprising more than half of the population of the continent), the estimate is approximately 10 percent of GDP. The difficulties in setting these kinds of monetary price tags on the effects of violence should of course be recognized[3], and the figures are therefore to be interpreted with care. However, there is no doubt that crime and violence are costly, both in terms of human suffering, as well as in terms of economic resources that are diverted from alternative uses.

II. EXPLAINING VARIATIONS IN AGGREGATED CRIME RATES: A SELECTIVE OVERVIEW OF CRIME RESEARCH

What does contemporary research tell us about the factors behind the variations in crime rates between different societies? There exists a long tradition of research on crime applied primarily to the developed nations, with contributions from disciplines such as criminology, sociology, economics, public health, psychology, political sciences and anthropology. A substantial share of these studies aims at identifying factors explaining variations in aggregated crime rates, with aggregates varying from communities to nations. Different disciplines have produced results within this field, but often with different theoretical approaches and interpretations. The following is a stylized overview (without any claims of being exhaustive):

Economics of Crime

The "economics of crime approach" dates back to the 1960s. The economics of crime model, in its most orthodox version, portrays criminals as rational agents who are able to weigh the expected return from criminal behavior against the risk and cost of getting caught, plus the forgone opportunity earnings of legal activity. Based on these assumptions of rational behavior econometric models are specified, typically involving indicators such as policing (indicating risk of getting caught), punishment (the cost of getting caught), education level, poverty and income inequality (reflecting earnings of alternative legal activity and availability of opportunities for crime). One of the earliest contributions in the economics of crime tradition is Becker (1968). Excellent overviews are found in Eide (1997) and Glaeser (1999).

Public Health

Analysis of variations in mortality causes – over time or between aggregations such as communities, socioeconomic groups or nations – has a long history in the health sciences. Homicide is often analyzed as just one of the several mortality causes to be explained, which is a distinguishing trait of the public health approach. Explanatory factors that are studied are numerous, but typically include socioeconomic factors (poverty, inequality, etc), life styles and demographic indicators. An interesting result in the various studies is that homicide is often found to be related to explanatory factors in the same way as several others, less abnormal, mortality categories. Examples of contributions in the public health tradition are Wilkinson (1996), Kennedy (1998) and Lynch (1997).

Criminology

Criminologists obviously have the longest history and the widest spectra of approaches in crime research. The sociology of crime is a sub discipline in which the variations of crime rates in the U.S. have been intensely studied; paying attention to such explanatory factors as poverty, inequality, unemployment, age structure, race, fire arm availability, divorce rates and socioeconomic segregation. One of the earliest contributions to the sociology of crime tradition is Shaw and McKay (1942). Examples of more recent contributions are Hagan (1995), Sampson (1997) and Kovandzic (1998).

Anthropology

Anthropologists have written some of the more interesting recent case studies on crime in Latin America. Their method is inductive, producing in depth analyses of the social interaction within crime stricken communities or youth gangs. These studies frequently use the concept of social capital or related concepts. Examples relevant to Latin America and the Caribbean are found in Moser (1999).

Political Science / Peace Research

Some of the most crime stricken countries in Latin America and elsewhere have been, or still are, subject to domestic armed conflicts (Guatemala, El Salvador, Colombia, Nicaragua, South Africa). For political scientists studying armed conflicts and peace processes, the continuation of expressions of violence after peace has been settled are subject to increased attention. Some examples relevant to the Central American peace processes are found in Fundación Arias (1994a; 1994b), Cuadra Lira et al. al. (1998) and Salomon (1999).

It is obvious from above that researchers from various disciplines are fishing

in the same waters. When doing regression analyses (at least economists, criminologists and health scientists make frequent use of this method) they tend to end up with the same indicators, but often with different theoretical motivations. However, a general impression after having reviewed some of this literature is that the cross-fertilization between the different disciplines is quite limited. When glancing through the references in an article on homicide rates in the journal *Criminology* one finds very few references to *American Journal of Public Health*, where a rich body of research has been presented on the same or closely related topics. If an economist discusses the issue of crime and inequality, references to Gary Becker (1968) are almost obligatory while the contribution by Shaw and McKay (1942) on how social disorganization may constitute a link from poverty/inequality to crime is completely overlooked. One would hope that the developing agencies such as the World Bank and IDB would be less inclined to pursue this kind of academic one-eyedness. However, the recently initiated research project by the World Bank does not seem to be very encouraging in this respect.[4] IDB's research project is more open-ended and is an interesting combination of economics of crime and public health (see Londoño and Guerrero 1999).

III. ON SOURCES, COVERAGE AND QUALITY OF CRIME DATA

When trying to explain variations in aggregated crime rates the most common procedure is to apply some variant of regression analysis. It requires comparable statistics on crime variables as well as the explanatory variables within the sample to be studied. Crime statistics are recognized to be full of pitfalls, but the homicide rate is generally thought to be the indicator least influenced by data problems such as underreporting and/or varying definitions of crime. It is hence the most preferred crime indicator especially when dealing with international samples. A substantially higher degree of sophistication is possible in studies of crime variations within nations where data restrictions are less severe.

There are basically three international sources of homicide statistics:

i) *United Nations World Crime Surveys* which is based on police reports throughout the world. Thus far five surveys have been made, presenting data covering the period 1970-94. Its coverage was rather low in the initial surveys but in the 1994 survey approximately 60 countries provided reports on homicide. The indicators are available on the Internet (see references for relevant web-sites).

ii) *INTERPOL* has gathered crime statistics from police authorities since the early 1970s. INTERPOL simply publishes the forms as they have been

filled in at the national level, without analysis or data screening (but with the warning that the data does not permit inter-country comparisons). Its coverage is more complete and up-dated than the UN surveys. The latest survey year at this point in time is 1997, and includes indicators for 110 countries.

iii) *WHO's World Health Statistics Annual* includes homicide as one of the mortality causes. Unfortunately WHO's coverage is low. However, the good news is that Latin America seems to be something of a leader in the developing world when it comes to presenting comparable mortality statistics (data is assembled by the *Pan American Health Organization*, PAHO, which is WHO's branch in Latin America). Indicators of "mortality caused by homicide" are available for some 22 Latin American and Caribbean countries for at least one year in the 1990s.

The fact that data emanates from different source opens up the possibility to check for quality. Doing so one finds individual cases where the homicide indicator varies considerably depending on the source. In particular, the statistics from INTERPOL need careful data screening (Neapolitan 1996). However, taken as a whole the picture is not that discouraging. The general pattern in terms of international variations in homicide rates is confirmed by two independent sources (Newman 1999:13)[5] .

IV. RESULTS FROM STUDIES APPLYING REGRESSION ANALYSIS

Table 2 summarizes the results from a selection of studies; most of them made during the last five years. Coverage is by no means claimed to be complete. The studies that have used regression analysis to explain variation in crime rates are so numerous that it is impossible to be comprehensive. In particular, studies on crime variation in the U.S are so numerous that only a selection of studies has been included.

The table gives rise to the following comments and reflections:

i) One of the indicators that is most consistently presented as significantly related to crime is income inequality – most often measured by the GINI index. This relationship is repeated in studies based on national as well as international samples. The relationship has remained robust even when control variables such as poverty, GNP/capita, household size; age structure and race have been included. In fact, among the cross-country studies in Table 2, income inequality is the only variable that consistently shows up as significant. Examples of variables found to be non-significant or not robust

in several international studies are demographic indicators (age structure, urbanization, population growth), education, and ethnic heterogeneity.

ii) Indicators of "social capital" or "social disorganization" such as trust, norms and civic behavior (more about social capital below) have been found to be significant determinants of crime in a number of studies based on national samples (U.S. UK, Russia, Colombia). However, it has not been possible to identify any study on international variations in crime where social capital indicators have been used.

iii) There is no striking pattern of inconsistencies between results from studies using national samples and studies based on international samples.

A review of studies conducted earlier than those summarized in Table 2 is found in Hsieh and Pugh (1993), which is a meta-analysis made of 34 studies that have related crime to poverty and inequality indicators (national as well as international samples). Of the 34 studies, practically all found a positive correlation between crime and poverty and inequality; with approximately 80 percent being of at least moderate strength (i.e. correlation >0.25).

None of the explanatory variables in Table 2 distinguish Latin America to the same extent as the measures of income inequality. Figure 3 illustrates the position of Latin America with regard to the inequality-crime link. A substantial share of the countries of the continent is located in the upper left part of the diagram. Furthermore, in Latin America there has been a sharp increase in crime since the early 1980s, while the income distribution line has changed its course in the same direction (see Londoño and Guerrero 1999 [chart 1.3]; and Londoño and Székely 1997:36). Together, it could be taken as an argument in favor of regarding inequality as *the* factor behind both Latin America's exceptional crime rate, *and* its recent increase. However, these correlations do also give rise to methodological headaches. If the international variation in crime to a large extent is a Latin American phenomenon, then any variable that is distinguishing for Latin America might do part of the explanatory job. In fact, introducing a dummy for Latin America, which is done in the cross-section regressions in Faynzylber (1998) and Neapolitan (1994), substantially reduces the significance of inequality as an explanatory variable. For instance, Latin America might also be described as an exceptional case in terms of alcohol consumption and problems of mental health (Londoño and Guerrero 1999:31). Or in terms of a culture of "machismo" combined with a peculiar history of conquest, "caudillos" and oppressed indigenous populations (as argued in Neapolitan 1994). All of this may be related to the social structure that is captured by the inequality indicator, but not necessarily so. A similar kind of concern may be raised over the Latin American crime-inequality

correlation over time; the GINI-coefficient and the crime rate are far from being the only variables in Latin America that changed their course in the early 1980s.

This methodological complication resembles the difficulties (and lengthy debates) one encounters in the U.S. – only studies over the issues of "race" and "southern states" (both variables highly correlated with inequality and crime). There are of course statistical techniques to deal with both these methodological problems. The trouble, however, is that it demands a higher degree of technical sophistication that in turn might require a quantity and quality of data that is not available.

Having made this reservation concerning the difficulties in interpreting the results, I now move on to the subject in the rest of this paper: how to understand the link between crime and inequality.

V. UNDERSTANDING THE INEQUALITY-CRIME LINK

If the evidence leads us to believe (with some reservations) in a strong link between inequality and crime, how is such a link to be understood? This question, it turns out, contains far more intellectual stimuli than a newcomer to crime research would expect. It seems as if each discipline has its favorite interpretation, influenced by specific theoretical assumptions but still based on a rather thin layer of empirical evidence. Reviewing some of the literature leads to the following list of broad categories of interpretations (see Figure 4 for an overview):

i)   *Economics of crime*. Income inequality may indicate that "crime is a comparatively rewarding activity for the very low income groups who may find a lot to steal from the rich" (Eidie 1997:10). Building models with optimizing agents and differentiating with regard to income or wealth of different income groups, reveals that link from inequality to crime may not be this straightforward (see Deutsch 1992 and Bourguignon 1999). However, the basic "economics of crime" interpretation remains the same in the sense that the link from inequality to crime is intermediated through individuals' perceptions of economic incentives. All economists are of course not fully orthodox in this sense. Some of them permit an "envy effect" in their models in addition to the economic incentives, in which case inequality may also have an impact on crime by reducing "the individual's moral threshold" (see for instance Fajnzylber 1999:8). However, in general economists also recognize that the economics of crime approach has tended to disregard issues relating to the social formation of norms and values[6].

ii) *Political economy.* A second interpretation, put forward by economists as well as health scientists, is that inequality may be a determinant of the way the public sector is able to prevent or cope with crime. One line of thinking involves the role of deterrence and public police forces. In an unequal society the rich are less interested in paying taxes for public police protection as they can buy the same protection at a lower price on the private market. Under certain "political economy" assumptions this will affect the efficiency of public crime deterrence (Bourguignon 1999). If we add to this argument the idea that private crime deterrence – armed guards in front of the houses of the rich as is seen throughout Latin America today – might have an escalating effect on the level of violence in a society, then the argument becomes even stronger (the latter argument is not put forward by Bourguignon). The corresponding public health argument is that a society which is unequal in income is probably also more unequal in access to public social services that may help to prevent crime, and less likely to intervene to assist certain high risk groups (Lynch 1997 reviews these arguments). In both cases, whether the link is public deterrence or social services, "the way the public sector works" lies on the causal pathway from inequality to crime.

iii) An argument against this line of interpretation is that when studies are made to assess the impact of public sector action on crime (or on health in general), it is either difficult to establish these effects or the magnitudes are too small. Wilkinson (1996:2) argues along these lines when it comes to the role of the social sectors. Glaeser gives account for the difficulties in empirically verifying the link "more police/punishment-less crime" (Glaeser 1999:11). An open question is of course whether this is mainly a problem of reversed causality (i.e. the policy response to reduce crime is stimulated by an increase in crime, so the causal relation is obscured when statistical relations are sought). A related issue that is subject to empirical studies is the social distribution of crime victims. A recent study commissioned by the IDB concludes that in Latin America's wealthier individuals are more likely to become victims of crime, indicating a limited effectiveness of private protection measures (Gaviria and Pages 1999).

iv) *Social Capital.* As can be seen in Table 2 there exist a number of studies that have identified "social capital" indicators (or indicators of "social disorganization") as explanatory variables of crime. The concept of "social capital" is today in frequent use within different disciplines, sometimes overlapping with previously existing concepts and theories. However, a

stringent and generally accepted definition is apparently lacking (see for instance Edwards 1997; Paldam 1998; Social Capital web site of The World Bank).[7] Here we will sidestep the conceptual difficulties and simply use "social capital" as an elastic umbrella that covers a family of related ideas. Examples of social capital related indicators that have been used in crime research are trust, participation in voluntary organizations and friendship networks, the existence of norms and the readiness to enforce them. They are most commonly elaborated from surveys where respondents have to answer questions such as "Do you believe that people in general are to be trusted?" or "Do you participate in any of the organizations on the following list?"

Among the studies in Table 2 there are couples (all of them made on national samples) that claim that the link from inequality to crime is intermediated through social capital. Inequality, it is argued, undermines trust and broad-based participation in voluntary organizations, readiness to make sacrifices for the common good, social cohesion etc. Concerning the mechanism leading from this to crime, at least two alternatives are present in the literature. One has to do with the establishment of *norms and efficacy of collective action*. In a community with low social capital people are less likely to establish joint norms (which is facilitated by social interaction and trust), to intervene against juvenile delinquents or to organize themselves in support of action by the police or social workers (Kennedy 1998a; Sampson 1997). Long before social capital become a fashionable concept criminologists have used "theories of social disorganization" to tell stories that essentially follow this line of argument (see Kovandzic 1998 for a synthesized overview).

Another line of reasoning is that the link from social capital to crime is intermediated through *psychosocial factors* at the individual level. Social capital is not only related to mortality due to homicide, but to a number of other mortality categories and health indicators as well (Kawachi/Kennedy 1997 and Kawachi/Kennedy 1999). Erosion of social capital may increase the level of isolation, stress, insecurity and anxiety and increase the frequency of homicide just as it seems to increase the risk of heart disease or car accidents (where norms and collective action is less likely to be the key issue). Arguments along these lines are to be found in, for instance, Wilkinson 1996.

v)   A difficulty with the hypothesis of an "inequality-social capital-crime" link are the observations (made for instance by anthropologists, Moser 1999) of a reversed causal link from crime to destruction or distortion of social capital. If this is a strong effect, there is a potential problem of reversed causality that would require more sophisticated treatment in a regression analysis. None of the studies on crime and social capital cited above have explicitly brought the reversed causality issue into their models.

vi)   *Inequality interacting with norms.* A variant of the social capital interpretation is that inequality is interacting with, rather than causing, certain norms and values. In Krahn (1986), it is argued that the inequality-crime link is likely to exist primarily among nations with more egalitarian value systems. He provides some preliminary empirical evidence by dividing his sample (cross-country, INTERPOL data) into two shares with respect to a political democracy index, showing a much stronger inequality-crime link among nations that score highly on the democracy index. Hence, the argument here is not that the inequality-crime link is intermediated through certain variables reflecting norms, but that it is the coexistence of inequality with these norms that is crime producing.

vii) *A non-issue explained by confounding factors.* Another way of understanding the inequality-crime link is to claim that the link is either spurious or in some other way explained by confounding factors. The race issue, "southern states", age structure and poverty have all surfaced as potential confounding factors in the debate over US crime. As seen from above "being a Latin American country" has the potential of becoming a similar confounding factor when dealing with international samples. Another confounding factor could be that inequality and potential crime-producing factors – such as urban growth and rapid modernization of social and economic relations – tend to coexist in a specific stage of the development process, without inequality directly causing crime (this would be a sort of a "Kuznetz curve" argument). All of this can be resolved in principle; it boils down to having the appropriate control variables in your regressions to eschew that the link inequality-crime reflects issues we are not primarily interested in. However, with data availability being a restriction and the underlying theories not that firm, there are no guarantees that full clarification will be achieved.

There seems to be a fair degree of reasonableness in all of the five categories of interpretations listed above. In principle, they are all open to empirical testing. However, surprisingly little empirical work seems to have been done to confirm or

reject these hypotheses. An exception is Kennedy (1998a). This study, which has U.S. states as the sampling unit, shows firstly that income inequality is strongly associated with levels of social trust and group membership, and secondly that inequality (as well as trust and group membership) is strongly associated with crime. A statistical method of "path analysis" (based on Alwin 1975) is applied which in essence suggests that the indirect effect of inequality on crime – i.e. the effect that works via "social capital" – is stronger than the direct effect from inequality to crime. They concluded that social capital is an important intermediating variable from inequality to crime.

A similar kind of path analysis is applied in Sampson (1989 and 1997), but in this case to demonstrate how socioeconomic status, residential mobility and some other "exogenous" variables are intermediated to crime through indicators reflecting "social disorganization" (the issue of inequality is not explicitly dealt with). Sampling units of these two studies are UK communities and communities in the Chicago area, and intervening social disorganization are indicators such as "access to local friendship networks", "organizational participation" and the "degree to which the youth is being supervised". Sampson's conclusion is in essence that the link from the exogenous variables to crime is intermediated through "social disorganization". Veysey (1999) reviews Sampson's 1989 findings and comes up with a somewhat modified interpretation saying that socioeconomic indicators and social disorganization indicators have strong independent effects as well.

Among the studies using international samples there are few examples where attempts are made to verify the intermediating link from inequality to crime. The study by Krahn (1986) mentioned earlier is to some extent an exception. In a very recent contribution (Fajnzylber 1999), alternative interpretations of the inequality-crime link are tested in a 45-country panel data sample. It concludes that straight income inequality, measured by the gini index, has a robust and significant effect on violent crime. None of their competing hypotheses for the observed connection between inequality and crime (relative poverty, education inequality, income or ethnic polarization, and unfair distribution of police and justice protection) are able to drive away such connection.

Our understanding of the inequality crime link is of course not just an issue of academic controversy. A thorough understanding of the character of that link could provide important keys to the handling of a serious development issue. The interpretations reviewed above do in fact point in different directions with regard to anti-crime policies.

VI. DISENTANGLING THE INEQUALITY-CRIME LINK: SOME PRELIMINARY FINDINGS

As mentioned above, the same inequality-crime link is established within various academic disciplines but understood in the light of different theories. The ideal way of resolving the issue would be through an interdisciplinary approach where ways are sought to test these different theories against each other, or to make them work in conjunction. Such a full-fledged empirical analysis is simply beyond the scope of this paper – and possibly also beyond reach due to data restrictions, at least in cross-country studies. However, an attempt is made below to shed some additional light on the inequality-crime link by experimenting with some "new" indicators, which to the knowledge of the author, have not thus far been used in international samples. The results are to be interpreted as preliminary and as ideas for future research, rather than final evidence on the subject matter.

The analysis is limited to a regression analysis at cross-country level. The availability of social capital related indicators at country level, which are necessary to test some of the theories presented above, constitutes a severe sample restriction. Indicators have been elaborated from the World Value Survey (Inglehart 1998) which includes a wealth of social capital related indicators for approximately 40 nations. These nations constitute our sample. It includes 4 Latin American nations (Mexico, Brazil, Chile and Argentine), 2 African, 3 Asian, 11 Eastern European/Central Asian and 19 high-income nations.

The dependant variable is the $\log^8$ of committed intentional homicides per 100 000, averages for the 1990s. My first hand data source on homicide is the UN Crime Survey. Where UN data is found missing/lacking, I make use of the INTERPOL data (if at least three reliable[9] data points are available for the 90s). When neither UN nor INTERPOL data was available, the WHO data has been used[‡]. In this way, it is possible to arrive at a homicide indicator for 38 of the 40 nations in the World Value Survey.

The independent variables are listed below. The heading "traditional variables" includes most of the variables found to be significantly related to homicide in at least some of the cross-country studies reported in Table 2. We have also added some demographic variables. Under the heading "social capital related indicators" variables are found that possibly could reflect the different pathways proposed by theories claiming that social capital is an intermediating link from inequality to crime[10]. Interaction variables between these variables and the GINI-index (i.e. GINI*DISCONTENT etc.) are also included to reflect the Krahn (1986) hypothesis that the inequality-crime link is reinforced, rather than causally

---

‡ Data sets and detailed regression results are available from the author on request

intermediated, by variables reflecting norms and values. All variables are for the 1990s (for sources and comments to the indicators see annex 1)[11]:

Traditional variables:

GINI	measure of income inequality
GNPc	gross national product per capita at purchasing parity prices
URBANIZATION	% living in urban areas
YOUNG	% of population below age of 15
POPGROWTH	population growth 1970-95
URBGROWTH	growth of urban population 1970-95
POVERTY	% of population below 2 USD/day

Social capital related variables:

TRUST	% respondents that believe "most people can be trusted"
NORMS	Strength of norms: Average of % respondents stating that it is never justified to "claim a government benefit you are not entitled to", "avoid fare on public transport", "cheat on taxes", "buy stolen goods", "accept bribes"
FEELOK	Average of % describing their "state of health as very good" and that in general "they are satisfied with their lives".
CONFIDENCE	Confidence: Average of % stating they have a great deal of confidence in parliament, civil service, legal system and the police.
DISCONTENT	Political discontent: Average of % stating that "there is injustice in our society" and "society must be radically changed"
GINI*DISC	GINI multiplied by DISCONTENT
GINI*TRUST	GINI multiplied by (100 minus TRUST)
GINI*NORMS	GINI multiplied by (100 minus NORMS)
GINI*CONF	GINI multiplied by (100 minus CONFIDENCE)

The experiment is conducted in two steps. First the computer is loaded with the traditional indicators. I then prompt the computer to select the combination of variables that maximize the significance of the regression[12]. I then add the "social capital related variables" and repeat the experiment allowing the computer choose its favorite model specification. It is recognized that this is an untheoretical way of model specification. However, as there are at least five different theories at stake it is not too obvious what the theoretically correct model specification would look like. The procedure may be justified as a way of spotting variables one should

include in future research efforts.

Experiment 1:

	VARIABLES SELECTED BY THE COMPUTER		ADJUSTED R^2	F-VALUE
	GINI	GNPc	0.31	9.6
Coefficient	0.017	-0.00019		
Significance[13]	0.010	0.013		

Variables dropped by the computer:
POVERTY, YOUNG, URBANIZATION, URBGROWTH, POPGROWTH
Sample: N=38
Dependant variable: HOMICIDE/100.000 (log)

The result of experiment 1 is not at odds with the results of previous cross-country studies presented in Table 2, where the GINI repeatedly shows up as closely related to homicide. The GINI-variable remains significant together with either GNPc or POVERTY (or both), indicating that the inequality-crime link does have something to do with relative, rather than absolute, levels of income. The demographic variables seem to have a quite limited explanatory force – they have also been tested in this sample one by one and in different constellations. The result was also checked for robustness using regional dummies. [14]

Experiment 2:

	VARIABLES SELECTED BY THE COMPUTER		ADJUSTED R^2	F-VALUE
	GINI*DISC	NORMS	0.52	21.9
Coefficient	0.0008	-0.0100		
Significance	0.000	0.028		

Variables dropped by the computer:
GINI, GNPc, POVERTY, YOUNG, URBANIZATION, URBGROWTH,
POPGROWTH, TRUST, CONFIDENCE, FEELOK, GINI*TRUST, GINI*CONF,
GINI*NORMS
Sample: N=38
Dependant variable: HOMICIDE/100.000 (log)

The experiment 2 completely changes the picture. The computer opts for the variables GINI*DISCONTENT and NORMS and drops all the traditional variables from experiment 1. The share of variation explained rise considerably (R^2 up from 0.31 to 0.52).

Experiment 2 was also made by disaggregating the social capital related variables per income group (introducing an indicator measuring responses in low-income groups only for each of the social capital related variables). The computer then selected GINI*DISCONTENT and "NORMS/LOWINCOME". When the NORMS indicator was divided into its different component ("cheating on taxes", "claiming benefit you are untitled to", "free-riding on public transport", "accept bribe" and "buying of stolen goods", all of them highly correlated), the computer opted for the variables GINI*DISCONTENT and "buying of stolen goods/low income groups" (with R^2 reaching 0.64). The experiment was also repeated without including the interaction variables. The computer then opted for the specification GINI, DISCONTENT and NORMS. When combining the interaction term GINI*DISC with the interacting terms GINI and DISC, the interaction term is the only one that is significant.

The robustness of the results of experiment 2 was checked by introducing regional dummies and excluding outlying values (i.e. South Africa), without changing the computer's selection of variables or affecting their level of significance more than marginally.

The fact that these variables come out so strongly in experiment 2 illustrate the limitations of any crime theories that tend to disregard that human behavior may be strongly influenced by socially determined norms and values[15]. The fact that the interaction variable GINI*DISCONTENT is so strong provides mild support for the Krahn (1986) hypothesis that inequality may be particularly crime producing when interacting with certain values. That the NORMS variable comes out strongly is what the social disorganization theory in criminology essentially would predict (and then particularly NORMS among low-income groups).

When correlating the social capital related variables one by one it can be shown that TRUST is significantly correlated with GINI (Pearson correlation = -0.349), moderately correlated with HOMICIDE (-0.28) and significantly correlated with DISCONTENT (-0.51) and CONFIDENCE (0.54). The FEELOK is significantly correlated with TRUST (0.59), as predicted by some public health theories, but only moderately correlated with homicide (-0.24). This is obviously a group of variables that tend to move together and their multicollinearity makes it difficult to use them in conjunction – the exception is NORMS which by itself is not significantly correlated with any of the other social capital related variables.

There are of course strong reasons to be extremely cautious when

interpreting these results. Firstly, the sample is both small and highly heterogeneous. Secondly, data reliability and validity are far from ideal. Doubts can of course be expressed over what is really measured when people from different cultures are asked questions whether they trust people in general or have confidence in the civil service. Thirdly, and probably most importantly, the regressions have been made without dealing with the issue of causality directions (from dependant to independent variables, and among the dependant variables). Norms and values may of course cause crime, as well as being caused by it.

Over the coming decade, it is likely that these issues might come closer to being resolved, and that we will see studies based on international samples reproducing some of the results established in national samples using social capital related variables – possibly also using panel data analysis, as the World Value Surveys are being up-dated continuously, with improved coverage). As data becomes available for more Latin American nations it will also be possible to come to a closer understanding of what accounts for the extreme position of Latin America in terms of crime, and for the variations in crime rates within the region. The experiments above have possibly identified some of the candidates to be tested more rigorously in the future as data availability improves. It also indicates what is being missed when running cross-country regressions using only the "traditional" variables.

VII. CONCLUDING REMARKS

i)   Crime is a salient development issue with complex ties to the development process in general. It merits a greater degree of attention considering the proportions it has taken, particularly in Latin America.

ii)   Evidence of a strong inequality-crime link abounds and is further confirmed in this paper. The link remains robust together with a large number of control variables and in different samples. Based on empirical evidence, one may argue that crime should be added to the list of costs to be paid by unequal societies.

iii)   Understanding the inequality-crime link is challenging. Different disciplines have tended to interpret this link in the light of their dominating theories. This paper has categorized these interpretations as "economics of crime", "political economy" (via public deterrence or via social sectors), "social capital" (via norms and collective action, via psychosocial health or as interaction) and "confounding factors". Empirical evidence of these

interpretations is still relatively weak. This is especially the case for the inequality-crime link that is to be found between nations.

iv)　　"Social capital related" indicators have been identified as significant explanatory factors to crime in national based studies, but have thus far not been used in studies on international variations in crime rates (to the knowledge of the author). Some experiments are made in this paper showing that these indicators merit being included in future research on cross-country variations of crime rates.

v)　　An interdisciplinary approach is warranted, considering that parallel results are being produced by different disciplines while competing theories exist on how to interpret the empirical evidence.

Table 1 - The Cost of Urban Crime in Latin America (% urban GDP)

Cost category	% of urban GDP
A. Costs related to health (health treatment and loss of "quality adjusted years of life")	1.9
B. Material losses (police, justice system, private protection)	3.0
C. Intangibles (estimated from willingness to pay for "living without violence")	7.1
D. Transfers (property being transferred from one person to another due to crime)	2.1
E. Total (average for the continent)	14.2
Estimates for individual countries:	
El Salvador	24.9
Colombia	24.7
Venezuela	11.8
Brazil	10.5
Peru	5.1
Mexico	12.3

Source: Londoño/Guerrero 1999, pp 22-26

Table 2 – Factors Explaining National and International Variations in Homicide. Summary of Results

STUDY	DEPENDENT VARIABLE	EXPLANATORY VARIABLE REPORTED AS SIGNIFICANT	EXPLANATORY VARIABLE NOT SIGNIFICANT OR NOT ROBUST	SAMPLE
A. International Samples:				
Fainzylber 1998 (1)	Homicide (log) (UNICJ+PAHO)	Inequality (log gini) Drug producers GDP growth rate lagged homicide (i.e. crime inertia). Police and conviction rate	Education (partially) GNP/capita Urbanization rate	68 countries 1970-94 Panel data
Fainzylber 1998 (2)	Homicide (log) (UNICJ+PAHO)	Inequality (log gini) Drug producers	Education GNP/capita Urbanization Death penalty Ethnic fractionalization Police and conviction rate Age structure Alcohol/firearms	62 countries Cross-country OLS
Londoño 1999 (1)	Homicide (PAHO)	Inequality (gini) poverty		17 countries 1970-95 panel data Latin America only
Londoño 1999 (2)	Homicide (PAHO)	GNP/cap "education gap" inequality (gini) GNP/cap		17 countries cross-country Latin America only
Neapolitan 1994	Homicide (log) (INTERPOL WHO data also tested with similar results)	Inequality (gini) Latin America-dummy	GDP/capita Population density Urbanization Age structure	118 countries cross-section
Neapolitan 1998	Homicide (log) INTERPOL	Inequality (gini)	GNP/capita. Race Ethnic heterogeneity Mean household size. Urbanization Age structure	118 countries cross-section

Table 2 – Factors Explaining National and International Variations in Homicide. Summary of Results

…Continued

STUDY	DEPENDENT VARIABLE	EXPLANATORY VARIABLE REPORTED AS SIGNIFICANT	EXPLANATORY VARIABLE NOT SIGNIFICANT OR NOT ROBUST	SAMPLE
Krahn 1986	Homicide (log) cross-section	Inequality (log gini) (INTERPOL) Democracy index	GDP/capita Population growth Population density Ethnic fractionalism Defence expenditure	65 countries
B. NATIONAL SAMPLES:				
Ousey 1999	Homicide	Race. Inequality. Poverty	(Homicide disaggregated for black/white offenders. Inequality, unemployment)	US, 125 cities
		Unemployment. Female-headed household. Age structure	Female household and age not significant for black homicide	
Veysey 1999	Homicide	Social disorganization indicators. Family disruption. Urbanization Socioeconomic status	Residential stability	England/Wales 238 communities (based on Sampson 1989)
Landmann 1999	Homicide	Inequality (diff. Measures). Demographic density	Median income. Poverty. Illiteracy	Brazil, 70 sub regions of the state of Rio de Janeiro
Kennedy et al 1998a	Homicide	Inequality (Robin Hood index). Trust. Group membership (age, race, poverty, firearm availability controlled for)		US states

Table 2 – Factors Explaining National and International Variations in Homicide. Summary of Results
…Continued

STUDY	DEPENDENT VARIABLE	EXPLANATORY VARIABLE REPORTED AS SIGNIFICANT	EXPLANATORY VARIABLE NOT SIGNIFICANT OR NOT ROBUST	SAMPLE
Kovandzic 1998	Homicide	Inequality (gini). Poverty. Unemployment. Race Divorce rate	Southern state Percentage young Population density	US, 190 cities
Londoño 1999	Homicide	Social capital		Colombia, regions
Kennedy et al 1998b	Mortality due to external cause	Social capital (income/poverty controlled)		Russia, 40 regions
Sampson et al 1997	Homicide	Collective efficacy (composite of trust, willingness to intervene for public good etc.) Concentrated disadvantage (a composite of indicators as poverty, being unemployed etc.) Residential stability	Immigrant concentration	US, 343 Chicago neighborhoods

Göran Holmqvist
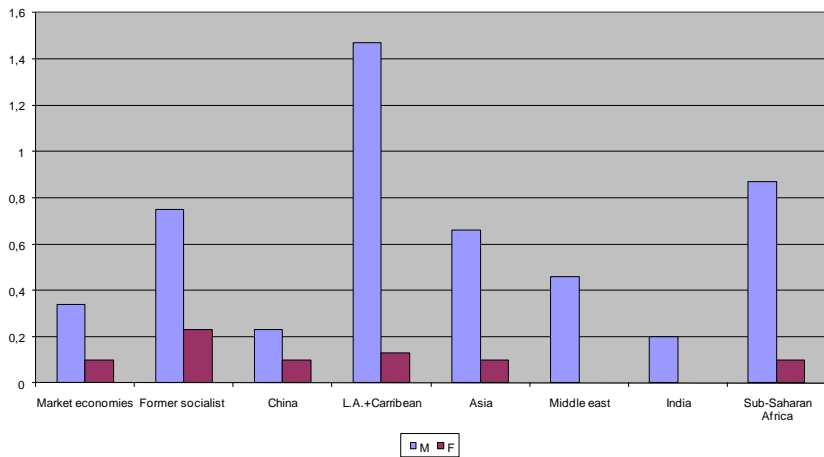
FIGURE 1: MEDIAN HOMICIDE RATES BY REGIONS, 1970-94
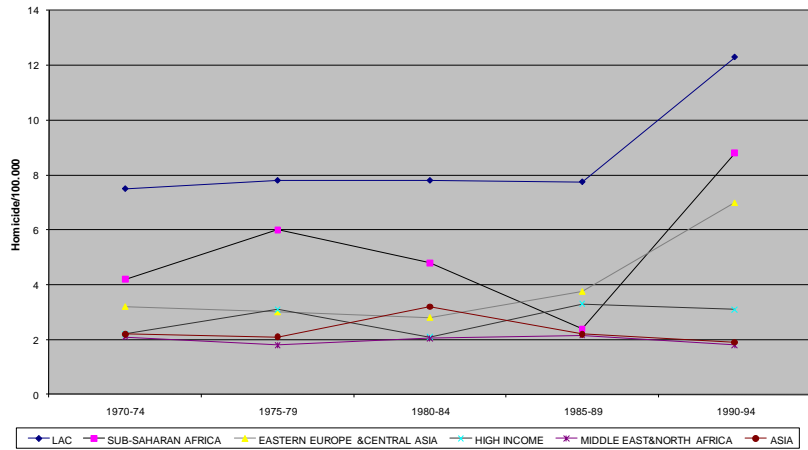
Source: adapted from Fajnzylber 1998 (original source UN crime surveys)

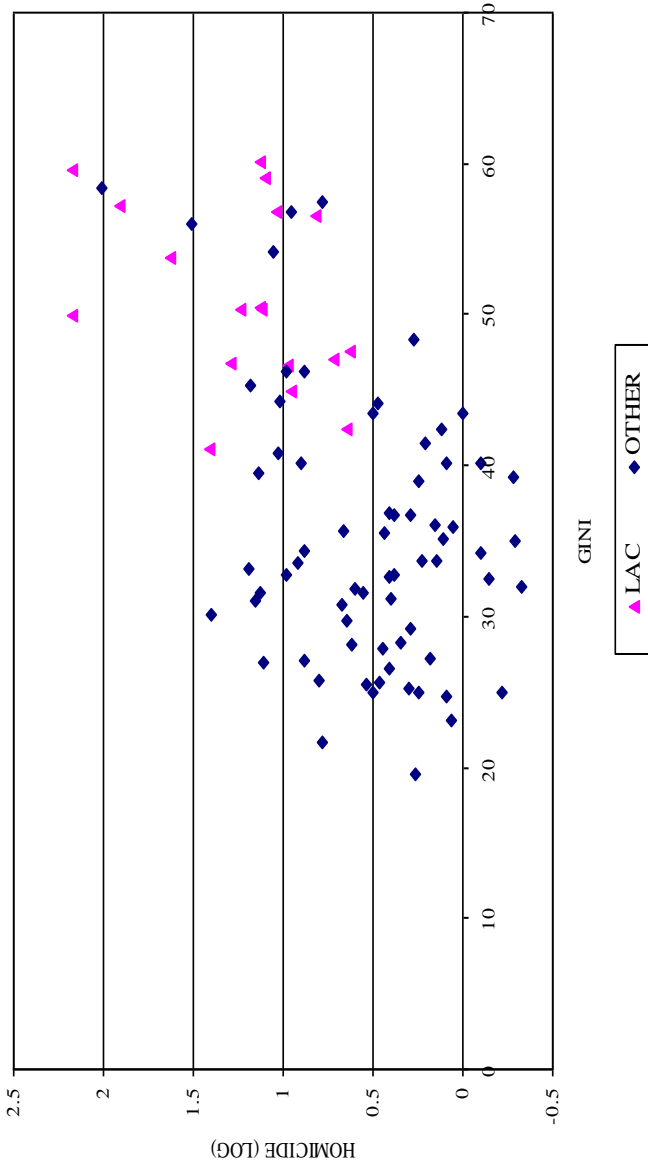**FIGURE 2: PROBABILITY OF DYING (IN %) DUE TO HOMICIDE/VIOLENCE FOR MALES (M) AND FEMALES (F)
BY REGION 1990**

Source: WHO 1994

Figure 3 - Homicide and Inequality, LAC and Other Countries

Source: Homicide: See annex 1 for data sources

DATA SETS AND SOURCES

(Data sets and detailed regression results can be made available from the author on request.)

HOMICIDE

Source: Main source is UN Crime surveys (committed intentional homicide per 100.000). For missing data points use have been made of INTERPOL data when at least three "reliable" data points exist (extreme data variations taken as indicator of data unreliability). When INTERPOL data has not been available WHO data has been added.

GINI

Source: World Bank, World Development Report 1999. Data from the Deninger/Squire data sets added in some cases if categorized as of high quality. Argentina represented with its urban GINI.

GNPc (gross national product per capita at purchasing parity prices, 1997)

Source: World Bank, World Development Report 1999. For some small countries not reported alternative sources have been identified.

URBANIZATION

Source: UNDP Human Development Report

POVERTY (%below 2USD/day)

Source: World Bank, World Development Report 1999. For most developed nations this indicator is not available. Substitution has been made using the value (if positive) predicted by GNPc and GINI. In practical this procedure meant that most developed nations are given a 0% for "population living below 2USD/day".

TRUST (% respondents that believe "most people can be trusted")

Source: Inglehart 1998

NORMS (Strength of norms: Average of % respondents stating that it is never justified to "claim a government benefit you are not entitled to", "avoid fare on public transport", "cheat on taxes", "buy stolen goods", "accept bribe")

Source: Elaborated from Inglehart 1998

FEELOK (Average of % describing their "state of health as very good" and that in general "they are satisfied with their lives".)

Source: Elaborated from Inglehart 1998

CONFIDENCE (Confidence: Average of % stating they have a great deal of confidence in the parliament, civil service, the legal system and the police.)

Source: Elaborated from Inglehart 1998

DISCONTENT (Political discontent: Average of % stating that "there is injustice in our society" and "society must be radically changed")

Source: Elaborated from Inglehart 1998

Figure 4 - Alternative Interpretations of the Inequality-Crime Link
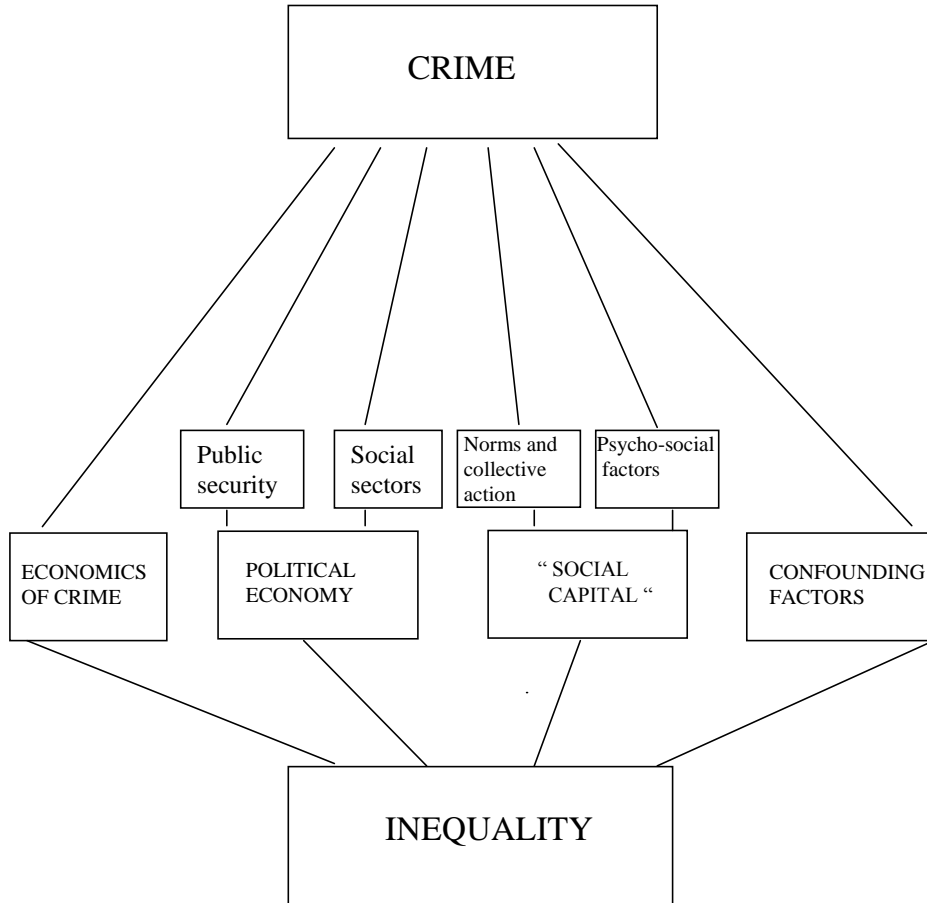
Notes

1   This paper is influenced by research papers focusing either on crime and violence, or both. All crime is not violent (i.e. fraud) and all violence is not regarded as criminal behavior (i.e. certain forms of intra-family violence in some countries). However, the categories crime and violence overlap to a large extent. Hence, quite often what is true about crime is also true about violence, and vice versa. In this paper, it is mainly the term 'crime' that is used, simply because it is short and without any claims to conceptual sophistication. When references are made to research where the main category of analysis has explicitly been stated as violence, rather than crime, the term violence will be used. All indicators of crime that are referred to in this paper fall within the category of "violent crime".

2   63% of respondents in San Salvador, and 73 % of respondents in Caracas approved of social cleansing, or at least in some way found it justified. In Cali, Rio de Janeiro and San José the corresponding figures were 35-40%. Approval of "police torture at least in some cases" ranged from 10 to 18% in these five cities.

3   An alternative estimate is found in Bourguignon 1999. His category of analysis is crime rather than violence and the cost is measured in relation to total rather than urban GDP. His estimate (which is partially based on Loñdono and Guerrero) for the average for Latin America is 9%, including "transfers" (i.e. the monetary amount transferred due to property crime).

4   The World Bank research project on crime, violence and civil wars states already in its initial declaration (see web-site indicated among the references): "We will essentially model an agent's decision to participate in criminal activity or civil wars as the product of a rational cost-benefit analysis. We will consider how a number of variables may affect that calculus and we expect to find that many of these variables are important for both crime and rebellion". The fundamental question whether crime is primarily a product of rational choice *by the* individual or rather a product of aspects related to the social interaction *between* individuals – a question that begs for an empirical answer – seems to be side-stepped by this World Bank project even before initiating the research.

5   The correlation coefficient between WHO and INTERPOL data on homicide rates (after correcting the INTERPOL data for "attempts") has been calculated to 0.87 (R^2) (Lester 1996:14).

6   "In theories of economics of crime, norms are seldom studies, or even mentioned. Preferences as a whole are assumed to be constant, and authors do not find it necessary, or do not feel competent to discuss norms" (Eide 1997:5, in *Encyclopedia of Law and Economics*).

7   The following definition is to be found on the introductory page of the social capital web site of The World Bank: "Social capital is defined as the norms and social relations embedded in the social structures of societies that enable people to coordinate action to achieve desired goals." It illustrates at least three conceptual difficulties. First of all, if the concept is defined by "what it produces" and not by "what it is", then the question "what does social capital produce" becomes a tautology, with risks of falling into circular reasoning. Secondly, it is apparent from the definition above that it describes something

that probably is quite characteristic not only of well functioning and socially unproblematic communities, but also of the Mafia and certain youth gangs. This has led to attempts to distinguish between "perverse" and "non perverse" social capital, and between "distortion" vs. "destruction" of social capital, which opens the door for a new set of conceptual difficulties. A third difficulty lies in drawing the borderline. Should we only include trust at the horizontal level (between neighbor etc), or should we also include something of the vertical level trust, and if so how much (trust in local government, civil servants…).

8   Most studies cited above have used the LOG of homicide as the dependant variable. It can be shown that it makes the regressions "look better". But a theory of why logged values of homicide rates are to be preferred seems to be lacking.

9   Countries with unreasonable inter-year variations in homicide rates indicating unreliability have been excluded. When possible INTERPOL data was adjusted for "attempted homicides".

10   A variable reflecting participation in voluntary organizations should ideally have been included, but this indicator is not available for a substantial group of countries in the World Value Survey.

11   In a few cases, methods for substituting missing data have been used. The poverty indicator is not available for most developed nations. It has been substituted with the value predicted by GINI and GNPc (in practice this meant that most developed nations got 0% of their population below 2 USD/day). The mean substitution was used for a limited number of data points for social capital variables (applied to 2 data points among the social capital related variables on the list above, and for some additional data points when these variables were desegregated).

12   The computer is asked to follow a stepwise procedure whereby variables are entered and removed depending on how they affect the probability of the F-value (SPSS software).

13   if <0.05 significant at 5% level.

14   Introducing a dummy for Eastern Europe made GNPc pass below the significance level, but strengthened the significance of GINI. A Latin America dummy did only marginally affect the level of significance of GINI and GNPc (it shall be kept in mind that the Latin American nations with highest homicide rates are not present in this sample).

15   "Since economists generally have little to contribute, especially in recent times, to the understanding of how preferences are formed, preferences are assumed not to be very different between wealthy and poor persons, or between persons in different societies and cultures" (Becker 1976:5).

References

Alwin, D F and Hauser R M (1975), 'The Decomposition of Effects in Path Analysis'. In *American Sociological Review 40,* pp. 37-47.

Ayres, Robert L (1998), *Crime and Violence as Development Issues in Latin America and the Caribbean*. Washington, D.C.: The World Bank.

Becker, Gary (1968), 'Crime and Punishment: an economic approach'. In *Journal of Political Economy,* 101, pp 385-409.

_____ (1976), *The Economic Approach to Human Behavior*. Chicago: University of Chicago Press

Bourguignon, Francois (1999), *Crime, Violence and Inequitable Development*. Paper prepared for the Annual World Bank Conference on Development Economics, Washington D.C., April 28-30, 1999.

Cuadra Lira, Elvira; Baltodano, Andrés Pérez and Saldomando, Angel (1998), *Orden Social y Gobernabilidad en Nicaragua 1990-96*. Managua: CRIES.

Deutch, Joseph et al (1992), 'Crime and Income Inequality: An Economic Approach'. In *Atlantic Economic Journal,* Vol 20, No. 4, pp. 46-55.

Edwards, Bob and Foley, Michael W. (1997), 'Social Capital and the Political Economy of our Discontent'. In *American Behavioral Scientist*, Vol 40, No 5, pp. 669-678.

Eide, Erling (1997), 'Economics of Criminal Behavior'. In *Encyclopedia of Law and Economics.* Available online: http://www.encyclo.findlay.com/lit/8100art.htm)

Fajnzylber, Pablo, Lederman, Daniel and Loayza, Norman (1998), 'Determinants of Crime Rates in Latin America and the World'. In *Latin American and Caribbean Studies.* (January 11).

_____ (1999), *Inequality and Violent Crime*. World Bank Working Paper. Washington D.C.: The World Bank

Fundación Arias (1994a), *De la Guerra a la Integración: la Transición y Seguridad en Centroamérica*. Fundación Arias.

_____ (1994b), *Desmovilización, Desmilitarización y Democratización en Centroamérica*. Fundación Arias.

Gaviria, Alejandro and Pages, Carmen (1999), *Patterns of Crime Victimization in Latin America.* IDB Working Paper. Washington, D.C.:IDB.

Glaeser E., Edward L. (1999), *An Overview of Crime and Punishment*. Harvard University (draft, downloadable from the World Bank web site).

Hsieh, C.C. and Pugh, M.D. (1993), 'Poverty, income inequality and violent crime: A meta analysis of recent aggregate data studies'. In *Criminal Justice review* 18, pp. 182-202.

IDB working papers on crime and violence in Latin America. Available online: http://www.iadb.org/oce/4.htm

Inglehart, Ronald and Basañez, Miguel (1998), *Human Values and Beliefs: A Cross Cultural Source Book*. Michigan: The University of Michigan Press.

INTERPOL, *International Crime Statistics* (various volumes). Paris.

Instituto Universitario de Opinión Pública (1998), *La Violencia en El Salvador en los Años Noventa – Magnitud, costos y factores posibilitadores*. IDB/Documento de trabajo R-338. IDB:IUOP.

Kaplan, George A. and Pamuk, Elsie (1996), 'Inequality in Income and Mortality in the United States: An Analysis of Mortality and Potential Pathways'. In *British Medical Journal*, Vol. 312, No 7037, pp. 999-2004.

Kawachi, Ichiro and Kennedy, Bruce (1997), 'Social Capital, Income Inequality, and Mortality'. In *American Journal of Public Health,* Vol. 87, No. 9, pp. 1491-99 .

Kennedy, Bruce et al (1998a), 'Social Capital, Income Inequality, and Fire Arm Violent Crime'. In *Social Science Medicine,* Vol. 47, No.1, pp. 7-17.

_____ (1998b), 'The Role of Social Capital in the Russian Mortality Crisis'. In *World Development*, Vol. 26, No. 11, pp. 2029-2043.

Kovandzic et al (1998), 'The Structural Covariates of Urban Homicide: Reassessing the Impact of Income Inequality and Poverty in the Post-Reagan Era'. In *Criminology,* Vol. 36 No. 3, pp. 569-599.

Krahn, Harvey et al (1986), 'Income Inequality and Homicide Rates: Cross-National Data and Criminological Theories'. In *Criminology,* Vol. 24, No. 2, pp. 269-297.

Landmann Szwarcwald, Celia et al (1999), 'Income Inequality and Homicide Rates in Rio de Janeiro, Brazil'. In *American Journal of Public Health*, Vol. 89, No. 6 (June), pp. 845-851.

Lester, David (1996), *Patterns of Suicide and Homicide in the World*. New York: Nova Science Cop.

Londoño, Juan Luis and Székely, Miguel (1997), *Persistent Poverty and excess Inequality – Latin America 1970-95.* Washington, D.C.: IDB.

Londoño, Juan Luis and Guerrero, Rodrigo (1999), *Epidemiología y Costos de la Violencia en América Latina*, Washington, D.C.: IDB.

Lynch, John W, Kaplan, George A. (1997), 'Understanding how inequality in the Distribution of Income Affects Health'. In *Journal of Health Psychology*, Vol. 2 (3), pp. 297-314.

Moser, Caroline and Lister, Sarah (1999), *Violence and Social Capital - Proceedings of the LCSES Seminar Series 1997-98*. Washington, D.C.: The World Bank.

Neapolitan, Jerome L (1994), 'Cross-National Variation in Homicides: The Case of Latin America'. In *International Criminal Justice Review,* Vol. 4, pp. 4-22.

_____ (1998), 'Cross-National Variation in Homicide: Is Race a Factor'. In *Criminology,* Vol. 36, No 1, pp. 139-156.

Newman, Graeme, Ed. (1999), *Global Report on Crime and Justice*. United Nations Office for Drug Control and Crime Prevention.

Ousey, Graham C (1999), 'Homicide, Structural Factors and the Racial Invariance Assumption'. In *Criminology,* Vol. 37, No. 2, pp. 405-426.

Paldam, M. and Tinggaard Svendsen, Gert (1988), *Is Social Capital an Effective Smoke Condenser? An Essay on a Concept Linking the Social Sciences*, Working paper No 1998-8. Aarhus: University of Aarhus/Denmark.

Rubio, Mauricio (1998), *La Violencia en Colombia – Dimensionamiento y Políticas de Control*. Bogotá: CEDE and IDB.

Salomon, Leticia (1999), *La Seguridad Ciudadana en Centroamérica: Un Debate Contemporáneo*. CRIES/Proyecto Regional sobre Gobernabilidad y Seguridad Ciudadana en Centroamérica.

Sampson, Robert J. and Groves, Walter B. (1989), 'Community Structure and Crime: Testing Social Disorganization Theory'. In *American Journal of Sociology,* Vol. 94, pp. 774-802.

Sampson, Robert J., Raudenbush S.W., Earls F. (1997), 'Neighborhoods and violent crime: a multilevel study of collective efficacy'. In *Science*, Vol. 277, pp. 918-924.

The World Bank research project on Social Capital. Available online http://www.worldbank.org/poverty/scapital/index.htm

The Worldbank research project on "Economics of Civil Wars, Crime and Violence". Available online: http://www.worldbank.org/research/conflict/index.htm

UN surveys on crime and justice (free download of data). Available online: http://www.ifs.univie.ac.at/~uncjin/html/wcsroro.htm

Veysey, Bonita M., Messner, Steven F. (1999), 'Further testing of Social Disorganization Theory: an elaboration of Sampson and Groves' "Community Structure and Crime"'. In *Journal of Research in Crime and Delinquency*, Vol. 36, No. 2 (May), pp. 156-175.

WHO (1994), *Global Comparative Assessments in the Health Sector*. Geneva:WHO.

_____ *Annual Health Statistics* (various issues). Geneva:WHO.

Wilkinson, R. (1996), *Unhealthy Societies – The afflictions of inequality*. London: Routledge.

World Value Surveys (access to data requires password). Available online: http://www.icspr.umich.edu/cgi/ab.prl?file=6160

Paper 2

HIV AND INCOME INEQUALITY:

IF THERE IS A LINK,
WHAT DOES IT TELL US?

Working Paper

Göran Holmqvist
Institute for Futures Studies, Stockholm
and Nordic Africa Institute, Uppsala

International
Policy
Centre for Inclusive Growth

HIV AND INCOME INEQUALITY:
IF THERE IS A LINK, WHAT DOES IT TELL US?

Göran Holmqvist [*]

ABSTRACT

There is a striking variation in the prevalence of the human immunodeficiency virus (HIV) among countries and regions of the world, with a distinct geographical pattern. This paper explores the link between income inequality and HIV. It presents empirical evidence—a meta-study and additional cross-country regression results—that clearly support the argument that such a link exists. The interpretation of this link is an open issue. Four different hypotheses are discussed, each one pointing out a transit route from income inequality to HIV. The paper presents preliminary evidence on these routes and identifies potential areas for future research.

1 POINTS OF DEPARTURE

The global HIV prevalence map reveals striking contrasts between high-prevalence and low-prevalence countries. Africa is clearly the most affected continent, but within Africa there is a distinct geographical pattern (see Figure 1). A handful of southern African countries have prevalence indicators of between 15 and 35 per cent, while the western parts of Africa are within the range of 1 to 5 per cent. A few countries in eastern Africa are in an intermediate position, with rates of between 3 and 7 per cent (together with Ivory Coast in the west). Outside Africa, the Joint United Nations Programme on HIV/AIDS (UNAIDS) has not reported prevalence above 4 per cent for any country, but each continent seems to have its geographical HIV pattern. In the Western Hemisphere, the highest levels are found in countries in the Caribbean Basin (Haiti, Bahamas, Trinidad and Tobago, Belize, Guyana, Suriname and Honduras, where rates are between 1.5 and 3.8 per cent). In Asia, the highest prevalence rates have been reported for Papua New Guinea, Cambodia, Thailand and Myanmar, where rates are at 1.4 to 1.8 per cent. In Europe, a group of eastern European countries are the most affected (Ukraine, Estonia, Moldova and Russia, with rates of 1.1 to 1.4 per cent).

How is this variation in HIV rates to be explained? One might expect that with such a striking variation, particularly within Africa, it should be fairly easy to identify a distinct set of explanatory factors. The question demands an answer not only because it may offer some clues about the HIV epidemic and how to counteract it.[1] More generally, it may also reveal why some societies are more vulnerable than others to "new" infectious diseases—diseases that are expected to increase as a by-product of globalisation.

The issue has been debated, of course, but the results seem far from conclusive and interpretation of the evidence is still open to discussion. Several studies point out the link between HIV and income inequality. A purely statistical correlation is clearly present (see

---

Figure 2). Can this link between income inequality and HIV prevalence be shown to be significant and robust? If so, why are less equal societies more vulnerable to HIV? This paper seeks to take some first steps towards addressing these two questions.

FIGURE 1
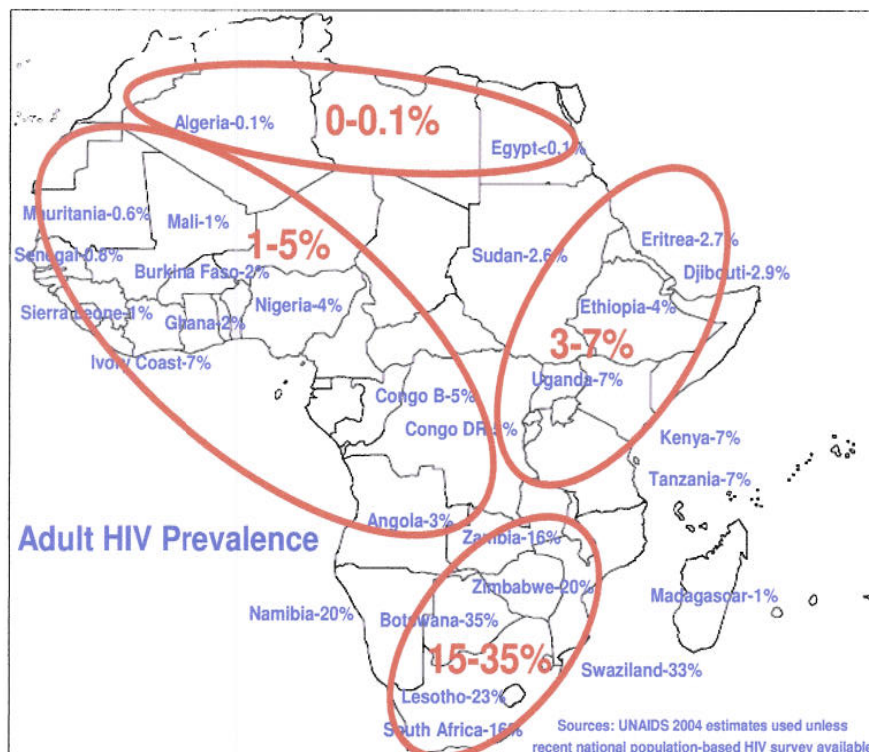
The paper is arranged as follows. Section 2 provides a short overview of what seem to be frequent and influential explanations of why HIV prevalence is so much higher in some countries and regions than others. Section 3 is a meta-study reviewing the results of a collection of recent analyses that have used cross-country regression techniques to explain variations in HIV prevalence. In Section 4, cross-country regressions similar to those presented in Section 3 are repeated, using data collected for the purpose of this study but altering the model specifications and samples. Some of the results are replicated, among them the significant relationship between income inequality and HIV; other links that have been reported as significant do not appear to be robust. Section 5 discusses the possible pathways from income inequality to HIV, and presents four alternative "stories". Each of them is confronted with some preliminary empirical evidence, and some areas for future research are identified. Section 6 presents the conclusions.

FIGURE 2

Income Distribution (GINI) and HIV Prevalence (LOGHIV), Global Sample
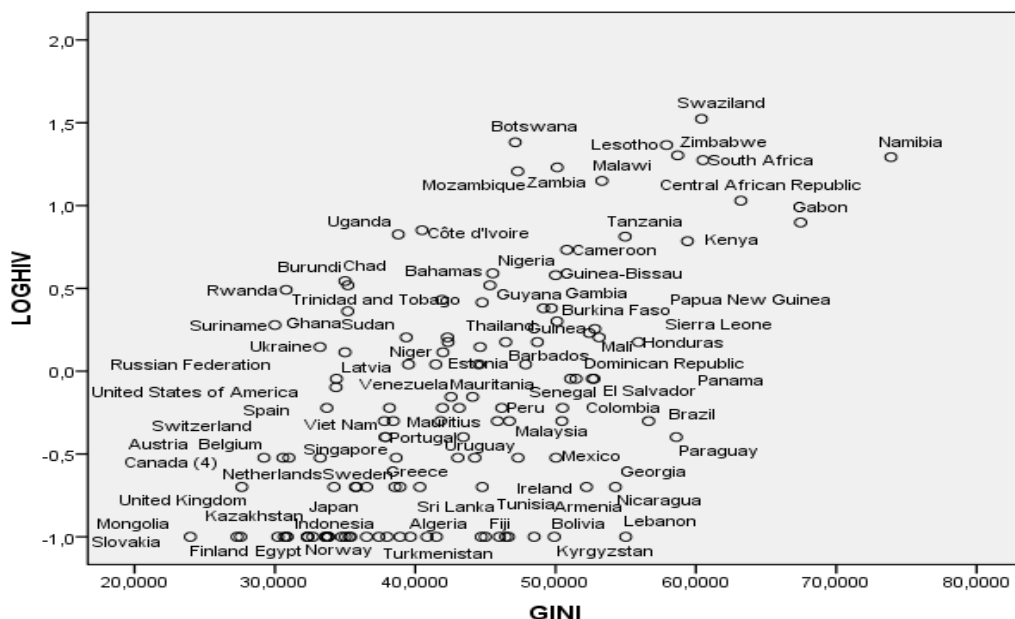
Source: See Annex 1.

2 CHIEF EXPLANATIONS OF THE VARIATION IN HIV PREVALENCE ACROSS COUNTRIES AND REGIONS

The potential determinants of HIV prevalence in a society are located along a complex causal chain involving various spheres that often interact. The links between HIV and different potential determinants in a given society may be portrayed as in Table 1, which is adapted from Barnett and Whiteside (2006).

TABLE 1

Determinants			
Distal determinants		Proximal determinants	
Macro environment	**Micro environment**	**Behaviour**	**Biology**
Wealth	Mobility	Rate of partner change	Virus types
Income distribution	Urbanisation	Concurrent partners	State of infection
Culture	Access to healthcare	Sexual mixing patterns	Presence of STDs
Religion	Levels of violence	Breast feeding	Gender
Governance	Women's rights	Intergenerational sex	Male circumcision
Interventions			
Social policy	Social policy	Behavioural change	STD treatment
Legal reform	Economic policy	communication	Blood safety
Human rights	Employment legislation	Condom promotion	Antiretroviral drugs
Taxation		Counselling	Mother-child prevention

Source: Adapted from Barnett and Whiteside (2006).

What are the most important drivers among these potential determinants? A (still incomplete) review of the literature identifies the following four factors as those most frequently cited.

Male circumcision. There is an apparent correlation between HIV prevalence and male circumcision in Sub-Saharan Africa (SSA). There has been a debate about whether this reflects the impact of religion and social norms rather than the impact of circumcision on the transmission rate of the virus. Nonetheless, there seems to be convincing biological and epidemiological evidence (such as from trials with control groups) that circumcision does indeed provide some protection against HIV (Halperin and Epstein, 2007). UNAIDS has taken a clear stand in favour of circumcision in its recommendations (UNAIDS, 2007). Of course, this does not preclude the consideration that the statistical correlation stems to some extent from behavioural factors related to culture, religion, norms and historical legacies. Note also that circumcision cannot explain why HIV rates in southern Africa are so much higher than those in other regions of the world, such as India, Latin America and Europe, where circumcision is equally uncommon or even less common.

Social cohesion/social capital. Barnett and Whiteside (2006) present a theory whereby social cohesion is a key variable that defines different societies' susceptibility to HIV. The basic idea is that socially cohesive societies are better able to mobilise resources in pursuit of joint goals to avoid or control risk. The establishment of trust and shared norms facilitates the collective action needed. It is assumed that social inequality undermines social capital, and there is a good deal of empirical evidence supporting that claim. A social cohesion-HIV theory has its echo in different fields of the social sciences, such as public health (Wilkinson, 1996), the sociology of crime (Sampson and Groves, 1989), and theories on democracy and governance (Putnam, 2000).

Concurrent partnerships. The empirical evidence does not support the suggestion that Africans on average have more sexual partners during their lifetimes than do, for example, Americans. Indeed, the opposite seems to be the case. It is claimed, however, that the phenomena of multiple, long-term, concurrent partnerships is more common in Africa than elsewhere. Modelling has shown that the spread of HIV in a population is much higher in a system of long-term, concurrent relationships than with the serial-monogamy form of relationships common in the West, since concurrency leads to widespread sexual networks through which HIV may be more easily transmitted. The fact that infectivity is higher in the first weeks after infection, and that condom use is less frequent in long-term partnerships, gives additional force to this mechanism. Polygamy is a form of concurrent partnership but will not lead to the same kind of extensive sexual networks unless women also engage in multiple, long-term relationships. This is less likely to be the case in the Muslim countries of northern and western Africa, where polygamy is common but women's sexual behaviour tends to be strictly controlled; this may explain why these parts of Africa are less affected. In essence, these are the elements of the theory of concurrent partnerships (Halperin and Epstein, 2007). It has been described as the "hottest explanation of the high rates in [Sub-Saharan Africa]" (Beegle and Özler, 2006). An income inequality link has also been identified here, since there is often an element of transactional sex in these concurrent relationships, and economic inequalities overlapping with gender and age inequalities may provide fertile ground (Leclerc-Madlala, 2004).

Colonial legacy. The disorganisation of family structures and social norms—a by-product of white settlements, the resettlement of Africans and forced or "voluntary" labour migration—

is often mentioned as an important background factor in Africa's HIV crisis (Setel et al., 1999; Hargrove, 2007; Barnett and Whiteside, 2006; Brummer, 2002). A glance at the HIV map also reveals that the high-prevalence countries in Africa tend to be those where whites settled in greater numbers and where large-scale commercial farming, and particularly the mining industry (and apartheid in general), had a far-reaching impact on labour migration and family patterns. This produced dual economies and unequal societies, and did so more in southern and eastern Africa than elsewhere.

The vast literature on HIV and AIDS, of course, includes several additional suggestions as to why Africa is special and why southern Africa is so special within Africa. Economists using utility maximisation models of sexual behaviour have argued that poverty, which entails higher mortality risks due to a number of causes, makes people less inclined to engage in risk-reducing behaviour. This has been offered as an explanation of why sexual behaviour changed quickly among the US gay community as risk became apparent, while the change does not seem to have taken place in Africa (Oster, 2007). Traditional sexual practices are also mentioned sometimes as contributing to the spread of HIV. Others have argued that the focus on sexual behaviour is misleading in explaining high African HIV prevalence indicators. In addition to male circumcision, both cofactor infections (such as untreated sexually transmitted diseases [STDs], parasites or malaria) that increase susceptibility to the virus (Sawers et al., 2008) and unsafe healthcare (Broody and Deutchert, 2007) have been pointed out as important determinants.

Moreover, it is often claimed that the causes of the HIV epidemic are multiple and highly context-specific, sometimes linked to development and wealth, sometimes to poverty and backwardness, sometimes to armed conflicts, trade routes and specific processes of social change. Hence there may be limitations on the space available for the kind of generalisation involved in regression analysis. However, claiming that determinants are exclusively local and context-specific would be difficult to reconcile with the distinct geographical pattern revealed by the global HIV map.

The literature is thus rich in possible explanations, all based on causal mechanisms that sound more or less plausible. Some of these explanations are potentially compatible with each other, in the sense that they may be parts of the same causal chain (for instance, social cohesion as a determinant of certain behaviours). Others must be seen as alternative explanations, and it would be helpful if their respective weights were resolved.

3 A META-STUDY OF AVAILABLE EVIDENCE FROM CROSS-COUNTRY REGRESSIONS

There are a number of reasons why evidence from cross-country regressions should be interpreted with care. Several caveats should be kept in mind, such as measurement problems, the "omission of relevant variable" bias, and uncertain directions of causality. Furthermore, it is rarely known whether all the critical underlying statistical assumptions are fulfilled. Statistical relations are not necessarily causal, and a causal link does not necessarily indicate what the relevant intervention should be. As mentioned above, moreover, generalising may have serious limitations because a causal link in one context may not be present in another. These reservations should be kept in mind as we proceed. Whatever

can be learned from cross-country regressions should be seen as one piece of evidence to be combined with evidence from other sources.

Table A1 in Annex 3 gives the results of some recent studies of the determinants of HIV prevalence that have used some form of cross-country regression technique (this is not to claim that all relevant studies have been identified). They are thus limited to ecological studies (that is, the unit of observation is a population); studies that seek to explain the variation in HIV status among individuals have not been included. The studies are by scholars from different disciplines. Some have been published in journals and others are working papers. They vary substantially in quality and technical sophistication, though this does not seem to be determined by whether or not they have been published. The studies were carried out using different samples: global, developing countries only, SSA countries only, and some samples consisting of provinces/states within countries (the United States, China and Russia). Most studies derive from a model with a set of basic explanatory variables (typically GDP per capita and some measures of poverty, income inequality, urbanisation, and the percentage of Muslims in the total population); some specific variable, the main focus of the study, is then added. Only a few of these studies focused specifically on the HIV-income inequality link; rather, they have stumbled on that link while the focus has been on other issues.

Table A1 shows the main theme of the study, the sample, how the independent variable was defined (typically the LOG HIV-prevalence),[2] and the explanatory variables reported. Variables reported as significant in the study (at the 5 per cent level) are in bold. This is subject to some interpretation because most studies report on results from different model specifications, and thus the significance may vary. The last column makes some comments to qualify the results, as well as some remarks on findings related to income inequality. The result of the meta-study presented in Table A1 may be summarised as follows:

- Among the variables that appear in several studies, only two (in addition to regional dummies) can be described as consistently significant: income inequality and percentage of Muslims in the population. It is noteworthy that income inequality is significant in different model specifications, in global and SSA-only samples, as well as in some subnational studies (states/provinces in the United States and China).

- Some studies have applied regional dummies (SSA or southern Africa). Where they have been used they have remained highly significant, indicating that something is left unexplained. Sawers et al. (2008) is an exception to some extent.

- Results are inconsistent for a number of variables. Among them are the indicators related to per capita income, poverty, urbanisation, gender and ethnic fractionalisation, which have been reported as significant in some studies but not in others. Inconsistency may be the result of different model specifications and samples.

- Indicators of sexual behaviour, undeniably a key factor of interest in relation to the spread of HIV and AIDS, are largely absent from these studies. There are limitations in terms of the available indicators (leading to small samples), as well as problems of reverse causality, which limit their usefulness. One study has used median age at first sex for females in a global 45-country sample (reported as significant). Another study reports commercial sex workers/population as a significant variable.

- Only one study, applied to US states, used indicators of social capital (Holtgrave and Crosby, 2003) and this variable emerged as significant.

4 REPLICATING AND REFUTING RESULTS

Table A2 in Annex 3 reports on a series of experiments with regressions that to varying degrees correspond to those presented in Section 3 and Table A1, but in which model specifications and samples have been altered. The purpose is to check whether the significant results of previous studies may be replicated in a straightforward ordinary least squares (OLS) regression, and to obtain some indications of their robustness. This will also shed light on some of the inconsistencies among the results as revealed by the meta-study. The data used have been collected specifically for the purpose of this study (Annex 1 gives data sources and definitions).

As in most of the studies reported in Table A1, the logarithm of HIV prevalence among adults aged 15–49 (UNAIDS data for 2005) is used. We depart from a basic model with five variables: income inequality (measured by average Gini coefficients over three decades); level of economic development (measured by log of GDP per capita at purchasing power parity, or PPP); a poverty measure (adult literacy); urbanisation (measured by urban population growth 1990–1995); and percentage of the population that is Muslim. Since it might be expected that income inequality could affect HIV though income and/or poverty, it was essential to keep these two variables in the basic model. Urban growth was used rather than urban dwellers as a share of the population, since it fits better with any theory emphasising social change/migration/mobility as a factor contributing to HIV (in bivariate analysis it also reveals a higher degree of correlation with HIV than urban share of the population).

Are problems of reverse causality reasonably under control in this basic model? HIV may obviously affect poverty levels, but the choice of literacy as a poverty indicator has the advantage that it has some built-in lags (literacy reflects historical poverty levels), which should mean that it is largely unaffected by present HIV levels. HIV may also affect income inequality, and the literature discusses the direction of that impact. Nonetheless, the Gini coefficients used here are based on averages for the last three decades (using a dataset provided by William Easterly; see Annex 1), which to some extent should lessen concerns about reverse causality. The impact of HIV on GDP is also discussed widely in the literature, and estimates of that impact differ considerably—see Glick (2007) for an overview. Reverse causality in relation to GDP per capita could be addressed using lagged variables or instrumental variable techniques. Tsafack Temah (2008, table 4.5) takes the latter approach without much impact on the overall results, at least as regards income inequality. We refrain from complicating the regressions here, and simply use log of GDP per capita. With respect to the percentage of Muslims in the population and urban growth in the period 1990–1995, it seems reasonable to assume that they are exogenous.

To this model we successively add several of the indicators used in previous studies. Variables reflecting sexual behaviour and social capital, where reverse causality is likely to be more problematic, are left for discussion in Section 5.

The large sample consists of all developing countries for which data are available (for a list of the countries, see Annex 1). In some cases, results are also reported for SSA only and for not-SSA samples. The results are grouped into sections, each of which seeks to shed light on a specific issue. Significant coefficients are in bold. In several cases, the significance of the variables is entirely dependent on the non-inclusion of a dummy variable for Africa. These are labelled non-robust, since their explanatory power seems to be exclusively the product of the overall variation in HIV levels between Africa and the rest of the world. Comments on the results of each section are given below.

ROUNDS 1–5. BASIC MODEL

The first five rounds replicate what seems to be a generalised finding from the meta-study: income inequality and percentage of Muslims are significant. This is the case with or without a SSA dummy and in the SSA-only sample, as well in the not-SSA sample. Significance falls slightly below the 5 per cent level in the SSA-only sample when a dummy for southern African countries is included.

The adult literacy indicator, which is reported as significant in some cases in the meta-study, is significant only in the large sample, with no dummy included. Africa has a high HIV prevalence and low levels of literacy, a circumstance that gives the literacy indicator some explanatory force. When a dummy is included, however, or when the sample is divided into SSA and not-SSA subsamples, this indicator loses its significance.

ROUNDS 6–9. ALTERNATIVE POVERTY MEASURES

Rounds 6–9 replace literacy by Poverty < 1USD. This reduces the sample size because of data availability, but Poverty < 1USD behaves more or less like the literacy variable: it is significant in the large sample but loses its significance when a regional dummy is included. Unreported in Table A2, tests were also carried out with some alternative poverty measures, such as access to an improved water source, with similar results.

A tentative conclusion is that HIV is not robustly related to poverty. Africa is poor and has high HIV prevalence, but neither within Africa nor among the non-African developing countries does poverty emerge as being significantly related to HIV.

A second tentative conclusion is that the link between income inequality and HIV is not intermediated by poverty. The beta coefficient of the Gini variable remains significant and largely unaffected when these different poverty measures are added to the equation.

ROUNDS 10–18. GENDER INEQUALITY MEASURES

Various gender-related variables are tested: female/male literacy; the gender power index of the United Nations Development Programme's human development index (HDI) rank minus gender-related development index (GDI) rank; and contraceptive use by married women. They are significant in some of the rounds, but again the significance is entirely dependent on the non-inclusion of a dummy variable for Africa, and in the case of female/male literacy it is also dependent on the non-inclusion of general literacy level. This could explain the inconsistency in some of the meta-study results in the area of gender inequality, where at least some models appear to suffer from the "omission of relevant variable" bias.

ROUNDS 19–21. ETHNIC FRACTIONALISATION

Ethnic fractionalisation is another variable with inconsistent results in the meta-study. It is significant in the large sample but loses all significance when an Africa dummy is included. It does not appear as significant in the SSA-only sample. Tsafack Temah (2008), with a more developed study, reached another conclusion for ethnic heterogeneity in an SSA-only sample.

ROUNDS 22-23. AGE OF EPIDEMIC

This indicator also has inconsistent results in the meta-study. The indicator is based on the first year an HIV case was reported. It is not significant in either of these rounds, but it comes closer to significance in the global sample without the dummy included (Africa's epidemic was earlier than those in other developing countries).

ROUNDS 24–29. MALE CIRCUMCISION

Is the link between HIV and the Muslim share of the population an issue of male circumcision, of norms and sexual behaviour, or both? Islam is clearly associated with male circumcision. It is also sometimes claimed to be associated with less alcohol consumption and stricter marital codes, but also with polygamy and a rejection of condom use, which might work in the opposite direction as regards HIV (Gray, 2003).

The meta-study identified few deliberate efforts to clarify this matter with quantitative analysis; Gray (2003) and Drain et al. (2006) are the most explicit attempts. Rounds 24–29 seek to shed some additional light on this issue (though the Islam-HIV link is not the main purpose of this paper). An advantage for the statistical analysis here is that the causal links should be straightforward: people do not become Muslim because of HIV or because they are circumcised. Moreover, at least until recently, people have been circumcised mainly for religious and cultural reasons and not because of the spread of HIV (this is likely to change in Africa after the UNAIDS recommendations and the introduction of new policies).

Inaccurate data are likely to be of greater concern. It has been possible to identify two measures of male circumcision. Available for the global sample was a classification of all countries in three groups: below 20 per cent, above 80 per cent and intermediate This is labelled MC1. For the SSA countries it was possible to identify more precise male circumcision rates, labelled MC2 (see Annex 1 for sources).

In the global sample without the SSA dummy (Round 24), male circumcision is not significant while the Muslim percentage of the population is. When an SSA dummy is added (Round 25), male circumcision is highly significant. Since African countries have comparatively high rates of male circumcision, this factor does not offer a strong explanation of the difference in HIV rates between Africa and the rest of the world. Nonetheless, allowing for a fixed effect for Africa (the dummy lets Africa have its own intercept), the result changes considerably. Then, male circumcision seems to add explanatory force in relation to the HIV pattern within Africa, but not to that between Africa and the rest of the world. In the SSA-only sample (Rounds 27–29), the use of both Muslim percentage of the population and male circumcision simultaneously, rather than successively, adds explanatory power to the equation (F-value up from 8.4 and 9.1 to 11.6). The two variables are clearly significant when combined. This may be interpreted as supporting the view that the Muslim factor has an effect on its own, one that is not expressed through male circumcision.

SUMMARY OF MAIN FINDINGS FROM REGRESSIONS AS PRESENTED IN TABLE A2

- As in the meta-analysis, two variables emerge as consistently significant (in addition to the regional dummies): the Muslim percentage of the population and income inequality.

- The income inequality variable behaves in a strikingly consistent manner, with a standardised coefficient at about 0.4 when the regional dummy is not included and 0.2 with the dummy. This variable apparently goes some way towards explaining why Africa is different and why there is a variation within (and outside) Africa. Income inequality's impact on HIV does not appear to emerge through poverty.

- The findings suggest that Islam is a factor that is expressed through the male circumcision factor, as well as through its own independent effect.

- A number of variables seem to be subject to what might be called an African reverse correlation paradox—that is, they are positively related to HIV in a global sample but unrelated or even negatively related to HIV within Africa. In short, globally HIV is associated with underdevelopment and poverty, but within Africa the relation is rather the opposite. This explains some of the inconsistencies revealed by the meta-study.

5 THE INEQUALITY-HIV LINK: WHICH THEORY DOES IT FIT?

The results above, therefore, clearly indicate that there is a link between inequality and HIV. The link between income inequality and HIV is further explored in Tsafack Temah (2008), using panel data for 29 African countries in the period 1997–2005. That study applies far more rigorous testing procedures than those outlined above, and income inequality still remains one of the strongest predictors of HIV.

While the income inequality-HIV link seems to have a relatively strong empirical support, its interpretation is more open to discussion. Why should there be such a link? Different hypotheses regarding the transit route from inequality to HIV may be constructed with elements from various disciplines of the social sciences. Four such hypotheses are described below. Figure 4 in Section 6 illustrates the position of these four hypotheses along the potential pathways from income inequality to HIV. Each of them has a disciplinary inspiration or affiliation, and to keep track of them here they have been labelled accordingly as the stories of the economist, the sociologist, the political economist and the historian.[3] Scholars in these disciplines are asked not to feel implicated or offended by the use of these labels. The accounts below are deliberately termed "stories", since it is not the aim of this exploratory paper to present fully developed and precise theories. For each story some preliminary evidence is presented, indicating possible areas for future research.

5.1   THE ECONOMIST'S STORY: INCOME INEQUALITY LEADING TO HIV THROUGH THE ECONOMICS OF SEXUAL BEHAVIOUR

Just as with the economics of crime, in the tradition of Gary Becker—whereby crime is modelled as a rational choice by a utility-maximising individual weighing the benefit of the

loot against the risk of getting caught times the punishment—we may construct an economic theory of sexual behaviour. Oster (2007) uses such a model of sexual behaviour to explain why poor people would be less inclined to adjust their behaviour when facing the risk of HIV, and hence why, for instance, members of the US gay community rapidly changed their sexual conduct as HIV became known while adaptation seems to have been much slower in Africa.

The intuition behind Oster's idea is simple: utility is maximised by an individual over two periods, and the chance of surviving to period 2 is determined by the risk of being infected with HIV in period 1, as well as by other mortality risks not related to HIV. Poor people are more exposed to a high risk of dying for reasons unrelated to HIV, a circumstance that decreases the expected loss associated with the risk of being infected by HIV. Correspondingly, being richer and having fewer mortality risks means that an individual places greater value on his life in period 2, and thus is less inclined to put it at risk.

Neither mentioned nor explicitly modelled in Oster's article, but an extension that can be added, is that there would also be a link between income inequality and risky sexual conduct if there were an element of economic transaction involved (not necessarily understood as prostitution). This would correspond to how theories of the economics of crime predict a link between income inequality and crime. Again, the basic intuition is simple: a utility-maximising individual engages in transactional sex as a "seller" if the utility of the benefits (transactional sex income) outweighs the expected utility lost, which is partially determined by the risk of being infected and therefore not surviving to period 2. The marginal utility of income is higher the poorer people are, so the transactional sex income has greater weight in the utility function of the poor. Being poorer also entails a higher mortality risk due to factors other than AIDS in period 2, and hence a lower expected loss from being infected in period 1. More poverty thus leads to more people being ready to engage in risky behaviour. On the other hand, people engage in transactional sex as a "buyer" if the pleasure they derive from it outweighs the lost utility from it, which in this case is determined by the "price" for transactional sex plus the expected utility loss from increased risk of not surviving to period 2. For the rich there are two forces at play here: being richer and having a greater chance of surviving to period 2 reduces the inclination to take risks, but being richer also means being able to afford more transactional sex. With higher levels of income inequality, therefore, it is expected that more poor people are ready to engage in transactional sex for a given price, and perhaps also that more rich people are able and ready to enter the transactional sex market as buyers. Annex 2 presents a sketch of a formalised economic model of sexual behaviour that illustrates this point, extending Oster's original model with the inclusion of a "transactional sex price".

As a portrayal of human behaviour this theory may appear crude and simplistic. Its basic elements, however, could easily be reconciled with the view that concurrent partnerships are a major driver of the HIV epidemic (see Section 2). Concurrent partnerships, not to be misunderstood as prostitution, are believed to contain varying degrees of transactional sex, the stereotype being the "sugar daddy" engaging in multiple partnerships with younger and economically dependent women (Leclerc-Madlala, 2004). Studies of the determinants of individual HIV status have also identified economic gender inequalities between young women and older/richer men as a clear risk factor (Beegle and Özler, 2006).

What would it take to give the economist's story empirical support in a cross-country analysis? To support it one would like to establish a link between income inequality and risky

sexual behaviour that involves some form of economic transaction, and between the latter and HIV. Determining the precise strength of the link between risk behaviour and HIV in ecological studies is demanding because of issues of both data availability and reverse causality. A number of studies have tried to establish the reverse link from HIV to behavioural change, and the methodological problems are recognised as challenging; for an overview, see Glick (2007: 28–34). It might be easier, however, to establish the link from income inequality to risky sexual behaviour, since income inequality could be seen as largely exogenous to sexual behaviour. Table 2 shows the partial correlations between income inequality and some indicators of risky sexual behaviour. Note that income inequality is positively correlated with most of these indicators of risk behaviour, and significantly so with some of them.

TABLE 2

Partial Correlations between Gini and Sexual Behaviour Indicators

Behaviour indicator	Partial correlation with Gini	Number of countries
High-risk sex female[1]	**0.47**	25
High-risk sex male	**0.51**	22
First sex female age	**- 0.36**	50
First sex male age	**- 0.54**	32
Young female (15–24) having premarital sex last year	**0.38**	43
Multiple partners female[2]	0.20	29
Multiple partners male	0.21	28
Female commercial sex workers, prevalence	**0.52**	42
Had commercial sex last year (males)	0.33	22

Sample consists of developing countries, a substantial share of them in Africa.

Significant correlations at 5% in bold.

1. High-risk sex defined as share of respondents (aged 15–49) who had sex with a non-marital and non-cohabiting partner during the previous 12 months.
2. Multiple partners defined as share of respondents (among sexually active aged 15–49) who had sex with more than one partner during the previous 12 months.

Source: See Annex 1.

Moving a step further to multivariate analysis, using the basic model from Table A2 but substituting HIV for an indicator of risk behaviour as a dependent variable, income inequality is confirmed as a significant predictor of the indicators of sexual risk behaviour. The results are reported in Table 3. Gini emerges as a significant explanatory variable for three of the four indicators of sexual risk behaviour, and is just below the 5 per cent significance level in the case of commercial sex worker prevalence.

Establishing the link between income inequality and risky sexual behaviour more rigorously could be an area of useful future research. Even if the links in Table 3 could be established with greater certainty, however, it is still not clear if it supports the theory of the economist rather than some other theory. As revealed by Tables 2 and 3, income inequality seems to be associated with most of the measures of risky behaviour, not just with those that could mainly be expected to involve elements of economic transactions.

The economist's story, as presented here, is a theory that works solely on the assumption that each individual is a utility-maximising agent, without any references to social interaction, the creation of norms, stigma or public sector interventions. The sociologist's story is different.

TABLE 3
Explaining Sexual Risk Behaviour with Variables of the Basic Model
(significant beta coefficients in bold; t-value below)

Explanatory variables	Dependent variable			
	First sex female age	**First sex male age**	**Young female premarital sex**	**Commercial sex worker prevalence**
Gini	**-0.35**	**-0.50**	**0.29**	0.26
	-3.09	-2.63	2.23	1.83
logGDP/cap	-0.07	-0.15	-0.12	0.19
	-0.66	-0.87	-0.91	1.48
Adult literacy	**0.45**	0.14	0.06	0.14
	2.75	0.48	0.25	0.51
Urban growth	0.07	0.13	-0.06	0.38
	0.51	0.63	-0.35	1.69
% Muslim	0.14	0.15	-0.13	-0.15
	1.12	0.70	-0.75	-1.18
SSA dummy	**-0.33**	-0.01	**0.64**	**0.53**
	-2.23	-0.06	3.79	2.62
R2	0.47	0.16	0.35	0.51
F-value	8.29	2.03	4.73	6.98
N=	49	31	42	35

5.2 THE SOCIOLOGIST'S STORY : INCOME INEQUALITY LEADING TO HIV THROUGH A REDUCTION IN SOCIAL CAPITAL

There are numerous ways of defining social capital but the elements usually included in the definitions are trust, norms, reciprocity and cooperation among members of a social network, enabling collective action in pursuit of shared goal. It is often pointed out that social capital in a given society does not express itself in one dimension alone. Strong social capital within one sub-group does not necessarily reflect social capital in society as a whole (the example of the Mafia in Sicily may illustrate the point). Moreover, a distinction is often made between vertical and horizontal expressions of social capital (for instance, trusting the government versus trusting people in general).

Various indicators have been used to measure social capital. In quantitative analysis, the most common are indicators of generalised trust: public surveys asking "in general, do you think most people can be trusted?" Other indicators used are measures of participation in different social networks, or groups and indicators reflecting vertical trust (trust in various public institutions).

Barnett and Whiteside (2006), a frequently cited source on the AIDS epidemic, argues that there is a link between social cohesion/social capital and HIV. Socially cohesive societies are assumed to be better able to mobilise resources in pursuit of joint goals and to avoid or control risk. But what, more precisely, does "social capital" contain that would facilitate the mobilisation of collective action against HIV? Just as the concept of social capital is vague, a number of different links may be at work here. It could be a matter of establishing common norms in a community to uphold certain rules of sexual behaviour. It could also have something to do with shared values being lost as a result of social divides, and mutual support mechanisms being undermined. Or could it reflect the absence of vertical and horizontal relations of trust that are needed in a society to pass on a warning that leads to behavioural change? The vast literature on the relationship between social capital and public health in general is rich in suggestions for possible linkages (Kawachi et al., 1999).

Is it possible to give empirical support to an income inequality-social capital-HIV link? The link between social capital and income inequality is quite well established empirically and reference is often made to it. A recent study, using a global sample, identified income inequality as one of the few determinants of generalised horizontal trust (as measured in the World Values Survey) that remained robust using various model specifications and tests (Bjornskov, 2006).

The link between social capital and HIV is more problematic. As with sexual behaviour, the causal relationship is likely to work in both directions. Indeed, one of the few identified studies to have conducted cross-country regressions involving HIV and social capital (generalised trust) tries to determine the impact of HIV on social capital rather than the other way round (David, 2007). It concludes that there is such an impact, though it acknowledges having used an instrumental variable for HIV that is of dubious quality.[4] Ecological studies based on US states have confirmed a social capital-HIV link. In South Africa, studies of the determinants of individuals' HIV status have tested the social capital hypothesis, using indicators of membership of different kinds of groups and social networks; the results have been mixed, depending on the character of the group or network (Campbell et al., 2002).

The World Values Survey is the most frequently used data source for the indicator of generalised trust—that is, the "most people can be trusted" question. A limitation of the World Values Survey is that it includes relatively few developing countries, particularly countries in Africa where there is the greatest variation in HIV prevalence. Trust is also measured by a similar question in the regional barometers (Afrobarometer, Latinobarometer and Asiabarometer), now combined under the heading of the Global Barometer. This has a sample of 38 developing countries (8 Asian, 17 Latin American and 13 African). Figure 3 shows the relationship between HIV prevalence (LogHIV) and this measure of trust. The correlation is perhaps not impressive, but it is clearly there (R2 adjusted = -0.29, just above significance at the 5 per cent level).

How does the trust variable behave when inserted into a regression analysis (while acknowledging small sample size and possible reverse causality bias)? Table 4 reports the results. When "trust" is inserted into the basic model from Section 4 of this paper, its beta coefficient has the expected sign (negative) and is close to significant at the 5 per cent level. But the insertion of social capital just slightly reduces the beta coefficient of the Gini variable, which would indicate two independent effects. When a dummy for Africa is included, the pattern remains the same, but with lower levels of significance. In the last round a dummy

for Latin America is also included (Latin America is an outlier continent in terms of inequality and trust), and both inequality and trust reach significant levels again.

FIGURE 3
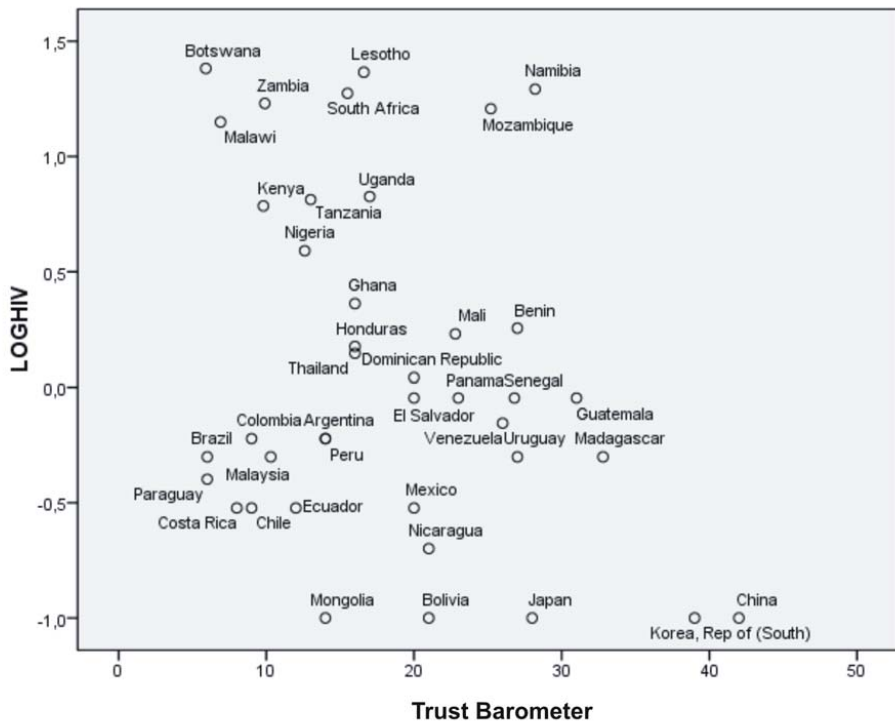
Source: See Annex 1.

A number of caveats should be noted here. The sample size is small; it is unknown if the right dimension of social capital is being measured; and the reverse causality bias has not been addressed. A cautious conclusion from this analysis is that at least the data do not clearly contradict the sociologist's story on the income inequality-HIV link. Social capital should be kept on the list of suspects.

What path might future research take to ensure more stringent testing of the inequality-social capital-HIV hypothesis? Ideally, larger samples and access to a wider range of indicators of social capital should be available, in addition to instrumental variables or time series data to address the issue of direction of causality.

One option would be to break down HIV prevalence figures to African provinces and then combine those with data from Afrobarometer. The latter contains a wide range of indicators, including those on various dimensions of social capital. Some exploratory attempts have been made in this direction while preparing this study, reaching a sample of some 150 African provinces, but the results are not ready to be reported yet.

TABLE 4

Regression Results, Social Capital/Trust Added to Basic Model
(significant beta coefficients in bold; t-value below)

Explanatory variables	Dependent variable LOGHIV				
	1	**2**	**3**	**4**	**5**
Gini	**0.30**	**0.28**		**0.23**	**0.297**
	2.23	2.19		2.44	2.987
Trust		-0.23	**-0.26**	-0.15	**-0.188**
		1.87	-1.95	-1.65	-2.053
logGDP/cap	0.04	-0.02	0.02	-0.09	-0.089
	-0.28	-0.16	0.12	-1.01	-1.001
Adult literacy	-0.33	**-0.43**	**-0.46**	-0.16	-0.132
	-1.54	-2.06	-2.08	-0.09	-0.735
Urban growth	**0.43**	**0.39**	**0.46**	0.02	-0.039
	2.68	2.44	2.78	0.16	-0.294
% Muslim	-0.26	-0.30	-0.33	-0.26	-0.35
	-1.50	-1.78	-1.82	-2.13	-2.676
SSA dummy				**0.82**	**0.599**
				5.33	2.969
LAC dummy					-0.267
					-1.672
R2	0.45	0.73	0.42	0.73	0.75
F-value	6.78	6.69	6.31	15.03	14.31
N=	36	36	36	36	36.00

5.3 THE POLITICAL ECONOMIST'S STORY: INCOME INEQUALITY LEADING TO HIV THROUGH POOR PUBLIC SECTOR PERFORMANCE

The literature frequently discusses the link between inequality and health. Inequality is associated with lower tax revenue and hence lower public expenditures, and possibly also their quality, since their distribution is sub-optimised. One hypothesis could be that an inequality-health link operates through a weakened public sector performance in delivering social services. See Kawachi et al. (1999) and Kaplan et al. (1996) for a discussion of this mechanism in relation to the more general income inequality-health link.

TABLE 5

Partial Correlations between HIV Prevalence and Various Health Sector Performance Indicators in Sub-Saharan Africa (significant correlations at the 5% level in bold)

Health sector performance indicator	Partial correlation with HIV prevalence	N
Immunisation rate measles	+0.18	38 SSA only
Immunisation tuberculosis	+0.28	38 SSA only
Child mortality (<5)	**-0.33**	38 SSA only
Public health expenditures	**+0.65**	38 SSA only

Source: Human Development Report, 2007.

Does this story also fit the pattern of HIV? For instance, a weak public health system might be less able to organise efficient HIV testing, to treat STDs, and to manage successful public awareness campaigns, all of which are believed to be important in counteracting the spread of HIV. If this were the case, one would expect HIV to follow a pattern similar to that of other health indicators whose links to public sector performance are less disputed. Immunisation or child mortality could be cases for comparison. Table 5 gives the partial correlations between HIV prevalence and four health system indicators in Africa: child mortality (<5 years), public health expenditures per capita, and immunisation rates for measles and tuberculosis. However, the table shows that all the signs are the opposite of what would be expected in the political economist's story. African countries with high HIV prevalence tend to have lower child mortality (despite the fact that HIV itself increases child mortality), better immunisation programmes and higher public spending on health (though the latter circumstance could also be an effect of the HIV epidemic itself). It seems difficult to reconcile the correlations revealed by Table 5 with the political economist's story.

Rather than following the pattern of health system performance indicators, HIV prevalence seems to follow the pattern of "social diseases" such as crime and homicide rates. Table 6 shows the correlation between HIV prevalence and indicators of crime and homicide rates in Africa (and also for a global sample as regards homicide rates). Here the correlations are all positive and surprisingly strong. In fact, replacing HIV prevalence with the homicide rate as the independent variable in the basic model in Table A2 gives a strikingly similar result; the Gini coefficient and the percentage of Muslims in the population emerge as the only significant variables. Future research could explore how the tools and approaches developed in criminology might be applied to research on HIV. The economics of crime and social capital/social disorganisation are two theories that compete to explain the established link between economic inequality and crime (Holmqvist, 2000).

TABLE 6

Partial Correlations between HIV Prevalence and Indicators of Crime/Violence (significant correlations at the 5% level in bold)

Crime indicator with HIV prevalence	Partial correlation	N
Homicide rate/100,000	**0.31**	102 (global sample)
Homicide rate/100,000	**0.61**	26 (SSA only)
Crime rate	**0.79**	22 (SSA only)

Source: See Annex 1.

5.4 THE HISTORIAN'S STORY: HISTORY AND THE COLONIAL LEGACY, LEADING TO BOTH INEQUALITY AND HIV, HAVE CREATED A SPURIOUS LINK

Could the relationship between crime and economic inequality be spurious? Poverty and/or urbanisation could be suspected of creating such a spurious link, but the results in Sections 3 and 4 did not support that hypothesis. The main candidates for such a link are probably among factors related to history and the colonial legacy. Within SSA it is apparent that the countries most affected by HIV share some historical traits. Compared to the rest of SSA, the high-prevalence countries in southern Africa and parts of eastern Africa had greater exposure to phenomena such as European settlements, apartheid, a large-scale mining industry, migration (forced and voluntary) and, consequently, possibly also a greater disruption of traditional

values and family patterns. The greater presence of European settlers probably also contributed to a more limited presence of Islam (and to less circumcision). These colonial roots helped create dual societies and gave rise to the economic inequality that is particularly pronounced in these parts of Africa. In all of this it is not obvious how causal and spurious links may be distinguished from each other.

The literature frequently refers to the colonial legacy as an important factor in understanding the geographical pattern of the HIV epidemic (Setel et al., 1999; Hargrove, 2007; Barnett and Whiteside, 2006; Brummer, 2002). Can an impact of the colonial legacy on HIV be documented statistically? It is not easy to find historical data that may be used for quantitative analysis, but one indicator of the colonial legacy is readily available: the year of independence from external domination. Within SSA, the year of independence is clearly associated with the degree to which European settlers were present in the country and hence with the extent of colonial penetration (more settlers are associated with later independence). An indicator was constructed for all developing nations in our sample. A zero was given to countries without a colonial past, or which attained independence before 1900, and a two-digit number corresponding to the independence year was given to the rest. Newly established states in the former Soviet Union and former Yugoslavia were categorised as lacking a colonial past. The independence years of Zimbabwe, South Africa, Botswana, Lesotho and Swaziland were defined as the point when white rule ended (Botswana, Lesotho and Swaziland combined with South Africa here, since they were largely ruled under the apartheid system in social and economic terms).

TABLE 7

Regression Results, "Year of Independence" Added to Basic Model

Explanatory variables	Dependent variable LOGHIV					
	AllDev 1	AllDEV 2	AllDev 3	AllDev 4	SSAonly 5	NotSSA 6
Gini	**0.37**	**0.28**	**0.20**	**0.20**	0.21	**0.28**
	4.44	4.18	3.29	3.45	1.69	2.50
Independence year		**0.58**		**0.29**	**0.44**	**0.31**
		6.94		3.49	3.12	2.31
logGDP/cap	0.00	-0.02	-0.08	-0.07	**-0.21**	0.06
	0.03	-0.27	-1.41	-1.30	-2.05	0.42
Adult literacy	**-0.48**	**-0.26**	-0.08	-0.07	-0.26	-0.16
	-4.24	-2.75	-0.83	-0.75	-1.49	-1.00
Urban growth	0.11	-0.07	-0.02	-0.08	**0.04**	-0.21
	1.05	-0.78	-0.25	-1.06	0.40	-1.39
% Muslim	**-0.43**	**-0.45**	**-0.38**	**-0.40**	**-0.62**	**-0.59**
	4.85	-6.24	-5.90	-6.58	-3.91	-5.07
SSA dummy			**0.73**	**0.55**		
			9.01	6.00		
R2	0.48	0.67	0.73	0.77	0.64	0.37
F-value	17.75	31.00	42.29	42.80	10.867	6.45
N=	90(=AllDev)	90 (=AllDev)	90 (=AllDev)	90 (=AllDev)	33 (=SSAonly)	56 (=notSSA)

Table 7 gives the results following the inclusion of this indicator in the basic model. It remains significant with and without a dummy for Africa, for a SSA-only sample and, perhaps

most surprisingly, also for a sample consisting only of non-African countries. The indicator tends to reduce the beta coefficient of the Gini variable somewhat, and substantially reduces the coefficient of the SSA dummy.

The results given in Table 7 indicate that historical factors related to the colonial legacy might be important determinants of today's geographical pattern of HIV. A hypothesis could be that prolonged rule by foreign elites created inequalities, disrupted the social fabric of a society and undermined its ability for collective action. Further research might document this more solidly, and might identify more precise indicators than the one used here.

Nonetheless, even if colonial-legacy factors seem to be associated with both economic inequality and HIV, there is still nothing in Table 7 to support the argument that this is a case of a spurious link. The historian's story might be half-true, but the claim that the link is spurious would need far more solid evidence.

6 CONCLUDING REMARKS

This paper sprang from two questions: (i) is there a significant and robust link between income inequality and HIV? and (ii) if there is such a link, why should unequal societies be more vulnerable to HIV?

The answer to the first question was in the affirmative; the link is there. It is confirmed consistently by a number of studies, as shown by the meta-study. The cross-country regression results in this paper have provided further support for the existence of such a link**.**

It has not been possible, however, to answer the second question conclusively. Four different hypotheses have been presented as to why a link between income inequality and HIV might be expected: (i) the economics of sexual behaviour; (ii) social capital; (iii) public sector performance; and (iv) history and the colonial legacy creating a spurious relationship.

Figure 4 gives an overview of the different pathways at play, and the position of these four hypotheses (the bolded boxes) in relation to them**.**

The right-hand side of Figure 4 illustrates that any factor with an impact on HIV prevalence would work at some point through sexual or possibly non-sexual transmission (two boxes are labelled accordingly). Biological cofactors may affect the "transmission rate" (male circumcision, untreated STDs and so forth).

The lines leading from the "feedback" box in the upper-right corner illustrate the various reverse causality mechanisms mentioned in the text. Rising HIV prevalence might have feedback effects in terms of AIDS mortality (reducing prevalence), more or less spontaneous behavioural adaptations, various kinds of public health interventions, and a number of other possible repercussions on society as a whole, including altered social relations that affect social capital. The determinants of HIV prevalence discussed here may affect the initial conditions that make a society vulnerable to HIV, as well as its ability to adapt once the epidemic becomes apparent (that is, influencing the force of the feedback mechanisms). It should be noted that linear regression analysis might not always capture the complexities and dynamics that Figure 4 attempts to illustrate.

Confronting the four hypotheses with some preliminary empirical evidence, there is no support for the idea that the link between income inequality and HIV arises from a weakening

of public sector performance. In SSA, at least, HIV tends to be associated with a comparatively better public health performance rather than a poorer one, which is what that hypothesis would predict.

As regards the other hypotheses, there is some empirical evidence to support them but it is not conclusive and we cannot determine their respective weight. Income inequality seems to be associated with riskier sexual behaviour, as the economics of sexual behaviour would predict. Income inequality is also associated with lower levels of social capital, and social capital seems to be negatively associated with HIV, as predicted by the social capital hypothesis. It has also been possible to show that even such a crude indicator of history and the colonial legacy as "year of independence" is a strong determinant of the variation in HIV prevalence today, globally as well as within Africa. The existence of this colonial legacy factor, however, is far from enough to underpin a claim that the income inequality-HIV link is spurious. The economics of sexual behaviour and social capital theory, apparently, remain our two main suspects. The paper has indicated some ideas for future research that could help clarify the matter further.

Is the issue relevant enough to merit additional research? Simply knowing that there is a statistical link between income inequality and HIV is not something that might lend itself to clear policy conclusions. If we can show more precisely how this link works, however, more useful policy conclusions may follow. Beyond the HIV epidemic itself, there is also an interest in understanding why highly unequal societies should be more vulnerable to new infectious diseases of this kind, in which the epidemiology has strong ingredients of human behaviour and social relations. If it is correct to say that we will see more of these diseases in the future, as a by-product of globalisation and human mobility, then there is a need for a better understanding of these mechanisms.

FIGURE 4
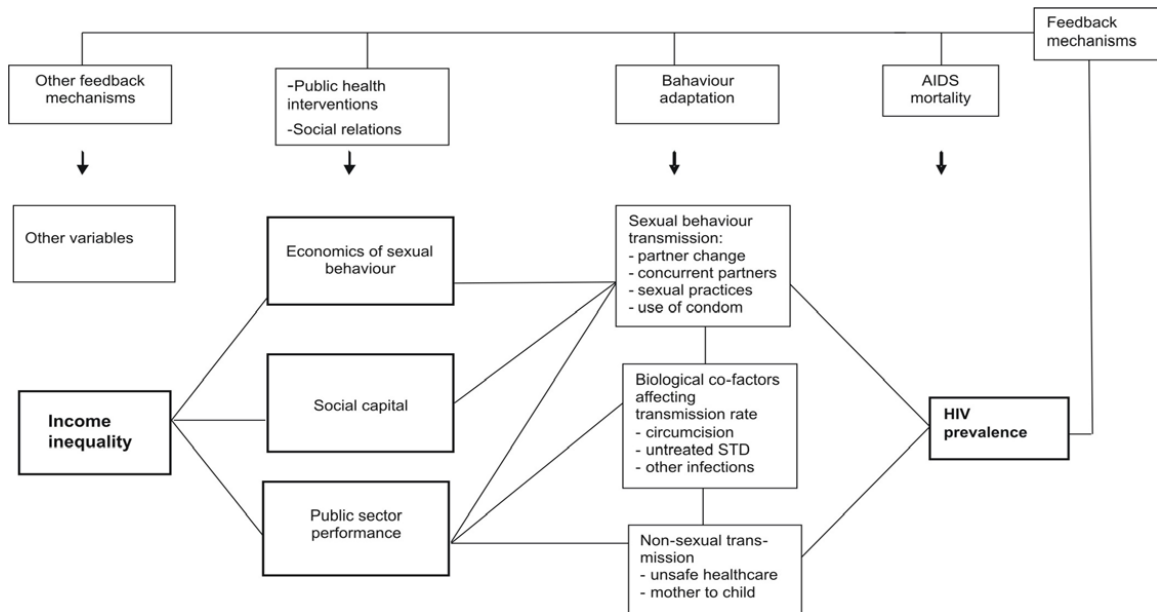
ANNEX 1. DATA, SOURCES, SAMPLE

DATA AND SOURCES

HIV
HIV prevalence among adults aged 15–49. UNAIDS, *Global Report, 2006*:
http://www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/.

Gini
Downloaded from William Easterly's dataset, used to explain the impact of income inequality on growth. Easterly's data are from WIDER (2000), but have been improved by adjusting for possible methodological biases. They are averages for the period 1960–1998, to the extent that data are available. As a sufficiently large Africa sample is essential for this study, Easterly's dataset has been complemented with a few additional countries now available in the WIDER dataset. Link for Easterly's dataset:
http://www.nyu.edu/fas/institute/dri/Easterly/Research.html.

LogGDP/capita
GDP/capita in PPP terms. UNDP, *Human Development Report* 2007/2008:
http://hdr.undp.org/en/statistics/.

Adult literacy
1995–2005. UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/

Urban growth
1990–1995. World Bank (1997). *Confronting AIDS*, Statistical Appendix, Table 2:
http://www.worldbank.org/aids-econ/confront/confrontfull/tables.html.

% Muslim
Wikipedia: http://en.wikipedia.org/wiki/Islam_by_country.

Poverty < 1 USD
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

Female/male literacy
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

Gender empowerment index
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

HDI-GDI rank
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

Contraceptive use, married women
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

Ethnic fractionalization
Easterly 2007: http://www.nyu.edu/fas/institute/dri/Easterly/Research.html.

Age of epidemic
Year of first reported AIDS case. World Bank (1997). *Confronting AIDS*, Statistical Appendix, Table 2: http://www.worldbank.org/aids-econ/confront/confrontfull/tables.html.

Male circumcision
MC1: Drain (2006): http://www.biomedcentral.com/content/pdf/1471-2334-6-172.pdf.

MC2: Williams et al. (2006): http://medicine.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pmed.0030262.

High risk sex
Demographic Health Surveys provided by USAID, downloaded from:
http://www.measuredhs.com/.

First sex
Demographic Health Surveys provided by USAID, downloaded from:
http://www.measuredhs.com/.

Young having premarital sex last year
Demographic Health Surveys provided by USAID, downloaded from:
http://www.measuredhs.com/.

Multiple partners
Demographic Health Surveys provided by USAID, downloaded from:
http://www.measuredhs.com/.

Female commercial sex workers
Vandepitte et al. (2006): http://sti.bmj.com/cgi/content/abstract/82/suppl_3/iii18.

Had commercial sex last year
Demographic Health Surveys provided by USAID, downloaded from:
http://www.measuredhs.com/.

Trust
Globalbarometer with links: http://www.globalbarometer.net/objectives.htm.

Immunisation rates measles
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

Immunisation rate Tuberculosis
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

Child mortality < 5
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

Public health expenditures
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

Homicide rates/100.000
UNDP, *Human Development Report* 2007/2008: http://hdr.undp.org/en/statistics/.

Crime rate SSA
Indicator constructed from classification of African countries in five categories according to
assessed crime rate. UNODC (2005): http://www.unodc.org/pdf/African_report.pdf.

Independence year
Adjustments made as explained in the main text. Wikipedia:
http://en.wikipedia.org/wiki/Independence_Day.

SAMPLE. 90-COUNTRY SAMPLE OF BASIC MODEL

Algeria	Macedonia
Argentina	Madagascar
Armenia	Malawi
Azerbaijan	Malaysia
Bangladesh	Mali
Belarus	Mauritania
Bolivia	Mauritius
Botswana	Mexico
Brazil	Moldova
Bulgaria	Mongolia
Burkina Faso	Mozambique
Burundi	Myanmar
Cambodia	Namibia
Cameroon	Nepal
Central African Republic	Nicaragua
Chad	Niger
Chile	Nigeria
China	Pakistan
Colombia	Panama
Costa Rica	Papua New Guinea
Côte d'Ivoire	Paraguay
Dominican Republic	Peru
Ecuador	Philippines
Egypt	Romania
El Salvador	Russian Federation
Estonia	Rwanda
Ethiopia	Senegal
Gabon	Sierra Leone
Gambia	Slovenia
Georgia	South Africa
Ghana	Sri Lanka
Guatemala	Sudan
Guinea	Swaziland
Guinea-Bissau	Tanzania
Honduras	Thailand
India	Trinidad and Tobago
Indonesia	Tunisia
Jamaica	Turkmenistan
Kazakhstan	Uganda
Kenya	Ukraine
Kyrgyzstan	Uruguay
Lao People's Dem Rep	Venezuela
Latvia	Viet Nam
Lebanon	Zambia
Lesotho	Zimbabwe
Lithuania	

ANNEX 2. A SKETCH OF AN INCOME INEQUALITY-SEXUAL RISK BEHAVIOUR MODEL

Let an individual maximise the following utility function over two periods:

$$U = U^1(Y^1, p) + m(y)(1-rp)U^2(Y^2, q) \tag{1}$$

with

$$Y^1 = y + tp$$
$$Y^2 = y + tq$$

where

U   =   total utility

U^1 =   utility period 1

U^2 =   utility period 2

p   =   number of "transactional sex" partners period 1

q   =   number of "transactional sex" partners period 2 (not of interest here)

Y^1 =   total income period 1

Y^2 =   total income period 2

y   =   income excluding cost/income from transactional sex, assumed to be the same both   periods

t   =   a fixed monetary cost/income of engaging in transactional sex (some individuals sell, others buy, with t negative for buyers and positive for sellers)

m(y) =   non HIV-related expectancy to survive to period 2 (supposed to be increasing with income)

r   =   risk of contaminating HIV from an additional transaction sex partner, contamination assumed to lead to non-survival period 2.

Standard properties of the utility function are assumed (second-order partials negative, cross partials zero or negligible, no corner solution). The individual will choose the number of transactional sex partners in period 1 that satisfies—that is, equation (1) differentiated with respect to p:

$$tU^1_Y + U^1_p - m(y) r U^2 = 0 \quad => p^* \tag{2}$$

Differentiating (2) with respect to income y gives:

$$tU^1_{Yy} + U^1_{pp}dp/dy - [rU^2 dm/dy + m(y)rU^2_y] = 0 \tag{3}$$

or

$$dp/dy = [rU^2 dm/dy + m(y)rU^2_y - tU^1_{Yy}] / U^1_{pp} \tag{4}$$

rich buyer (t<0): +   +   -   -
poor seller (t>0): +   +   +   -

The poor "seller" of transactional sex will unambiguously reduce the number of partners with increasing income (dp/dy <0): increased income means higher expected non HIV-related survival (dm/dy >0) and increased utility period 2 (U^2_y>0), and hence less willingness to take the risk of being infected. Increased income also reduces the marginal utility of the additional income derived from transactional sex (tU^1_{Yy}<0).

For a "buyer", the value of dp/dy depends on a trade-off: higher income means higher expected survival and a greater utility period 2, and hence less willingness to take the risk of being infected and not surviving. But being richer also means that the marginal utility loss from paying "t" is lower—that is, transactional sex becomes more affordable. If the latter effect dominates, increasing income means more "buyers".

Higher income inequality means that there will be more of both rich and poor people, so there will be more potential sellers of transactional sex, and possibly also more buyers. Adding a price mechanism (that is, let "t" be a function of supply and demand so that price goes down as more sellers enter the market) would reinforce the basic point of this model further, as demand from rich "buyers" would react to the price effect.

ANNEX 3

TABLE A1

Study (author/journal)	Main theme	Sample	Independent variable	Explanatory variables ("significant" in bold)	General remarks and specific findings concerning income inequality
Tsafack Temah (2008) PhD dissertation, University d'Auvergne	HIV and income inequality HIV and gender inequality	SSA 29 countries pooled data 1997–2005	Logit HIV $=\ln[hiv/(C\text{-}hiv)]$	**Inequality/Gini (+)** Female economic participation **Female/male school enrolm. (-)** Maternal leave benefits Log GNI/cap **Poverty(water+malnutrition) (-)** Access to healthcare **Adult literacy (+)** **Muslim % (+)** **Ethnic fractionalisation (+)** Log TV sets (-) **Contraceptive prevalence (-)** Urbanisation rate Conflict Voice and accountability **Southern/Eastern Africa (+)** Prevalence border country	*Income inequality remains robust for various tests, such as using instrument for GNI/cap, allowing for interaction variables, making HIV binary, etc. It is estimated that income inequality adds 30% explicative power to the model. *The HIV-inequality link is not explicitly tested but some potential transmission mechanisms mentioned (such as material deprivation, psychosocial, social cohesion). *Some but not all gender variables shown to be robust. *Most results, including on income inequality, also remain significant when, in a smaller sample, HIV prevalence rate is replaced by HIV incidence.
Sawers et al. (2008) *AIDS Care*	HIV and cofactor infections	Global 80 countries	LOG HIV	**Inequality/GINI (+)** LogGNI/cap (PPP) **Adult literacy (+)** Urban % Age of epidemic **Muslim % (+)** **Southern Africa (+)** Contraceptive use **Cofactor infections (STI, parasites, etc.) (+)** **Age first sex females (-)**	Median age for first sex is tested in a smaller sample (45 countries) and is significant as an explanatory variable. In this sample and model specification, the Gini variable loses its significance.

Study	Topic	Sample	Outcome	Variables	Notes
Broody/Deuchert (2007) *Annals of Epidemiology*	HIV and unsafe healthcare	Global 54 develop. countries	HIV prevalence	**Inequality/Gini (+)** GDP per capita Health expenditures Literacy Vaccination Physicians/cap **Urban share (-)** **Muslim %** Female/male literacy **Female economic activity (-)** Age of epidemic **SSA dummy (+)** **LAC dummy (-)** Asia dummy Eastern Europe dummy **No-use autodisable syringe (+)**	*Non-use of autodisable syringes significantly related to HIV, indicating transmission through unsafe healthcare. *In a SSA-only sample tetanus immunisation coverage is also significantly and positively related to HIV, also indicating healthcare transmission.
Talbott (2007) *PLoS ONE*	HIV and commercial sex workers	Global 77 countries	HIV prevalence	**Inequality/Gini (+)** **Female illiteracy rate (-)** **Muslim % (+)** **Commercial sex workers (+)** GDP/capita	*Inequality robust for all model specifications. *Significance of "Muslim" not robust for inclusion of commercial sex worker.
Drain et al. (2006) *Epidemiology and Social Science*	HIV determinants	Global 122 devel. countries	LOG HIV	Examine 81 different socioeconomic variables Strong predictors were: **Male circumcision (-)** **Regional dummies** **Female illiteracy (-)** **Age structure (+)** **Immunisation (-)** **Age of epidemic (+)**	Unclear methodology. Not reported how inequality was used in multivariate model, but reported as significant correlate in bivariate analysis.

Study	Topic	Sample	Outcome	Variables	Comments
Gray (2003) *Soc Science and Medicine*	HIV and Islam	SSA 38 countries	HIV prevalence	**Muslim % (+)** **GDP/cap (+)** Population density Urban % Age of epidemic	Also contain meta-study of findings on Islam and HIV, where all but one reporting Islam leading to less HIV. Potential pathways indicated as male circumcision, restrictive norms on alcohol and marital codes. Ambiguous evidence of Islam being related to less risky sexual behaviour.
McIntosh (2007) *Univ. of California Working Paper*	HIV and mortality, increased preval. from better healthcare	SSA 31 countries	HIV prevalence	Population density Road network 1990 GDP/cap **Female mortality 1980 (-)**	High female mortality in 1980s negatively related to HIV prevalence. Good healthcare leading to reduced mortality could increase prevalence, claimed to explain why richer African countries have higher prevalence.
Sutherland (2007) *Nottingham University Conference Paper*	HIV and income inequality	China 30 provinces		**Inequality urban/rural (+)** Female literacy Various others (not reported)	The inequality variable remains robust for inclusion of a set of 15 different explanatory variables (details not given).
Crosby and Holtgrave (2003) *Sexually Transmitted Infections, STI online*	HIV income inequality and social capital	US states 48 states	AIDS case rate	**Inequality richest/poorest deciles (+)** **Social capital (index of 14 measures) (-)** **Poverty**	
Moran and Jordaan (2007) *Int. Journal of Health Geographics*	Determinants of regional prevalence	Russia 78 regions	HIV prevalence	GDP/capita **Mobility/number of cars (+)** **Urbanisation (+)** **Teenage crime (+)** Healthcare/hospital beds **Far East dummy (+)**	No income inequality measure used.
Nepal (2007) *World Health and Population*	HIV and equity, governance, gender	Global 100 countries	HIV prevalence	**Inequality/Gini (+)** GDP/cap **Gender development index (-)** Good governance	

TABLE A2

Dependent variable: LOGHIV

Table report standardised regression coefficients with t-statistics below. Significance at 5% level in bold.

Round	Sample[1]	GINI	LogGDP/capita	Adult Literacy 1995-05	Urban Growth 1990-95	Muslim %	SSA dummy[2]	Poverty indicators	Gender inequality indicators	Ethnic fractionalisation	Age epidemic	Male circumcision[3]	F-value	R-squared, adjusted
1–5 Base model														
1	AllDev	**0.36**	0.00	**-0.48**	0.11	**-0.43**							17.75	0.482
	n=90	4.44	0.03	-4.24	1.05	-4.85								
2	AllDev	**0.20**	-0.08	-0.08	-0.02	**-0.38**	**0.73**						42.29	0.734
	n=90	3.29	-1.41	-0.83	-0.25	-5.90	9.01							
3	SSA	**0.34**	-0.22	-0.89	0.10	**0.67**							8.46	0.531
	n=33	2.58	-1.81	-0.46	0.79	-3.72								
4	SSA	0.22	-0.16	-0.18	0.04	**-0.57**	**0.40** S. Afr. dummy						10.541	0.634
	n=33	1.82	-1.44	-1.05	0.31	-3.54	2.99							
5	NotSSA	**0.24**	0.05	-0.30	-0.18	**-0.53**							6.145	0.315
	n=56	2.06	0.32	-2.00	-1.17	-4.50								
6–9 Alternative poverty indicators														
6	AllDev	**0.40**	-0.04		0.14	**-0.23**		Poverty <1USD **0.38**					19.129	0.525
	n=82	4.66	-4.86		1.34	-2.85		3.76						
7	AllDev	**0.26**	-0.08		-0.17	**-0.31**	**0.76**	-0.02					41.374	0.747
	n=82	4.03	-1.36		-0.22	-5.18	8.28	-0.26						
8	SSA	**0.40**	-0.13		0.02	**-0.56**		-0.04					5.796	0.48
	n=26	2.72	-0.87		0.12	-3.77		-0.30						
9	SSA	0.16	-0.05		-0.06	**-0.27**	**0.65** S. Afr. dummy	0.03					14.838	0.762
	n=26	1.44	-0.47		-0.58	-2.37	5.08	0.32						

10–18 Gender inequality

Row	Sample								Female/male literacy / Gender empowerment index / HDI-GDI rank / Contraceptive use married women		
10	AllDev n=86	**0.42** 4.76	-0.03 -0.31		**0.20** 2.02	**-0.39** -4.09			**-0.33** -3.07	14.996	0.449
11	AllDev n=86	**0.22** 3.41	-0.08 -1.47	-0.12 -0.70	-0.04 -0.48	**-0.36** -5.39	**0.71** 8.71		0.06 0.40	34.19	0.73
12	AllDev n=86	**0.39** 4.44	-0.01 -1.03	-0.55 -2.33	0.08 0.70	**-0.40** -4.36			0.11 0.51	14.087	0.477
13	AllDev n=46	**0.39** 2.89	0.27 1.98	-0.36 1.99	0.06 0.34	-0.30 -1.85			0.08 0.50	6.261	0.407
14	AllDev n=46	**0.30** 2.41	0.11 0.83	-0.14 -0.79	0.03 0.23	-0.28 -0.20	**0.44** 3.35		0.04 0.31	8.34	0.528
15	AllDev n=85	**0.39** 4.51	0.00 0.04	**-0.50** -3.97	0.08 0.73	**-0.42** -4.36			0.04 0.53	13.347	0.47
16	AllDev n=85	**0.23** 3.62	-0.07 -1.28	-0.09 -0.91	-0.04 -0.52	**-0.38** -5.55	**0.73** 8.85		-0.01 -0.12	33.83	0.73
17	AllDev n=86	**0.37** 4.82	-0.02 -0.30	-0.15 -1.13	0.07 0.70	**-0.44** -5.20			**-0.45** -3.77	18.856	0.555
18	AllDev n=86	**0.21** 3.25	-0.08 -1.46	-0.04 -0.33	-0.01 -0.08	**-0.38** -5.80	**0.69** 7.49		-0.08 -0.74	35.283	0.736

19–21 Ethnic fractionalisation

Row	Sample										
19	AllDev n=84	**0.32** 3.73	-0.01 -0.08	**-0.40** -3.16	0.09 0.78	**-0.43** -4.56			**0.18** 2.03	12.426	0.449

#	Sample										F	R²
20	AllDev	**0.20**	-0.09	-0.07	-0.03	**-0.39**	**0.73**			**-0.01**	28.893	0.699
	n=84	3.03	-1.45	-0.65	-0.36	-5.53	8.11			-0.11		
21	SSA	**0.34**	**-0.29**	-0.05	0.10	**-0.60**				-0.19	5.824	0.55
	n=27	2.26	-2.10	-0.21	0.66	-2.94				-1.28		

22–24 Age of epidemic

#	Sample										F	R²
22	AllDev	**0.35**	-0.19	**-0.10**	0.12	**-0.63**			-0.18		6.955	0.438
	n=84	2.59	-1.48	-0.50	0.93	-3.18			-1.30			
23	AllDev	**0.16**	-0.09	-0.07	-0.02	**-0.39**	**0.74**		-0.03		30.428	0.71
	n=84	2.55	-1.53	-0.73	-0.19	-5.24	8.62		-0.40			

24–28 Male circumcision

#	Sample										F	R²
24	AllDev	**0.37**	0.00	**-0.48**	0.11	**-0.39**			-0.06		14.682	0.477
	n=90	4.40	0.05	-4.24	1.09	-2.93			-0.43			
25	AllDev	**0.23**	-0.08	-0.03	-0.01	-0.10	**0.83**		**-0.36**		45.022	0.774
	n=90	4.06	-1.53	-0.39	-0.09	-1.06	10.55		-4.00			
26	AllDev	**0.24**	-0.08	0.00	0.00		**0.85**		**-0.43**		52.264	0.774
	n=90	4.33	-1.52	0.01	-0.02		11.40		-7.47			
27	SSA	**0.34**	-0.22	-0.09	0.10	**-0.67**					8.462	0.531
	n=33	2.58	-1.81	-0.46	0.79	-3.72						
28	SSA	**0.37**	-0.19	-0.11	-0.02	**-0.51**			**-0.37**		11.644	0.67
	n=33	3.16	-1.87	-0.66	-0.15	-3.11			-2.78			

Data sources: See Annex 1.

Software: SPSS 16.0.

1. AllDev = All developing countries with data available; SSA = Sub-Saharan Africa; NotSSA = All developing countries excluding SSA.

2. Dummy is for SSA countries except in SSA-only equations, where it refer to countries in southern Africa, as indicated.

3. Note difference in male circumcision indicator for SSA-only sample; see main text and Annex 1.

REFERENCES

Barnett, T. and A. Whiteside (2006). *AIDS in the Twenty-First Century*. London, Palgrave Macmillan.

Beegle, K. and B. Özler (2006). *Young Women, Rich(er) Men and the Spread of HIV*. Mimeographed document. International Food Policy Research Institute Website <http://www.ifpri.org/themes/gender/Presentation/BeegleK.ppt>.

Bjornskov, C. (2006). 'Determinants of Generalized Trust: A Cross-Country Comparison', *Public Choice* 130, 1–21.

Broody, S. and E. Deuchert (2007). 'Lack of Autodisable Syringe Use and Health Care Indicators Are Associated with High HIV Prevalence: An International Ecological Analysis', *Annals of Epidemiology* 17 (3), 199–207. Circumcision Information and Resources Website <http://www.cirp.org/library/disease/HIV/deuchert1/>.

Brummer, D. (2002). *Labour Migration and HIV/AIDS in Southern Africa*. Pretoria, International Organisation for Migration. Southern African Regional Poverty Network Website <http://www.sarpn.org.za/documents/d0000587/index.php>.

Campbell, C., B. Williams and D. Gilgen (2002). 'Is Social Capital a Useful Conceptual Tool for Exploring Community Level Influences on HIV Infection? An Exploratory Study from South Africa', *AIDS Care*, 14 (1), 41–54.

David, A. C. (2007). 'HIV/AIDS and Social Capital in a Cross-Section of Countries', *Policy Research Working Paper* 4263. Washington, DC, World Bank. World Bank Website <http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469372&piPK=64165421&menuPK=64166093&entityID=000016406_20070621101825>.

Drain, P. K. et al. (2004). 'Correlates of National HIV Seroprevalence. An Ecological Analysis of 122 Developing Countries', *Journal of Acquired Immune Deficiency Syndrome* 35 (4), 407–420.

Drain, P. K. et al. (2006). 'Male Circumcision, Religion and Infectious Diseases: An Ecologic Analysis of 118 Developing Countries', *BMC Infectious Diseases* 6 (1), 172. Biomed Central Website <http://www.biomedcentral.com/1471-2334/6/172>.

Easterly, W. (2007). 'Inequality Does Cause Underdevelopment', *Journal of Development Economics* 84 (2), 755–776.

Gillespie, S. and R. Greener (2006). *Is Poverty or Wealth Driving the HIV Epidemic?* PowerPoint presentation prepared for UNAIDS expert consultation on the prevention of sexual transmission of HIV. 22-25 September. UNAIDS Website <http://data.unaids.org/pub/Presentation/2007/gillespiegreener20060922_en.pdf>.

Glick, P. (2007). *Reproductive Health and Behaviour, HIV/AIDS, and Poverty in Africa*, Report prepared for the African Economic Research Consortium, Cornell University. Cornell University Website <http://www.cfnpp.cornell.edu/images/wp219.pdf>.

Gray, P. (2003). 'HIV and Islam: Is HIV Prevalence Lower among Muslims', *Social Science and Medicine* 58 (9), 1751–1756.

Halperin, D. and H. Epstein (2007). 'Why is HIV Prevalence So Severe in Southern Africa: The Role of Multiple Concurrent Partnerships and Lack of Male Circumcision: Implications for

AIDS Prevention', *The Southern African Journal of HIV Medicine* 26, 19–23. Harvard Center for Population and Development Studies Website <http://www.harvardaidsprp.org/research/halperin&epstein-why-is-hiv-prevalence-so-severe.pdf>.

Hargrove, J. W. (2007). *Migration, Mines and Mores: The HIV Epidemic in Southern Africa*. Stellenbosch, South Africa, Stellenbosch University. Stellenbosch University Website <http://www0.sun.ac.za/sacema/publications/Hargrove%20Migration%20Mines%20and%20Mores.pdf>.

Holmqvist, G. (2000). 'Latin American Crime and the Issue of Inequality', *Iberoamericana – Nordic Journal of Latin American and Caribbean Studies* 30 (2), 23–54.

Holtgrave, D. R. and R. A. Crosby (2003). 'Social Capital, Poverty and Income Inequality as Predictors of Gonorrhoea, Syphilis, Chlamydia and AIDS Case Rates in the United States', *Sexually Transmitted Infections* 79, 62–64. STI Website <http://sti.bmj.com/cgi/reprint/79/1/62?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&author1=Holtgrave&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&sortspec=relevance&resourcetype=HWCIT>.

Jeonghoon, A. (2002). 'Beyond Single Equation Regression Analysis, Path Analysis and Multi-Stage Regression Analysis', *American Journal of Pharmaceutical Education* 66, 37-42. AJPE Website <http://www.ajpe.org/legacy/pdfs/aj660105.pdf>.

Kaplan, G. A. et al. (1996). 'Inequality in Income and Mortality in the United States: Analysis of Mortality and Potential Pathways', *British Medical Journal* 312 (7037), 999–1003.

Kawachi, I., B. P. Kennedy and R. G. Wilkinson (1999). *Income Inequality and Health*, *The Society and Population Health Reader* Vol. 1. New York, New Press.

Leclerc-Madlala, S. (2004). 'Transactional Sex and the Pursuit of Modernity', *Social Dynamics* 29 (2), 1–21. Healthdev Website <http://www.healthdev.org/eforums/Editor/assets/accelerating-prevention/Transactional_sex_and_the_pursuit_of_modernity.pdf>.

McIntosh, C. (2007). 'Has Better Health Care Contributed to Higher HIV Prevalence in Sub-Saharan Africa?' Mimeographed document. University of California at San Diego Website <http://irps.ucsd.edu/assets/015/6810.pdf>.

Moran, D. and J. Jordan (2007). 'HIV/AIDS in Russia: Determinants of Regional Prevalence', *International Journal of Health Geographics* 6 (22). IJHG Website <*http://www.ij-healthgeographics.com/content/pdf/1476-072X-6-22.pdf*>.

Nepal, B. (2007). 'Prosperity, Equity, Good Governance and Good Health: Focus on HIV/AIDS Pandemic and its Feminization', *World Health and Population* 9 (3).

Oster, E. (2007). 'HIV and Sexual Behaviour Change: Why Not Africa?' Mimeographed document. University of Chicago Website. <http://home.uchicago.edu/~eoster/hivbehavior.pdf>.

Piot, P., R. Greener and S. Russell (2007). 'Squaring the Circle: AIDS, Poverty and Human Development', *PloS Med* 4 (10), 1571–1575. PLoS Website <http://medicine.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pmed.0040314&ct=1>.

Putnam, R. (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York, Simon & Shuster.

Sampson, R. J., and W. B. Groves (1989). 'Community Structure and Crime: Testing Social Disorganization Theory', *American Journal of Sociology* 94, 774–802.

Sawers, L., E. Stillwaggon and T. Hertz (2008). 'Cofactor Infections and HIV Epidemics in Developing Countries: Implications for Treatment', *AIDS Care* 20 (4), 488–494. American University Website <http://nw08.american.edu/~hertz/cofactor%20infections%20and%20HIV%20epidemics%20final%20version%20with%202006%20data.pdf>.

Setel, P., M. Lewis and M. Lyons (1999). *Histories of Sexually Transmitted Diseases and HIV/AIDS in Sub-Saharan Africa*. Westport, Conn., Greenwood press.

Sutherland, D. (2007). *Exploring the Economic and Social Terrain of Epidemic Disease in China: Income Inequality and HIV/AIDS – Is There a Relationship? Conference Papers*, Warwick, United Kingdom, University of Warwick. Centre for the Study of Globalisation and Regionalisation Website <http://www2.warwick.ac.uk/fac/soc/csgr/activitiesnews/conferences/2007/hivaids/papers/sutherland.doc>.

Talbott, J. R. (2007). 'Size Matters: The Number of Prostitutes and the Global HIV/AIDS Pandemic', *PLoS ONE* 2 (6). PLoS Website <http://www.plosone.org/article/info:doi%2F10.1371%2Fjournal.pone.0000543>.

Tsafack Temah, C. (2008). *The Role of Income and Gender Inequalities in the Spread of the HIV/AIDS Epidemic: Evidence from Sub-Saharan Africa*. Doctoral dissertation, University d'Auvergne.

UNAIDS (2006). *2006 Report on the Global AIDS Epidemic*. UNAIDS Website <http://www.unaids.org/en/KnowledgeCentre/HIVData/GlobalReport/>.

UNAIDS (2007). *New Data on Male Circumcision and HIV Prevention. Policy and Programme Implications*. UNAIDS Website <http://data.unaids.org/pub/Report/2007/mc_recommendations_en.pdf>.

UNODC (2005). *Crime and Development in Africa*. UNODC Website <http://www.unodc.org/pdf/African_report.pdf>.

Vandepitte, J. et al. (2006). 'Estimates of the Number of Female Sex Workers in Different Regions of the World', *Sexually Transmitted Infections* 82, 18–25. STI Website <http://sti.bmj.com/cgi/content/abstract/82/suppl_3/iii18>.

Wilkinson, R. (1996). *Unhealthy Societies: The Affliction of Inequality*. London, Routledge.

Williams, B. G. et al. (2006). 'The Potential Impact of Male Circumcision on HIV in Sub-Saharan Africa', *PLoS Medicine* 3 (7). PLoS Website <http://medicine.plosjournals.org/perlserv/?request=get-document&doi=10.1371/journal.pmed.0030262>.

NOTES

1. The usefulness of cross-country analysis, however, should not be overestimated. It has clear limitations, in particular as regards guiding interventions.

2. The log transformation is rarely given a theoretical justification in the literature. Its impact is to improve the statistical properties of the variable, "flattening out" the outliers.

3. In the literature on income inequality and health, an additional transmission mechanism often discussed is the psychosocial one (that is, negative health effects from feelings of stress and alienation in an unequal society). This transmission mechanism seems less plausible with regard to HIV and has not been included here.

4. To address the direction of causality, male circumcision was used as an instrument for HIV prevalence. But the validity of male circumcision as an instrument is doubtful because it is likely to correlate with country or cultural characteristics. See Glick (2007: 29).

Paper 3

Fertility Impact of High-Coverage Public Pensions in sub-Saharan Africa

Göran Holmqvist
Nordic Africa Institute, Uppsala/Sweden

30 May 2011

Abstract: The potential link between child-related cash transfers and increased fertility is often raised as an issue of concern in debates as to their use. Old age pensions are a form of cash transfer where theory would suggest the opposite impact, namely, pensions equalling decreasing fertility. A handful of sub-Saharan African countries have introduced non-contributory social pensions that cover the great majority of the older population. This makes these countries a distinctive group in relation to the rest of the region, where public old age security arrangements, if they exist at all, are largely confined to the formal sector. This paper attempts to trace the impact these high-coverage pension schemes may have had on fertility. The findings suggest there has been such an impact, to the extent of 0,5 to 1,5 fewer children per woman, depending on model specification. However, data limitations and methodological concerns require that the results be interpreted cautiously.

Introduction

Social protection in the form of cash transfers is high on the development agenda. One recurring concern in the debate on child-related cash transfers is the impact these might have on fertility, given the high dependency ratios in many developing countries. In the case of South Africa, which is one of the few sub-Saharan African countries that has

introduced a child grant on any scale, the potential fertility impact of the grant (particularly on teenagers) has been the subject of heated debate and was used as an argument against its introduction (Lund, 2008). Concern over a potential fertility impact is also sometimes reflected in the design of child-related cash transfer schemes. For instance, in some Latin American schemes household benefits are unaffected by children born after the family enters the programme (Stecklov, Winters, Todd and Regalia, 2007).

Social pensions for the elderly are another form of cash transfer, and like child-related cash transfers are part of the 'social protection floor' advocated by the United Nations.[i] A handful of sub-Saharan African countries have introduced such social pensions for the elderly and they are also under consideration elsewhere on the continent. However, despite being part of the same package of proposed social protection measures, the impact of pension schemes on fertility seems to attract less interest than that of child grants.

The effect of social transfers on fertility is also an issue of debate in OECD countries, but here the interest is driven by the opposite concern, that fertility is too low. However, among OECD countries both child-related social transfers and pensions have been closely scrutinized for their potential fertility impact. A number of empirical studies of fertility development in advanced economies have pointed to old age pensions as one contributing factor, among others. A theoretical assumption underpinning these studies is that children may serve as a parental investment in old age care, and that the existence of public old age pensions reduces that motive. In this context, pension systems have sometimes been blamed for causing a reduction in fertility, over time resulting in fewer tax payers to sustain them (Cigno and Werding, 2007).

Does this claimed pension-fertility link also have a bearing on sub-Saharan Africa? It is sometimes assumed this should be the case (Kidd 2009). Can this assumption be tested empirically? Most sub-Saharan African countries have some sort of public pension system for public sector employees, sometimes extending to segments of the formal sector. As the vast majority of Africans are active either in the rural or the informal urban sector, these pension systems can hardly be assumed to have a substantial impact on aggregate fertility rates. However, there are exceptions. A few sub-Saharan African countries (South Africa, Mauritius, Seychelles, Namibia, Botswana, Lesotho and Swaziland) have introduced non-contributory pension schemes that benefit the great majority of the elderly. These were introduced at different times, with South Africa and

Mauritius having the oldest systems, dating back more than 50 years, while Lesotho and Swaziland are the latest additions, with systems introduced in 2004 and 2006 respectively. If the theory of a pension-fertility link holds in Africa, it is in these countries that we might detect a fertility impact. That is the hypothesis to be tested here.

Some caveats are necessary right from the start. There are severe data limitations regarding African historical indicators on expenditures, pension coverage and on other fertility determinants. All the usual reservations about the limitations of cross-country econometric analysis also apply. Some indication that such an effect exists is to be expected from this exercise, rather than exact estimates.

The three sections that follow review results from the 'pension-fertility' literature, give some background to fertility development in sub-Saharan Africa and provide an overview of the high-coverage pension systems that have been introduced in the region. The theoretical considerations are discussed in the fifth section, followed by a presentation of the econometric results. The last section discusses potential policy implications.

Results from the pension-fertility literature

The 'theory' of a link between old age security and fertility dates back to at least the 1950s (Leibenstein, 1957). Since then, there have been numerous contributions from demographers, economists and sociologists (Neher, 1971; Caldwell, 1982; Becker and Barro, 1988 are among the early contributions). Economists have developed formal models in which rational and utility-maximizing agents choose their desired family size influenced by old age security considerations and where children are assumed to support elderly parents. The models differ in complexity, involving interaction with a range of other variables such as savings, growth, capital market imperfections, properties of the tax and social security system, etc. In general, these models predict that a pension-fertility link is to be expected (although this does not necessarily follow, depending on model specification), a prediction that has been tested repeatedly using econometrics on macro-data. Although most empirical applications refer to the developed world, many of these theoretical models explicitly pretend to capture the effect of introducing public pensions in a development context where informal old age security is provided within the family (Wigger, 1998 and Holler, 2007).

Table 1 (attached) reports the results of a handful of recent econometric studies of the pension-fertility link (it is not intended to be exhaustive). Given the purposes of this paper, the key findings may be summarized thus:

- This literature has tended to reach the conclusion that pensions lower fertility. This result is reached in studies based on different model specifications and samples and in single-country as well as cross-country studies, and is confirmed after the inclusion of a wide range of control variables and econometric tests.

- Finalized studies focusing exclusively on sub-Saharan Africa cannot be identified, but some of the cross-country samples include developing countries.[ii] Most results are based either on single-country studies in high-income countries or on panel data where low-income countries, particularly African countries, are less represented due to lack of data. In other words, there is an apparent 'Africa gap' in this literature, which this article attempts to fill.

- In some single-country studies, pensions and child benefits have been combined as an explanatory variable (Germany, UK and Hungary). The results in these cases indicate that pensions negatively impact fertility, while child benefits impact positively, with roughly comparable orders of magnitude.

There is also a large literature focusing exclusively on the impact of family policies such as child-related social transfers on fertility in OECD countries. In general, results indicate that family policies have at least some positive impact on fertility, although the estimated magnitude varies and is sometimes quite small (see Gauthier, 2007 for an overview). The more recent wave of child-related cash transfer schemes in developing countries have also been evaluated for their impact on fertility. A review of three major Latin American conditional cash transfer programs found an impact on fertility in just one of them, a finding attributed to the different designs of these programs in regard to creating incentives for child bearing (Stecklov et al., 2007).

Some remarks on fertility in sub-Saharan Africa

Sub-Saharan Africa is sometimes described as being half-way through its demographic transition, with mortality and fertility indicators at roughly comparable levels to those of South America in the 1960s or China in the early 1970s (Malmberg, 2008). Average fertility rates for sub-Saharan

Africa started to fall in the 1980s and have since then declined 25 percent to 5,1 children per woman. The UN predicts, mainly by extrapolating present trends, that it will take another 35 years for sub-Saharan Africa fertility to reach 3 children per woman, a slower rate of decline than has been observed in South America, India and China (Malmberg, 2008). The population of Africa is projected to approximately double by 2050, reaching close to two billion people or slightly more than one-fifth of the world population. Assumptions made about the rate of fertility decline are key factors in these projections (UN, 2009).

Fertility is now declining all over sub-Saharan Africa. However, this process varies considerably across the continent. The decline has been greatest in the Southern Africa sub-region, lowest in West Africa while East Africa is in an intermediate position. The total fertility rate ranges from 2-3 children per woman in South Africa, Mauritius and Botswana to 6-7 children per woman in countries such as Burkina Faso, Mali and Niger. There is a clear rural-urban divide in this development, with fertility starting to decline as early as the 1960s in some urban areas but not until the late 1990s in the last rural areas (Garenne, 2008). In terms of simple correlations, it is apparent that African countries with lower fertility rates also tend to be richer in terms of GDP/capita, more urbanized and with better social indicators (Garenne, 2008).

High-coverage pension systems in sub-Saharan Africa

In general, sub-Saharan African countries have some form of mandatory contributory pension system, in most cases with legal origins dating back to the first decades of independence (ISSA, 2009). Comparable data on coverage and expenditures are scarce. In the ILO/Social Security Expenditure database (widely used in the studies presented in Table 1 above), just 15 African countries have data reported for any year on pension expenditure/GDP for the 1990-96 period, most in the range of 0,1 to 0,5 percent. Indicators on contributory pension scheme coverage (contributors/labour force) reveal that, with few exceptions, contributors constitute approximately just 5 percent of the labour force (Barrientos, 2008). Hence, the general picture in sub-Saharan Africa is that the vast majority of the population is uncovered by any form of publicly organized old age security. However, there are exceptions.

In discussions of a possible pension-fertility link in Africa, the systems of interest are those that provide old age security to a majority of the elderly. In this study, these are labelled 'high-coverage' systems, disregarding such distinctions as universal/means-tested. Seven sub-Saharan African countries have such systems: South Africa, Mauritius,

Namibia, Seychelles, Botswana, Lesotho and Swaziland (recent reform measures mean Cape Verde is likely to join this group). From a global perspective, these African non-contributory, large-scale pension schemes are in fact highly unusual: in a social pension database provided by HelpAge, just two developing countries outside Africa (Bolivia and Chile) have social pensions covering more than 50 percent of the elderly.[iii] Key information on them gathered from different sources, with estimates to be taken as rough indications rather than as strictly comparable, is presented in Table 2 (attached).

One trait common to these systems, whether universal or means-tested, is that they are non-contributory. It means that they are non-funded and tax-financed, with beneficiaries receiving their pensions regardless of previous tax-contributions. It has been noted elsewhere that the non-contributory feature is apparently necessary if high-coverage is to be achieved in countries where rural and informal sectors dominate (see Barrientos, 2008 and Holzmann and Hinz, 2005). The seven systems noted above are reasonably comparable in terms of i) coverage rate (all over 80 percent of age-qualified population), ii) pension benefit as share of GDP per capita (mostly in the 15-25 percent range) and iii) aggregate pension cost in relation to GDP (roughly 1-2 percent). Complementary contributory pension schemes exist in these countries but have marginal coverage rates, except for Mauritius where contributors constitute 50 percent of the labour force. (In no country in sub-Saharan Africa, except Mauritius and Cape Verde, do contributors constitute more than 20 percent of the labour force, and in almost all countries the share is 5-10 percent (Holtzmann et al., 2009).)

It is clear from the history of these pension systems that the social and political context in which they were introduced varies greatly:

<u>South Africa and Namibia, pensions introduced as part of apartheid policies</u>: In the case of South Africa, non-contributory state pensions were introduced for whites and coloureds in 1928, inspired by European welfare policies. Eligibility was extended to urban Africans in 1944 and to rural Africans in 1948. Pension payment rates were differentiated according to race and rural/urban residence (the ratio between a white and a non-white rural pension was 11 to 1 in 1965) and the system was used to advance various apartheid policies (Devereux, 2001; Pelham, 2007). The number of natives/Africans receiving old age pensions is reported to have risen from 197,000 in 1947 to 400,000 by 1973 (Devereux, 2001). Although it has not been possible to identify early indicators of coverage, these figures imply that the system already covered a majority of the elderly early on in the apartheid era.[iv] Since

1994, South Africa has had a unified, non-contributory and means-tested pension system (the means-test serving to exclude a rich minority rather than identifying the poor). Coverage has been reported to be 87 percent of age-qualified population with annual pension benefits of the order of 30 percent of GDP/capita (Willmore, 2007).

Initially, the South African pension system did not apply to residents of South West Africa (now Namibia), but was extended to white residents there in 1949, to coloureds in 1965 and to the native/African population in 1973. As in South Africa, pension benefits were initially differentiated by race. After Namibian independence in 1990, a universal pension system, equal for all races, was established. In contrast to South Africa, there has been no means-testing since then. Coverage rates at independence were about 50 percent, rates which the new government has sought to increase. During the 1990s, coverage rates improved, particularly after the privatization of pension delivery and the introduction of mobile cash dispensing machines, which made monthly tours to remote areas (Devereux, 2001).

Mauritius, an unintended system that survived: Mauritius introduced a non-contributory pension system in 1950, before independence. It was originally regarded as a temporary measure to be dismantled once a proper contributory system could be put in place. Its introduction has been portrayed as something of an historical accident. However, it became popular and functioned smoothly and was kept in place (Willmore, 2003). Initially it was means-tested, but in 1958 the means-tests were abolished (but with pensions included in taxable income). Even in its initial years, the system covered the vast majority of the older population and since 1977 coverage has been close to 100 percent. Over the years, the system has become increasingly generous (Willmore, 2003). The non-contributory system operates alongside a contributory pension scheme, with contributors now constituting approximately 50 percent of the labour force (Holzmann et al., 2009).

Seychelles, pensions introduced after leftist coup: In 1979, the Social Security Fund of Seychelles was established, extending pension coverage to the entire population over 64 (later reduced to 63). It was introduced after a leftist government had been installed in a coup in 1977. It has been described as an element in the one-party state's progressive policy to extend social protection to all citizens. The return to multiparty democracy in the Seychelles in 1993 seems to have expanded the scale and scope of the social protection programmes introduced during the previous one-party regime (Campling, Confiance and Purvis, 2009).

<u>Botswana, Lesotho and Swaziland, pensions introduced in the context of multiparty politics and by a traditional monarchy</u>: These are the most recent examples of sub-Saharan African countries introducing high-coverage pension schemes, with systems put in place during 1996-2006. Unlike in South Africa, Namibia, Mauritius and Seychelles, the systems in Lesotho and Botswana were introduced in the context of a democratic multiparty system. There are at least some indications that electoral politics contributed to their introduction and to sustaining them (Pelham, 2007). In the case of Swaziland (traditional monarchy rather than multiparty), the introduction of the system was announced by the king, but has also been heatedly debated in the Swazi parliament following a public outcry when pensions were temporarily suspended because of administrative weaknesses in the introductory years (Dlamini, 2007). It is also apparent that international influences have played a role, since these countries abut on and are economically integrated with South Africa, where a pension system has existed for decades (Pelham, 2007). The three countries are also severely affected by the HIV/AIDS-pandemic: the increasing number of AIDS orphans to be taken care of by the older generation has been an additional incentive for these reforms (RHVP, 2007 and Pelham, 2007). However, even though both Lesotho and Swaziland are quite aid dependent, there are no indications donors have played any role in pushing for or financing these systems. In the case of Lesotho, the introduction of the pension system apparently came as a surprise to the donor community (Pelham, 2007).

Although these systems were introduced in highly different political and social contexts, they seem to have one thing in common: once introduced, they have persisted, even when the original political context has changed radically. This seems to illustrate the 'stickiness' or path dependence of a social policy instrument such as pensions. Once introduced, the systems shape the institutions, values and interests that tend to sustain them.

To summarize, despite their historical heterogeneity, these seven high-coverage pension countries constitute a group clearly distinct from the rest of sub-Saharan Africa, where only a small minority of the population enjoys any public old age security. As revealed in Table 2, the systems are also reasonably comparable in terms of coverage and generosity. They are all non-contributory pension schemes. Thus, some populations in sub-Saharan Africa have been subject to 'pension treatment', while the rest have not. This is something that may be used, despite the lack of comparable time-series data on pension expenditure and coverage, to approach the question: Do pensions in Africa impact fertility?

Theoretical considerations

Many examples exist of formal modelling of utility-maximizing agents who make fertility decisions influenced by old age security concerns (see the studies mentioned in Table 1). This kind of modelling exercise will not be repeated here. Instead, this section points out some of the basic premises underpinning the hypothesis of a pension-fertility link.

Firstly, the hypothesis assumes that fertility choices are influenced by the costs and benefits of having children. An underlying assumption is that family size can be chosen, that is, that a mechanism for birth control exists. Another important assumption is that children do provide some form of old age care for their parents, otherwise there could be no substitution effect when pensions are introduced.[v] Furthermore, this link is assumed to operate through people's perceptions. For instance, introducing a pension scheme that people of reproductive age do not trust to remain in place should not be expected to impact fertility. This also implies that, to the extent time is needed for a newly introduced pension system to build in terms of coverage and credibility, the link to fertility would operate with a lag.

These premises do not imply that the costs and benefits of having children are necessarily the only factors influencing fertility choices.[vi] Neither do we have to assume all individuals are completely rational in that they deliberately calculate economic costs and benefits before taking decisions about having children. The perceived costs and benefits of having children may, for instance, operate alongside traditions and norms not necessarily captured by the assumed utility functions. The costs and benefits of certain behaviours may of course influence the creation and survival of values, traditions and norms in the long run.

How relevant are these theoretical models to sub-Saharan Africa, where incomes (also pensions) are often shared within an extended family? The existence of intergenerational transfers of resources is an important driver in the assumed pension-fertility link, so the informal old age security arrangements dominant in sub-Saharan Africa are by no means alien to these models. On the contrary, it has been argued that the old age security motive for having children should be expected to be particularly strong in rural areas of developing countries (Nugent, 1985; Caldwell, 1982). Empirical results from surveys in sub-Saharan Africa also lend some support to the social mechanisms that underpin these theories. The vast majority of the older population in sub-Saharan Africa does rely on informal family transfers (Holzman and Hinz, 2005: 162).

Surveys also indicate there are high expectations that children will provide old age support: according to ILO's People Security Survey in Ghana (ILO, 2002), as many as 48 percent of respondents stated they expected their children to be their main source of income (only 4 percent expected pensions to fill that role). When directly asked, people also indicate that old age security is an important motive for having children (Nugent, 1985 refers to 13 such surveys in sub-Saharan Africa).

Some 'eyeball-econometrics'

Initially, some graphic illustration of a possible pension-fertility link in Africa will be presented. Regression results based on African panel data will follow.

The cross-country picture

In diagrams 1-3 (attached), the 2005 fertility rates of sub-Saharan African countries are plotted against their GDP/capita (ln-form of GDP/capita has been chosen to increase visibility), urban share of population and child mortality. The high-coverage pension countries are labelled at their data points (Swaziland and Lesotho are also labelled although their systems were introduced as late as 2004 and 2006).

These three diagrams basically tell us that:

-Lower fertility among sub-Saharan African countries is clearly correlated with higher GDP/capita, higher urban share and lower child mortality, as indicated by trend-lines and R^2s .

-The high-coverage pension countries are at the lower end in terms of fertility rates, but also at the higher end in terms of GDP/capita and urbanization and at the lower end for child mortality.

-Finally, and most importantly for present purposes, the high-coverage pension countries are grouped below the trend-lines. This shows us that these countries are at the lower end in terms of fertility also given their level of GDP/capita, urban share and child mortality. Hence, their lower fertility levels cannot be solely ascribed to the fact that they have reached a higher level of economic and social development as measured here. Simple visual measurement of the distance to the trend-lines indicates that their fertility rates are very roughly one unit lower (i.e., one child less per woman) than expected, given their position in terms of these three development indicators.

The time-series picture

Is this a relationship that also holds over time, that is, has fertility in high-coverage pension countries tended to decline (with some lag) after the

introduction of pensions, and more so than in comparable countries? To make this comparison, a control group of countries is needed. We also need to consider the fact that systems have been introduced at different times during a period when general fertility levels have started to decline in the region.

Historical data in sub-Saharan Africa do not permit advanced propensity-score matching, but it is clear that GDP/capita is a key factor in determining whether an African country is likely to introduce a high-coverage pension system.[vii] South Africa, Mauritius, Namibia, Seychelles, Botswana and Swaziland were all among the top ten African countries in terms of estimated GDP/capita at the time they introduced their systems (Lesotho is the only exception in this respect).

Based on their estimated GDP/capita ranking (see Annex 1 for data sources), one five-country control group is created for South Africa and Mauritius, which introduced their systems in 1948 and 1950. Gabon, Angola, Namibia, Republic of Congo and Sudan form that control group as they were closest to South Africa and Mauritius in terms of estimated GDP/capita PPP 1950. Correspondingly, another five-country control group is created for Namibia and Seychelles, which introduced their systems in 1973 and 1979, namely Gabon, Swaziland, Republic of Congo, Angola and Botswana.

In Diagrams 4 and 5 (attached) the fertility curves are shown for South Africa/Mauritius and Namibia/Seychelles respectively, together with the fertility curves of their control groups (the fertility indicator used here is based on UN data available from 1950 at five-year intervals). In the cases of South Africa, Mauritius and Namibia, there are visible kinks on the fertility curve some ten years after the introduction of the pension system, and their curves decline faster than those of their control groups. For the Seychelles, this is not the case: fertility is falling only slightly more rapidly than for the control group, but without any visible kink on the curve following the introduction of pensions. (The exercise is not repeated for Botswana, Lesotho and Swaziland, as their pensions systems are too recent to serve our purpose here.)

Summarizing the time-series picture, it appears that in at least three of four cases fertility has fallen faster after the introduction of pensions (with some lag), and faster than for a control group of comparable countries.

Econometric results

Based on what is visible to the eye alone, there are some indications to support the hypothesis of a pension-fertility link in Africa. However, if we assume that this is also a causal link, some of the usual objections immediately arise: omission of variable bias, underlying trends in time series, reverse causality, etc. To address these objections, econometric tools are needed.

Table 3 (attached) presents the results of OLS regressions, based on sub-Saharan African panel data 1960-2006, for 46 countries. Explanations of sample, definitions and data sources are available in Annex 1. The fertility rate (TFR) refers to the average rate for the following five year period.

The pension variable has been constructed as a dummy. It has been time-lagged 10 years (choice of lag is not the driver of results, see below), so the dummy '1' stands for '10 years with high-coverage pension system'. This approach differs from the econometric pension-fertility literature cited above, where 'pension cost/GDP' is the variable most frequently used. The choice of a dummy variable is not only because time-series data on pension expenditures and on coverage are lacking in sub-Saharan Africa. It is also motivated by the fact that aggregate pension costs in sub-Saharan African are a poor reflection of the extent to which old age security is provided to larger segments of the population. Public costs for pensions covering a tiny percentage of the population with formal sector incomes can be substantial (Kenya illustrates this point[viii]), but there is little reason to expect such systems to have a substantial impact on aggregate fertility rates. The introduction by a select group of sub-Saharan African countries of high-coverage pension systems, which are reasonably similar in coverage and generosity, while the remaining countries have only public pensions for a small segment of the population, is the dichotomy that is exploited in using this dummy variable.

Three control variables are used in all models: GDP/capita, urban share of population and child mortality. There are quite pragmatic reasons for the choice of these three: they have been frequently used in the literature (see Table 1) and there are few other relevant indicators available for sub-Saharan Africa post-1960 that do not seriously affect sample size. Various theoretical considerations also justify their inclusion. The urbanization indicator may capture such factors as the changing costs and benefits of having children in an urban setting; weakening family ties; improved access to health services, including family planning; and more exposure to 'modern' norms and values. Child mortality may capture both a reduced motive for childbearing as more children survive and

improved access to health services, including family planning. GDP/capita is, of course, linked to a whole range of transformative processes in a society. None of these variables can be assumed to be completely exogenous in relation to fertility, but that may not be a major concern for the purposes of this study.

In Model 1 in Table 3, the fertility rate is simply regressed on GDP/capita, child mortality and the urban share of population. In Model 2, we add the pension variable. All four variables come out as significant. The beta-coefficient of the pension variable could be interpreted to mean that having a high-coverage pension system for ten years is associated with a reduction in fertility rate by as much as 1,3 children per woman.

The result is obviously open to the criticism that it might be driven by omitted variables. There could, for instance, be a special structural factor in high-coverage pension countries that make them more likely to introduce these pensions <u>and</u> to have a more rapid fertility decline, without any causal relation between pension and fertility. One could think of several such potential factors, but data availability (particularly in the 1960s and 1970s) makes experimentation with more variables difficult without severely reducing sample size.[ix] However, to the extent that this unknown factor is reasonably time-invariant, it can be controlled for by introducing country-fixed effects (each country given a dummy variable). This is done in Model 3. As seen, the beta-coefficient of the pension variable remains significant, but slightly reduced from -1,3 to -1,1. Hence, it is not the omission of a structural variable of this kind that drives the result.

The issue of bias resulting from time-series correlation is addressed in similar fashion by introducing a time-fixed effect in Model 4. As each year is given its own dummy, we can be sure that the result is not driven by some continent-wide time trends that happen to correlate with each other. The beta-coefficient of the pension variable once again remains significant, and at -1,4.

In Model 5, both country- and time-fixed effects are combined. This means that there are now simultaneous controls for unobserved time-invariant country-specific characteristics <u>and</u> continent-wide time-specific trends. Even under this restrictive specification, the beta-coefficient remains significant, but drops to -0,5.

Reverse causality bias is an issue that merits some comment. If reduced fertility is a factor that increases the likelihood of the introduction of a pension system, then that would produce a potential bias in these results. It is not an unreasonable assumption that this would be the case. In the literature, one mechanism that has been suggested is based on

political economy considerations (Entwistle and Winegarden, 1984). Lower fertility means fewer children to take care of more elderly, so one could imagine pressure building up on politicians, from the elderly as well as their potential caregivers, to set up public pension schemes. Fewer children would also free-up public resources for this purpose. One argument against this reverse causality hypothesis is the fact that in South Africa and Mauritius pensions were introduced while fertility levels were at high levels (approximately 6 children per woman) and the fertility decline occurred in the decades after the introduction (this is, however, not the case to the same extent in Botswana, Lesotho, Seychelles and Swaziland, where fertility rates stood at 3-4 children per woman at the time of introducing pensions). Another argument against a reverse causality mechanism is the political context in which these pensions were originally introduced: in non-democratic countries (South Africa/Namibia under apartheid, Mauritius before independence and Seychelles during one-party rule) the scope for a majority of voters to directly influence pension policies was probably limited.

In the pension-fertility literature, some studies have tried to address the potential reverse causality bias by introducing the variable 'share of population above 65' to capture the strengthened demand side for pensions as demographic structures change (Galasso et al., 2008: 14). As an additional control, the variable 'population above 65' is included in Model 6, but with the effect that the beta-coefficient of the pension variable is increased.

Finally, Table 4 (attached) gives some indications of the robustness of these results. First, different lags in the pension variable are inserted into Model 2 of Table 3. As shown, using a ten year lag or a five year lag does not have much impact on the beta-coefficient, which stays around -1.3. Adding a five year lead to the dependant TFR- variable (and using no lag on the pension variable) also leaves the beta-coefficient roughly unaltered. The result after constructing a 'gradual impact' pension variable is also reported, as this probably better reflects the reasonable assumption that these systems gradually build over time in terms of coverage, credibility and impact on perceptions. The variable has been constructed so as to approach unity as the years pass after the introduction of a pension system.[x] This formulation of the pension variable produces the strongest level of significance of the beta-coefficient.

The data sample was also divided into two time periods, 1990-2007 and 1960-90 (using pension with lag=10). As shown in Table 4, the beta-

coefficients remain significant, but higher in the earlier period (-1,6 vs. -1,1).

Finally, Table 4 also reports the impact on the beta-coefficient of the pension variable (with lag=10) when some countries are excluded. Running the regression just with sub-Saharan African middle-income countries changes the beta-coefficient downwards, to -0,8. Also, excluding just one pension country from the sample can have a considerable impact, producing beta-coefficients in the range of -0,9 to -1,6 (the strongest effect coming from excluding South Africa or Mauritius, as reported in Table 4). The sensitivity of the results should come as no great surprise, given the few high-coverage pension countries available in our sample.

In reviewing all model results, it is still noteworthy that the beta-coefficient of the pension variable has remained significant in all of them, and in no case outside the range of -0,5 to -1,6.

There are still reasons to be cautious when interpreting these results. A weak spot is the fact that the results depend on such a limited number of countries with 'high-coverage' pensions: just five sub-Saharan African countries have had high-coverage pensions in place for more than ten years. Secondly, the pension variable used has been a rough proxy, a lagged dummy, as historical data on exact coverage and on pension-benefit levels are lacking. Thirdly, it has not been possible to operate with a wider range of fertility determinants as control variables without severely affecting the sample size, something that has been dealt with by controlling for fixed country- and time-effects.

Concluding remarks

Do high-coverage pension systems in Africa, which are able to provide some minimum old age security to the vast majority of the population, have an impact on fertility? Theories assuming that the choice of family size is influenced by concerns about old age security would predict this to be the case. Empirical results from other parts of the world, where this pension fertility link has been tested, would also lead us to assume so. The findings presented here lend further support for believing this assumption to be correct. Results indicate that having a high-coverage pension system in sub-Saharan Africa is associated with a reduction of the fertility rate in the range of 0,5 to 1,5 children per woman, depending on model specification. The result is surprisingly robust, and holds over time as well as across countries. It should still be interpreted cautiously,

given data limitations and the quite small number of countries with high-coverage pensions driving the result.

If these findings are to be believed, what are the policy implications? A fertility impact of the indicated magnitude is clearly significant in assessing costs and benefits of introducing old age pension schemes. However, the author does not wish to argue that fertility reduction should be the main motive for introducing old age pensions, as considerations related to poverty, dignity, social cohesion and humanitarian principles are likely to weigh heavier, just as in the case of child-related cash transfers. Furthermore, to the extent that fertility is a major concern, a wide range of other policy instruments exist to influence fertility levels that are likely to be cheaper and more efficient than pensions in reaching that objective. Much is left to be done when it comes to implementing reproductive health policies in sub-Saharan Africa.

Still, we need to know the full range of consequences of different policy actions, including unintended side-effects. The fertility impact of child-related cash transfers in developing countries is apparently hotly debated, while scant attention is paid to the fertility impact of old age cash transfers. The results presented here serve to remind us that a balanced social protection approach, caring for both elderly and children as proposed by the UN social protection floor, might contribute to a balanced fertility impact as well.

References

Bailey, C. (2004) Extending Social Security Coverage in Africa. ESS Working Paper 20, ILO.

Barrientos, A. (2008) New strategies for old-age income security in low income countries. Technical Report 12, International Social Security Association (ISSA).

Becker, G. and Barro, R. (1988) 'A Reformulation of the Economic Theory of Fertility', The Quarterly Journal of Economics, 103, no. 1, 1-25.

Boldrin, M., De Nardi, M. and Jones, L. (2005) Fertility and Social Security. Working paper W11146, NBER.

Caldwell, J. (1982) Theory of Fertility Decline. London: Academic Press.

Campling, L., Confiance, H. and Purvis, M. (2009) Social Policy in the Seychelles. UNRISD [draft Working Paper, quoted with permission of author].

Cigno, A. and Rosati, F. (1996) 'Jointly Determined Savings and Fertility Behaviour: Theory and Estimates for Germany, Italy, UK and USA', European Economic Review, 40, 1561-1589.

Cigno, A., Casolara, L. and Rosati, F. (2002/2003) 'The Impact of Social Security on Saving and Fertility in Germany', FinanzArchiv 59, 189-211.

Cigno, A. and Werding, M. (2007) Children and Pensions. Cambridge: MIT Press.

Devereux, S. (2001) Social Pensions in Namibia and South Africa. Discussion Paper 379, IDS.

Dlamini, A. (2007) A CANGO/RHVP Case Study of Public Assistance in Swaziland [online resource available at http://www.wahenga.net]. Accessed 15 January 2010.

Ehrlich, I. and Kim, J. (2007) 'Social Security and Demographic Trends: Theory and Evidence from the International Experience', Review of Economic Dynamics 10, 55-77.

Entwisle, B. and Winegarden, R. (1984) 'Fertility and Pensions Programs in LDCs: A model of Mutual Reinforcement', Economic Development and Cultural Change, 32, 331-354.

Gábos, A., Gál, R. and Kézdi, G. (2006) Fertility Effects of Pensions and Family Benefits-Test on Hungarian Data. IARIW conference paper [online resource available at: http://www.iariw.org/papers/2006/gabos.pdf]. Accessed 15 November 2009.

Galasso, V., Gatti, R. and Profeta, P. (2008) Investing for Old Age: Pensions, Children and Savings. Working Paper 138 Universitá Commerciale Luigi Bocconi/Centre for Research on the Public Sector.

Garenne, M. (2008) Fertility Changes in Sub-Saharan Africa. DHS Comparative reports No. 18, USAID.

Gauthier, A. (2007) 'The Impact of Family Policies on Fertility in Industrialized Countries: A review of the Literature', Population Research and Policy Review, 26, 323-346.

Help Age/Pension Watch, [online resource available at http://www.helpage.org/Researchandpolicy/PensionWatch]. Accessed 20 November 2009.

Hickey, S. (2007) Conceptualising the Politics of Social Protection in Africa. Working Paper 4, BWPI/Brookings World Poverty Institute.

Holler, J. (2007) Pension System and their Influence on Fertility and Growth. Working Paper No 0704, Department of Economics/University of Vienna.

Holzmann, R. and Hinz, R. (2005) Old-age Income Support in the 21st Century: an international perspective on pension system and reform. World Bank.

Holzmann, R., Robalino, D. and Takayama, N. (2009) Closing the Coverage Gap: The Role of Social Pensions and other Retirement Income Transfers. World Bank.

ILO (2002) People Security Survey-Ghana, downloaded at: https://www.ilo.org/dyn/sesame/pss.pss_files

Kakwani, N., Son, H. and Hinz, R. (2006), Poverty Old Age and Social Pensions in Kenya. UNDP/IPC Working Paper 24

Kidd, S. (2009) 'Equal Pensions Equal Rights, Achieving Universal Pension for Older Women and Men in Developing Countries', Gender and Development, 17, 3, 377-388.

ISSA (2009) Social Security Programs throughout the World: Africa 2009 [online resource available at http://www.ssa.gov/policy/docs/progdesc/ssptw/2008-2009/africa/ssptw09africa.pdf]. Accessed 10 November 2009.

Leibenstein, H. (1957), Economic Backwardness and Economic Growth. New York: John Wiley.

Lund, F. (2008) Changing Social Policy – The Child Support Grant in South Africa. Cape Town: HSRC Press.

Malmberg, B. (2008) Demography and the Development Potential of Sub-Saharan Africa. Current Africa Issues 38, Nordic Africa Institute.

Neher, P. (1971) 'Procreation and Pensions', The American Economic Review, 61, 3, 380-389.

Nhabinde, V.C. and Schoeman, N.J. (2007) Social Security and Fertility Rates in Sub-Saharan Africa. Working paper presented at 2007 conference of Economic Society of South Africa/ESSA.

Nugent, J. (1985) 'The Old Age Security Motive for fertility', Population and Development Review, 11, 1, 75-97

Oppenheim Mason, K. (1997) 'Explaining Fertility Transitions', Demography, 34, 4, 443-454

Pelham, L. (2007) The Politics Behind the Non-contributory Old-age Social Pensions in Lesotho, Namibia and South Africa. Working Paper 83, Chronic Poverty Research Centre.

RHVP/Regional Hunger and Vulnerability Program (2007) Old Age and Public Assistance Grants Swaziland. [online resource available at www.wahenga.net]. Accessed 24 November 2009.

Stecklov, G., Winters, P., Todd, J. and Regalia, F. (2007) 'Unintended effects of poverty programmes on childbearing in less developed countries: Experimental evidence from Latin America', Population Studies, 61, 2, 125-140.

Stewart, F. and Yermo, J. (2009) Pensions in Africa. Working Papers on Insurance and Private Pensions 30, OECD.

UN (2009) World Population Prospects - The 2008 revision. UN/Department of Economic and Social Affairs.

Wigger, B. (1997) 'Pay-as-you-go financed public pensions in a model of endogenous growth and fertility', Journal of Population Economics, 12, 625-640.

Willmore, L. (2003) Universal Pensions in Mauritius: Lessons for the Rest of Us. UN/Department of Economic and Social Affairs.

Willmore, L. (2007) 'Universal Pensions for Developing Countries', World Development, 35, 1, 24-51.

Zhang, J. and Zhang, J. (2004) 'How does Social Security Affect Economic growth? Evidence from Cross-country Data', Journal of Population Economics, 17, 473-500.

Annex 1: Sample, data and sources

Sample

Data used in regressions are for the period 1960-2007 with sample including all sub-Saharan African countries listed in World Bank/World Development Indicators (46 countries). Missing values have been reduced by using moving five year-averages of available data in the cases of infant mortality and total fertility rate, and by using estimated time series from elsewhere in the case of GDP/capita PPP (see below). The basic model uses 1934 country/year observations (46 countries, 47 years with 228 values missing).

TFR

Total Fertility Rate, children per woman. Calculated as moving averages of the following five-year period.

Source: World Bank, World Development Indicators

Table 3 and diagram 4-5 use TFR based on UN fertility data (which has data from 1950 for these countries).

Source: World Population Prospects, 2006 revision, United Nations Population Division. Downloaded at:

www.gapminder.org/downloads/documentation/#gd008.

PENSION

Dummy variable (=1) for countries having a high-coverage pension system, with lag as specified. The 'Pension Gradual Impact' indicator is calculated according to the formula $[1-0,9^t]$ where t stands for the number of years with a high-coverage pension system.

GDP/capita PPP

GDP per capita, adjusted for purchasing power parities in fixed 2005 prices. Data are based on World Bank International Comparison Program and further compiled by Gapminder Foundation (full documentation on the compilation exercise downloadable).

Source: The Gapminder Foundation, downloaded at

www.gapminder.org/downloads/documentation/#gd001

Urban share of population

Source: World Bank, World Development Indicators

Child mortality <5years

Mortality rate, children under 5 (per 1,000). Calculated as moving five-year averages.

Source: World Bank, World Development Indicators

Population above 65

Share of population above age 65.

Source: World Bank, World Development Indicators

Table 1: Impact of pensions on fertility: recent empirical results

Study/year	Sample	Pension indicator	Main control variables (not complete)	Main result of relevance to this paper
Galasso et al. 2008	Panel data, approx. 80 countries	Pension spending/GDP (various measures using ILO and WB data), and pension coverage (share of population covered by mandatory systems)	i) GDP, ii) rural population %, iii) share of population >65, iv) legal origin, v)female labour participation, vi) female secondary education, viii) religion	Pensions impact on fertility. Impact stronger in countries with less developed capital markets.
Gábos et al. 2006	Time series Hungary 1950-2005	Pension expenditure/GDP	i) child benefits, ii) indicators on family policy shifts,	Significant impact of pensions on fertility. 1% increase in pension/GDP rate associated with 0,3% decline in fertility. 1% increase in child benefit/GDP rate associated with 0,2% increase in fertility.
Ehrlich and Kim 2005	Panel data, 57 countries/32 years	Pension benefits/GDP	i)GDP/cap, ii) survival probability different age groups, iii) female labour participation, iii) deviation from 50% female share of population, iv) female/male schooling years	Pensions highly significant impact on fertility. Larger impact in OECD countries than non-OECD countries.
Boldrin et al. 2005	i)Cross section 104 countries 1997, ii)Panel data 8 developed countries 1960-97	Social security expenditures/GDP (also social security expenditures/labour earnings)	i) GDP/cap, ii) population share over 65, iii) infant mortality rate	Social security highly significant impact on fertility. Increasing social security by 10% of GDP reduces TFR by 0,7-1,6 children per woman.
Zhang and Zhang 2004	Panel data 1960-2000	Social security expenditures/income	i) growth, ii) per capita income, iii) schooling	Social security highly significant impact on fertility.
Cigno et al. 2003	Time-series data Germany 1960-95	Total pension benefits/person over 65	i) male and female wage rates, ii) interest rates, iii)child benefits, iv) saving rate, v) social security deficit	Pensions decrease fertility. Child benefits increase fertility. Magnitude of impact of the same order.
Cigno and Rosati 1996	Time-series data UK, US, Germany and Italy, 1950-90	Various indicators of pension benefits (depending on data availability each country)	i) male and female wage rates and disposable income per capita, ii) interest rates, iii)child benefits (in the case of UK), iv) saving rate, v) social security deficit	Pensions decrease fertility in all countries. Child benefits impact positively on fertility in UK (the only country where this variable used)

Table 2, High-coverage old age pension systems in sub-Saharan Africa

	Year introduced *1)*	Means-tested or universal	Qualifying age	Coverage rate *(pensioners/age-qualified pop) 2)*	Pension /GDP per capita	Publicly financed pension cost/GDP	Source
South Africa	1948	Means-tested	65 (m) 60(f)	87%	29%	1,20%	Willmore 2006
Mauritius	1950	Universal	60	100%	16%	1,70%	Willmore 2006
Namibia	1973	Universal	60	93%	16%	0,80%	Willmore 2006
Seychelles	1979	Universal	63	>80%	25%	2,90%	Campling et al. 2009 *4)*
Botswana	1996	Universal	65	96%	10%	0,5	Willmore 2006
Lesotho	2004	Universal	70	*3)* 96%	34%	1,4	Stewart/Yermo 2009 *5)*
Swaziland	2006	Means-tested	60	>80%	7%	n.a.	RHVP 2007

Comments Table 2:

The provided data refer to the years 2002-07 (data from Willmore refer to circa 2003, other sources from 2005-07).

Systems are non-contributory and hence publicly financed.

1)Year of introduction in South Africa and Namibia refer to the year when non-contributory pension system was extended to majority African population.

2) In the case of Seychelles and Swaziland, no exact coverage rates are available; the estimate '>80%' is based on information in indicated sources combined with population statistics.

3) Persons already receiving government pension are excluded from the universal pension in Lesotho.

4) GDP ratios and coverage rate for Seychelles estimated using Campling et al. and WB/WDI.

5) Pension/GDPc estimated using Stewart/Yermo and WB/WDI.
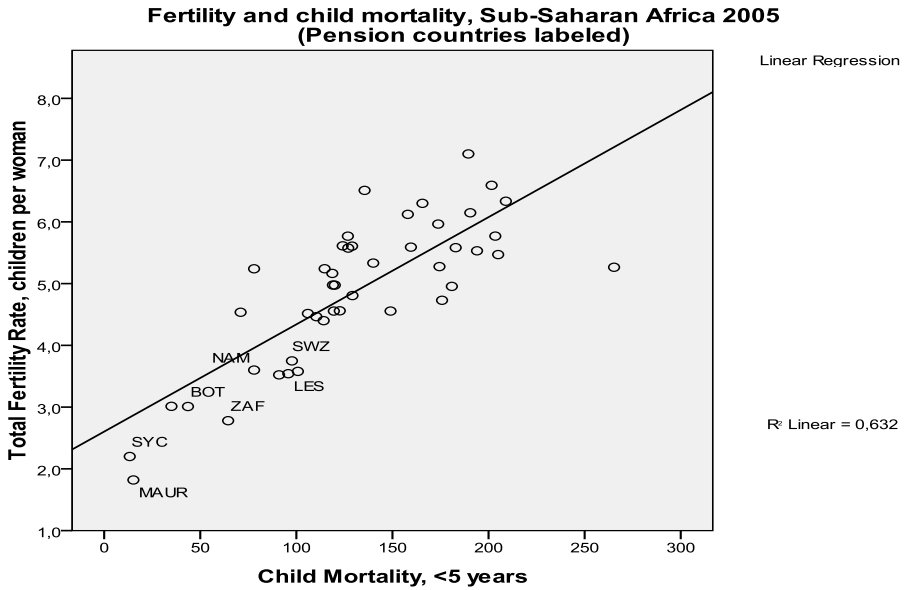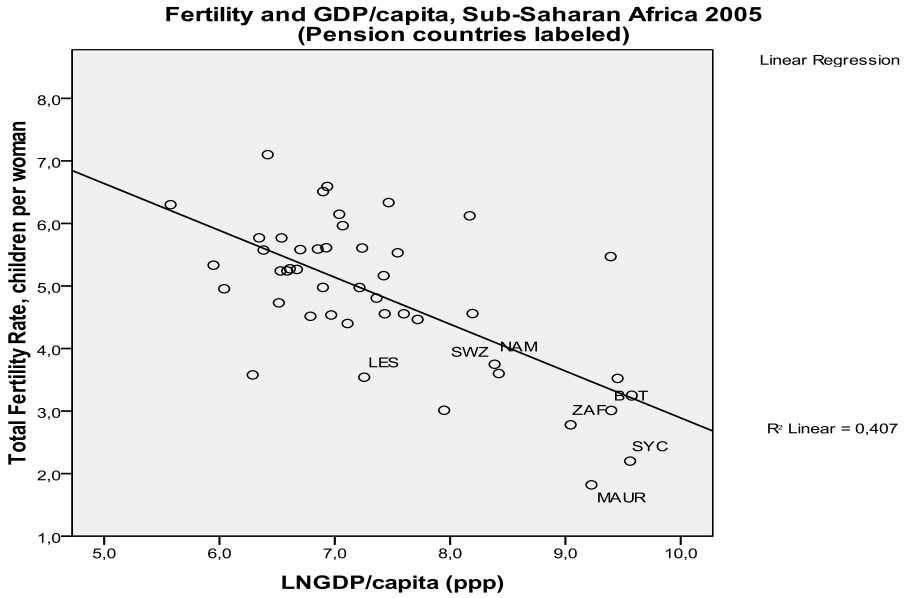
Table 3, OLS regression results

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Pension (lag=10)		-1,34	-1,13	-1,41	-0,46	-0,73
		-16,9	-9,5	-19,7	-5,1	-6,3
GDP/capita PPP	-7,1(E-5)	-1,9(E-5)	-2,9(E-5)	-5,4(E-5)	-3,3(E-5)	2,4(E-5)
	-8,2	-2,2	-2,2	-6,8	-3,3	-2,2
Urban share of pop.	-0,027	-0,028	-0,071	-0,017	-0,025	-0,028
	-17,1	-19,3	-30,3	-12,1	-11,4	-12,3
Child Mortality <5	0,008	0,007	0,002	0,006	-0,004	-0,003
	28,9	26,3	5,2	22,6	-8,9	8,1
Country-fixed effects			Included		Included	Included
Time-fixed effects				included	Included	included
Population over 65						-0,16
						-6,2
	-	-	-	-	-	
Adjusted R2	0,63	0,68	0,85	0,74	0,92	0,91
No. of observations	1934	1934	1934	1934	1934	1899
No. of countries	46	46	46	46	46	46

Dependent variable: TFR (Total Fertility Rate, five-year averages for following period). Table reports beta-coefficients from OLS regressions, with t-statistics in italics. Significance level at 5% for t>1,96.

Table 4

Variations of Model 2: impact on pension variable coefficient		
	B-coefficient of pension variable	(t-value)
Different lags/leads:		
Pension (lag=10)	-1,34	*-16,9*
Pension (lag=5)	-1,31	*-16,7*
Pension (lag=0), TFR (lead=5)	-1,26	*-16,1*
Pension gradual impact	-1,58	*-18,3*
Excluding countries:		
Excl South Africa	-1,62	*-18,1*
Excl Mauritius	-0,93	*-9,8*
Excl Namibia	-1,49	*-17,1*
Excl Seychelles	-1,38	*-16,8*
Excl 'not middle income'	-0,84	*-9,7*
Different periods		
1960-90	-1,56	*-16,2*
1980-2006	-1,08	*-12,9*

Diagram 1-3 (data sources, see Annex 1)

Fertility and GDP/capita, Sub-Saharan Africa 2005
(Pension countries labeled)

Linear Regression

R^2 Linear = 0,407

Fertility and child mortality, Sub-Saharan Africa 2005
(Pension countries labeled)

Linear Regression

R^2 Linear = 0,632

**Fertility and urban share of population, Sub-Saharan Africa 2005
(Pension countries labeled)**
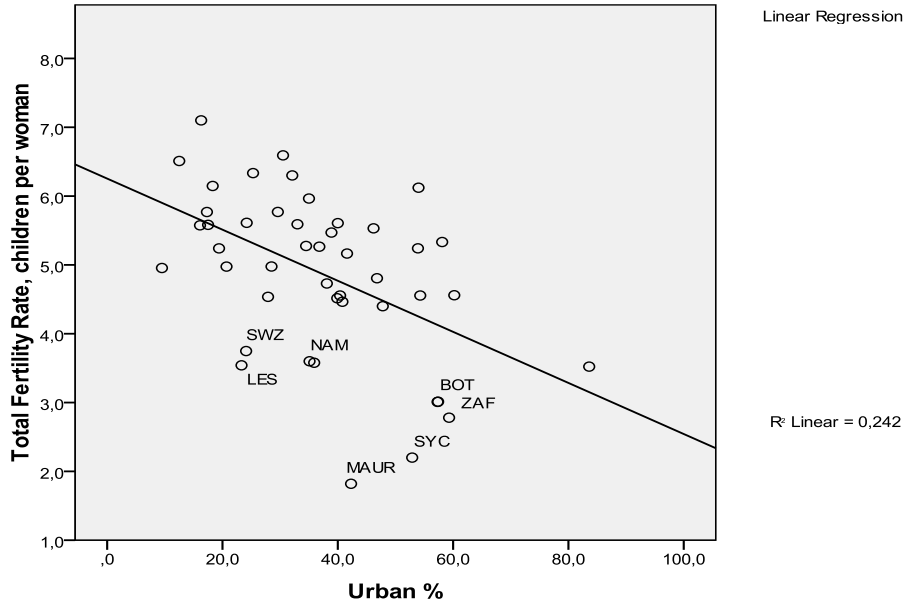
Diagram 4-5 (data sources, see Annex 1)

Fertility after introducing pensions: South Africa (48') and Mauritius (50') vs. control group

Fertility after introducing pensions: Namibia (73') and Seychelles (79') vs. control group
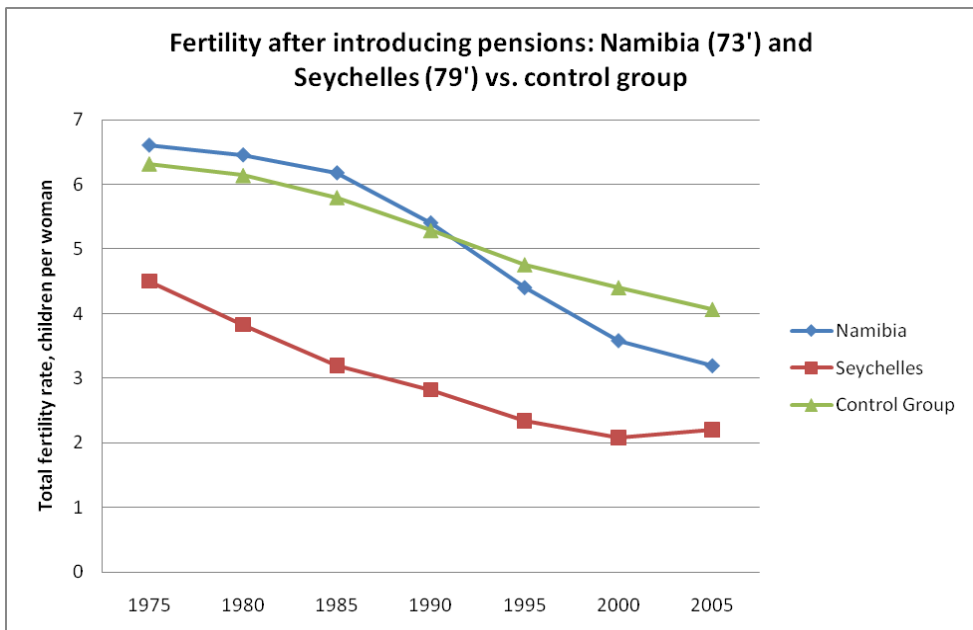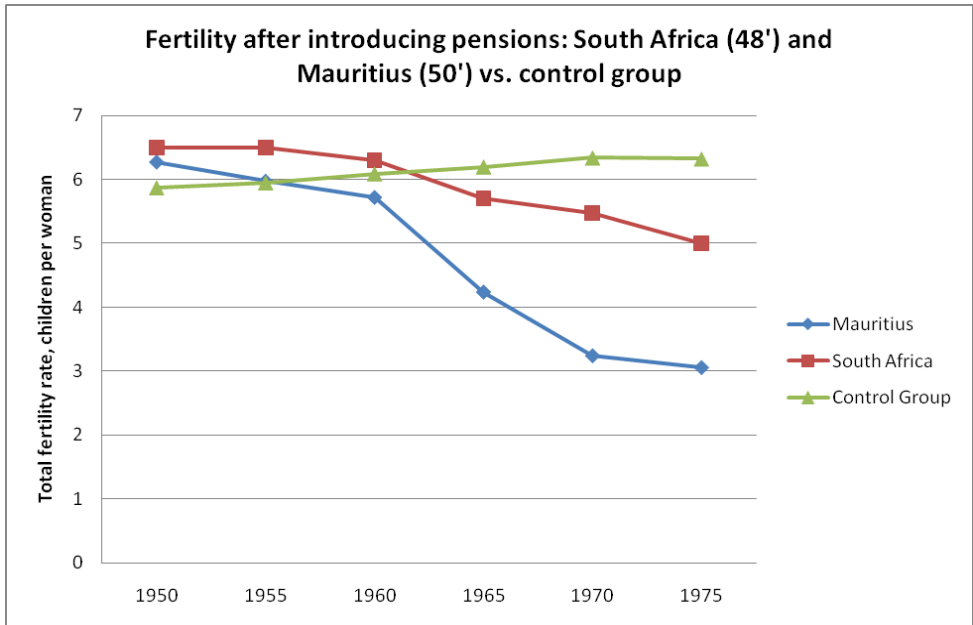
[i] UN initiative launched in April 2009:
http://www.socialsecurityextension.org/gimi/gess/ShowTheme.do?tid=1321

[ii] An exception is an unpublished conference paper by Nhabinde and Schoeman (2007). It is an attempt to replicate the Boldrin (2005) paper using sub-Saharan retirement benefits/GDP data. No significant impact of these payments on fertility was found. The authors recognize the low coverage rate of the retirement programmes as being a main caveat for the results.

[iii]http://www.helpage.org/Researchandpolicy/Socialprotection/PensionWatch/Feasibility

[iv] In 1973, South Africa had a total population (including white and coloured) above 65 years of approximately 700,000 (World Bank/WDI), to be compared with the reported figure of 400,000 native pensioners ('native' here referring to South Africans who are not white or coloured).

[v] In addition to such a substitution effect, one may also have an income effect as well as other indirect effects, depending on model specification.

[vi] A complex set of factors may explain fertility transitions, with costs and benefits of having children being just one set among many (Oppenheim, 1997).

[vii] A simple regression analysis, based on the control variables available in Annex 1, would also point out GDP/capita as the strongest determinant of whether a country has a pension system of this kind in place.

[viii] Pension costs/GDP in Kenya are estimated to be above 1% while coverage rate is just 3% of the elderly (Kakwani et al., 2006), mainly due to a generous public sector pension scheme.

[ix] On the list of desired but not sufficiently available indicators, particularly not as far back as 1950, one may mention: pension benefit levels, coverage rates, schooling (incl. female schooling), availability of family planning methods, other large scale transfer programmes such as child benefits (known to have been introduced in Botswana, South Africa and Namibia over the last decades). The fixed effect methodology applied is a way of controlling for such unknown variables.

[x] The variable has been calculated as $[1-0,9^t]$, with t the number of years with pensions. Constructed in this way, the variable comes close to 0,7 after 10 years and 0,9 after 20 years.

Paper 4

External Financing of Social Protection – Opportunities and Risks

Göran Holmqvist
Nordic Africa Institute, Uppsala/Sweden

15 May 2011

Abstract: *Social transfers have reached the policy agenda of low-income countries in Africa, where affordability is a key concern and aid dependency is high. In terms of magnitude, aid could make a substantial difference in relaxing the affordability constraint. This paper addresses issues that arise as external financing of social transfers is contemplated, risks as well as opportunities. Different aid modalities are considered. COD-aid, cash on delivery aid, is discussed as an alternative aid contract with some attractive features when the political ownership is strong. The potential for external financing of social transfers in cases where political ownership is weak is also discussed, and the limitations of aid under such circumstances are recognized.*

1. Introduction

In the developing world there has been a wave of social protection initiatives over the past decades, sometimes even described as a "silent revolution". Large-scale social transfer schemes have been introduced mainly in middle-income countries and using domestic financing and design, to the benefit of millions of people living in poverty, (Barrientos and Hulme 2008). These kinds of interventions are also increasingly on the policy agenda of low-income countries in Africa, where affordability is a key concern and aid dependency is high.

That such a large share of public spending in sub-Saharan Africa is made up of foreign aid – aid volumes equivalent to one-third or more of public expenditures are not uncommon – is a phenomenon without historical parallel in respect of the introduction of social protection policies elsewhere. However, so far only limited aid flows have been earmarked to support the introduction of social transfer schemes.[1] The availability of external financing

---

[1] Reliable data on aid flows destined for social transfers or social protection are lacking. Within OECD/DAC, efforts are under way to produce more accurate estimates. At present, the OECD/DAC Creditor Reporting System has no sector code for social protection, but there is a purpose code labeled "Social/Welfare Services".

for poverty reduction clearly represents an opportunity, but also gives rise to critical questions. It is these matters this paper seeks to address, specifically the risks as well as opportunities that arise as external financing of social transfers is contemplated. How much aid money is really available and how much of a difference could aid make? Which aid modality would be most appropriate? How is the contradiction between the need for long-term and predictable financing reconciled with the more limited time horizon of donors? How is the political economy of social protection in partner countries affected when external actors come on the scene?

Definitions of social protection vary. A common approach is defining social protection as the policies and actions that support a set of objectives related to human wellbeing, with these objectives then being more or less narrowly defined (ranging from "coping with risk" to more general development objectives). Social transfers constitute just one sub-set of potential instruments to achieve such objectives: protective legislation, delivery of social services, social insurance and other instruments could be added to the list (it could even be argued that it is unclear where that list ends).

This paper mainly focuses on external financing of social transfers, not on external financing of social protection interventions in general. This choice of focus is not made because social transfers are the only, or even the most important social protection intervention. Rather, it is because external financing of social transfers raises specific concerns, apart from being something of a newcomer to the aid and development debate. First of all, there is an issue of magnitude: social transfers are costly and aid may be a necessary part of bringing them about. Second, there is the issue of recurrent costs to be met through long-term predictable financing (this may not be a unique feature of social transfers, but is perhaps accentuated). Third, the role of social transfers as a permanent redistributive mechanism raises a number of questions about the connection between external aid and political economy.

The disposition of the paper is as follows. Section 2 discusses the affordability restriction and the potential of foreign aid to relax it in terms of mere magnitude. The sections that follow review different aid modalities and aid contract models and how well they satisfy various requirements. This discussion is structured around two cases. In the first case – the "benign" case – the full political ownership of the social transfers is assumed to be in place in the partner country, so the political economy aspects are side-stepped. In the second case, the social transfer policy is not fully owned by the partner country, and the discussion focuses on the restrictions aid providers would face under such circumstances.

Of all Official Development Assistance committed in 2008, only 1.5% was registered as having that purpose code:http://stats.oecd.org/Index.aspx?DataSetCode=CRSNEW

2. The price tag of social transfers and the potential of aid to fill the gap

Disregarding other issues, are the magnitudes such that aid could make a difference to the affordability of social transfers in African low-income countries?

Table 1 below illustrates some simple arithmetic on the cost of social transfers and its relation to domestic revenue and external aid. The first columns of the table display the cost of three basic social transfers in relation to GDP for a handful of sub-Saharan African countries as estimated by ILO. Together, these transfers constitute three of the four elements in the so-called social protection floor advocated by UN (the fourth being universal access to healthcare). Calculations are based on the following assumptions (ILO 2008):

a) <u>A child grant</u>: Benefit per year and child equivalent to 15% of GDP per capita for a maximum of two children per woman, in the age bracket 0-14
b) <u>An old age pension</u>: Benefit equivalent to 30% of GDP per capita for all individuals over 65 and for disabled persons (1% of population):
c) <u>An employment scheme</u>: Benefit equivalent to 30% of GDP per capita provided to poor and unemployed (assumed to be 10% of population) for 100 days per year.
d) <u>Administrative overhead</u>: 15% of transfer value.

The cost of introducing these social transfers would amount to 3-5% of GDP in these seven countries. The child grant is clearly the most expensive element in this package of transfers. A recurrent and somewhat controversial issue is whether costs of this magnitude are to be labelled "affordable" or not.

In the last columns of table 1, these estimates are related to the two main potential sources for financing, domestic resource mobilization or external aid. The statistical measures used here are "Government revenue excluding grants"[2] and "Official Development Assistance, net flows" (net ODA).

The cost of the package in relation to government revenue (excl. grants) ranges from 16% in Cameroon to approximately 40% in Burkina Faso and Ethiopia. Under the assumption that present capacity to raise revenue is unchanged and that the social transfers are purely financed out of domestic revenue, this social transfer package clearly appears to be out of reach, at least for countries with less favourable conditions. However, this does not imply that nothing at all can be done. First of all, it should be kept in mind

---

[2] "Government revenue excl grants" primarily includes various taxes, but also social security contributions, fines, fees, rent and income from property and sales. The no-tax/no-grant part amounts to approximately 1-2% of GDP in these countries.

that there is nothing like a fixed price tag on these ambitions: less generous age requirements, lower benefits or a more targeted approach could obviously reduce costs. It would hence be possible to start slowly and expand as economic conditions permit. Second, there is also at least some room for raising more domestic revenue or for reprioritizing expenditures: for instance, simply raising expenditure from 13% to 14% of GDP in a country like Burkina Faso would be enough to finance universal old age pensions for all Burkinabés over 65. Finally, there is the option of external financing, which is the subject of this paper. A conclusion drawn within the framework of the UN social protection floor is that financing the proposed package of interventions would initially require mobilization of external resources, particularly in the countries with lowest per capita incomes (ILO/WHO 2009).

So how much difference could aid make? The last columns of table 1 compare the cost of this transfer package to the present net flow of ODA to these countries. The transfer package cost is approximately 40% of net ODA in Guinea, Burkina, Ethiopia, Tanzania and Senegal, but above 100% in the richer and less aid-dependent countries (Kenya and Cameroon). It should also be kept in mind that ODA measures what donors claim they give, not what a recipient government actually receives and disposes of (any discrepancies being attributable to support to non-government actors, donor administrative costs, costs for refugees in donor countries, etc.).

The social transfers/net ODA ratio of 40% means that if the international community were to step in and match domestic financing of the full package on, say, a 50/50 basis, then 20% of the 2008 ODA levels would be required in countries such as Guinea, Burkina Faso, Ethiopia or Tanzania.

Keeping this 20% of net ODA to sub-Saharan Africa as a reference point (approximately US$ 8 billion in 2008), one may compare it to the widely announced "doubling of aid to Africa by 2010" at Gleneagles 2005, estimated at the time to be equivalent to some US$ 25 billion (OECD 2008). The shortfall in meeting that commitment is estimated by OECD/DAC to be approximately US$ 14 billion, or 35% of the level of net ODA for 2008 (OECD 2010a). The combined net ODA to Afghanistan and Iraq – two countries that have attracted enormous aid flows but are possibly less likely to do so in the future – was US$ 17 billion in 2008, or more than one-third of net ODA flows to sub-Saharan Africa.

The point here is not to claim that there is plenty of aid money readily available to finance social protection in sub-Saharan Africa. Even should additional funding become available – if donors honor commitments and/or if the geographical allocation of aid rebalances in favour of sub-Saharan Africa – there would still be many demands for aid to be used for other purposes. The point is just that aid volumes, in theory, are large enough to make a substantial difference in financing the social transfers at the level of ambition contemplated by the UN social protection floor initiative.

Table 1: Cost of social transfers in relation to domestic and external sources of revenue, 2008

	a) Universal pension/ GDP	b) Child benefit/ GDP	c) Employment scheme/ GDP	Transfer package/ GDP (a+b+c+15%)	Revenue excl grants/ GDP	Transfer package/ Revenue excl. grants	net ODA/ GDP	Transfer package/ net ODA
Guinea	0.6	1.5	0.3	2.8	15.6	17.7	7.5	36.9
Burkina Faso	1.1	2.8	0.6	5.2	13.1	39.5	12.5	41.3
Ethiopia	1.0	2.8	0.6	5.1	12.0	42.2	12.6	40.3
Tanzania	1.1	3.1	0.6	5.5	17.3	31.9	11.4	48.5
Senegal	1.1	2.0	0.5	4.1	19.6	21.1	8.0	51.7
Kenya	0.9	3.0	0.6	5.2	20.8	24.9	3.9	131.3
Cameroon	0.8	1.8	0.4	3.5	20.0	17.3	2.2	154.0

Sources:
Transfer costs: based on ILO 2008.
Revenue excluding grants: IMF 2010
net ODA: OECD 2010

To summarize:

-A social transfer package at a scale similar to the one projected in the UN social protection floor could hardly be financed solely out of domestic revenue at present tax ratios in African low-income countries with less favourable conditions.

-Mere magnitudes are such that aid in theory could make a substantial difference in financing these transfers, particularly in the more aid-dependent countries.

Even so, the question remains whether such financing would be feasible and desirable, given the various constraints on donors and partner countries and the complexities of the aid relationship?

3. On aid modalities and the aid debate

If external aid is to be used for financing social transfers, what should the aid modalities be? And what restrictions, risks and particular concerns need to be addressed?

When aid modalities are discussed, a distinction is often made between categories such as "project support", "budget support", "sector programme support", etc. These categories are characterized in terms of various dimensions, such as whether funding is *earmarked* for specific expenditures, *aligned* with national plans and budget procedures, *harmonized* among donors and how the *conditionality* of the donor-recipient aid contract is structured (on actions or on outcomes or a blend, linked to broader or more narrowly defined programmes, ex-ante or ex-post, etc.) (Foster and Leavy 2001). In practice, there is a lack of clear-cut definition as there are hybrids, overlaps, grey zones and numerous combinations along these dimensions.

The art of providing aid is contested terrain. In this multifaceted debate, "accountability" is one of the keywords. Accountability arises as an issue at three different levels at least. First there is an accountability issue within donor countries. Donors are ultimately accountable to taxpayers and need to show that intended results are achieved. Results that are tangible and easy to communicate are often favoured, while any mismanagement of aid linkages in partner countries tends to backfire. Second, there is an accountability issue in the relationship between donor and partner country, often portrayed as a principal-agent problem, "incentive incompatibility" and "asymmetric information" being two of the main concerns. The aid contract needs to be formulated so that the right incentives are set, predictability is assured and monitoring facilitated. Third, accountability is also an issue in the relationship between governments and citizens in partner countries: one frequent critique of aid relates to the risk that aid will distort domestic

accountability in favour of accountability towards external actors and by reducing policy space.

The solutions to these layers of aid-related accountability are not always fully compatible: they are rather characterized by trade-offs. Attempts by home-constituencies in donor countries to seek concrete evidence of what their tax money has paid for may conflict with the harmonization and alignment agenda meant to facilitate "ownership" in partner countries. And when attempts are made to define bulletproof aid contracts between "principal" and "agent", these may disturb domestic accountability between the partner government and its citizens. The sometimes messy aid debate is often a reflection of the efforts to address such dilemmas.

Thus, in order to identify the most appropriate aid modality for financing social transfers, at least the three following requirements must be dealt with:

- Donors having domestic support: Donors must be able to sell the idea of financing social transfers to their domestic constituencies. There are various motives for giving aid, and the actual outcome may be the result of a broad coalition of heterogeneous interests. However, being able to show tangible and easily understood results for a "good cause" clearly eases the task of defending aid, and social transfers may pass that test better than many other donor-supported interventions. Even so, if the financing is to be long-term, such protracted engagement must be accepted. That, in turn, is likely to be facilitated where there is something like a long-run exit strategy that demonstrates that external financing is not intended to be permanent.
- A credible aid contract: The aid contract needs to be structured so as to give both partners the confidence that what is agreed is also delivered. A vast aid literature has dealt with this issue and has often pointed to shortcomings in the way aid is normally handled. Different types of solutions have been proposed. There are additional challenges for aid contracts covering engagement that needs to be long-term.
- Political sustainability of social transfers in partner country: Long-term social transfers require sustained political support in partner countries, extending beyond the day when external financing ends. External financing should at a minimum not disturb the political economy processes needed to assure such sustained political support.

In reviewing how different aid modalities meet these requirements, a distinction will be made between two cases. The first is "the benign case", where political support in the partner country is not an issue. Rather, the issue is how to meet the first two requirements, i.e., formulating a credible aid contract that will also gain the acceptance of donors' home constituencies. The third requirement is simply ignored in this case. The

second case addresses the situation where the vision of scaled-up social transfers is not fully "politically owned" in the partner country and donors may be tempted to exercise some form of "leverage". This leads to a different set of political economy-related questions.

4. The benign case: well anchored vision but with a financing constraint

Let us imagine a hypothetical aid-dependent, low-income African country that has defined its strategy for social protection. It has been convinced by the arguments that enhanced security for people living in poverty will, in addition to its short-term impact on wellbeing, also produce long-term gains in terms of human capital, "empowerment from below", social cohesion and improved investment behaviour from less risk exposure. Given the limitations of contributory insurance-like schemes in reaching the neediest, the country has defined a set of non-contributory social transfers as an element in its social protection strategy. This approach has been debated among key stakeholders, is well anchored in society and has been included in the overall development strategy.

So, in this case we assume that there are no problems related to political ownership and sustainability, but that financing remains a constraint. Some initial steps have been identified on a path that would lead progressively towards the full implementation of these transfers: initially benefit levels and age requirements have been made less generous, some components are postponed and some easily implemented targeting mechanisms have been introduced to bring down costs. External financing, on a long-term basis, is now sought to extend coverage and to hasten the implementation of this vision.

What should the response of the donor community be? Let us assume that donors are reasonably convinced about the merits of the vision, so that is not the issue. Let us also assume that they have read and understood the OECD/DAC policy statement and guidance note for social protection (OECD/DAC 2009), so they have agreed to stay harmonized, aligned and respectful of domestic ownership (even if some donors have ideas about social protection policies being designed differently in one way or other).

The concern about long-run sustainability and aid dependence is likely to be one of the first that comes to mind among the donor community: "Will we as donors be stuck with a long-term obligation to pay these transfers? Will we contribute to long-term expectations among poor people that at some point will be disappointed or to a situation where the country is left on its own with unaffordable obligations? And will our home constituencies buy this?" A

corresponding set of questions might arise among partner countries: "Is the external financing predictable enough to be trusted? Will these external actors start interfering with what we have set out as our national agenda?"

Let us review four possible donor responses:

-"We just cover investments or temporary costs": There are many things donors could do to support the introduction of these transfers without entering into explicit or implicit long-term obligations. There may be a need for studies and other planning activities, capacity building, pilots, technical assistance, cross-country learning, engagement of civil society groups, etc., all of which may lend themselves to the kind of project aid modalities, with defined time horizons, that donors are used to. There is a considerable investment cost in introducing social transfer systems, so a potential contribution along these lines is by no means negligible. However, this approach does not respond to the fundamental constraint that has to be resolved in the partner country – the need for more long-term financing. Another problem with this approach could be that it leads to too deep and interventionist donor involvement during the design phases that could crowd out domestic political processes.

Another way for donors to avoid long-term commitments would be to take on the role of insurer. For certain social transfers, such as an employment scheme that people can move in and out of as they experience temporary economic downturns, such short-term undertakings would make some sense. However, to the extent that the positive impact of social transfers rests on their being long-term, reliable and predictable, such a donor approach would simply be a limited contribution to resolving the fundamental constraint.

-"We give general budget support": Another potential donor response would be to refer to the existing budget support mechanism. Such mechanisms are in place in many low-income countries in Africa, with pooled resources from multilaterals and bilaterals directly entering the state budget as revenue. Funds are not earmarked and are fully integrated into national budget procedures. Such funding is normally defined as support for the national poverty reduction strategy or its equivalent, and guided by a jointly agreed Performance Assessment Framework (PAF) that defines a set of urgent policy actions and results. The joint reviews of performance against the PAF are meant to strengthen policy dialogue and mutual accountability, with disbursement intended to be as predictable as possible. In practice, there are elements of more or less explicit conditionality in this approach, frequently applied and interpreted differently by individual donors.

If social transfers are a national priority, then they may be integrated into this framework. Rather than arranging specific financing of social transfers, donors would only go as far as including social protection in their budget support dialogues and possibly agreeing with the partner country to bring related indicators into the PAF. As there is no earmarking, donors are

detached from particular expenditures and the issue of the long-term financing obligation of social transfers is avoided by donors. Partner countries would then be free to set priorities, estimate what is affordable and allocate resources for these transfers accordingly. Some hopes have been expressed that general budget support could facilitate the expansion of social protection policies, although a high-quality partnership between donors and partner country would be required (Barrientos 2007).

There are a few problems with this response to the need for additional financing for social transfers, and some of them relate to the inbuilt difficulties with the budget support mechanism as such. Even if it is a mechanism that should guarantee predictable financing, harmonization, alignment, ownership, results orientation and mutual accountability, and has been declared "the preferred aid modality" in many instances, in practice budget support has become hard to sell to home constituencies in donor countries. Information asymmetries, with "voters" not fully trusting their "aid administrators", may help to explain these difficulties (Jain 2007). Financing "the entire state budget" opens up the prospect of a broad and comprehensive dialogue that may have its attractions, but may also make donors accountable to their home constituencies for almost anything that goes on in the partner country, where political realities may not always match the ambitions expressed in high-flying policy declarations. Donors are thus pushed to seek guarantees, to set conditions, despite the rhetoric of ownership and less conditionality (Lister et al. 2006, p. 13). What has evolved has been described as a process of permanent negotiation (Whitfield 2009, p. 350). Many donors either have stayed away form or dropped out of the budget support mechanism and a frequent critique is that this approach has not delivered in terms of securing hands-off, long-term, predictable financing for development strategies in partner countries (Knoll 2008). This is also its main shortcoming as an avenue for resolving the constraint related to long-term financing of social transfers.

-"A sector wide approach" or a special budget support tranche in favour of social transfers: A third option would be to create a specific link between external financing and social transfers, while avoiding some of the drawbacks of traditional project aid and general budget support. An aid modality frequently used in low-income African countries is the "sector wide approach", SWAP. Funding is provided as general revenue to the government, and in this sense its macroeconomic effects are similar to general budget support, but it is linked to the implementation of a specific "sector" programme. Dialogue and conditions are hence more narrowly defined than in the case of general budget support. Donors are harmonized and aligned with a nationally owned "sector" programme that defines prioritized actions and results. Just as there are SWAPs for education or health sector reforms, one could imagine a SWAP for social transfers or for a wider social protection strategy.

A somewhat similar approach would be the creation of a special budget support tranche that is longer-term and is directly linked to social transfers, while being delinked from wider budget support conditionality. The tranche could be structured in a way similar to the "MDG contracts" handled by the European Commission, which are a longer term and more predictable form of general budget support (European Commission 2008). There is a special variable MDG-based tranche that rewards performance against MDG-related outcomes (notably health, education and water) after a mid-contract review. The long-term nature (six years) of the approach and reduced conditionality is intended to make it more predictable and less vulnerable to the ups and downs of previous forms of budget support. Linking the special tranche to clear outputs makes the approach easier to communicate and explain to domestic constituencies, and would facilitate defence of the idea of entering into a longer-term engagement. If existing frameworks of budget support were to be used for social transfers, an adaptation of the "MDG contract"-approach to the delivery of social transfers (a "Social Protection contract") is one option to look into.

An external financing modality that is more explicitly linked to social transfers, whether as a SWAP or a special budget support tranche, would have to be more explicit about the time horizon and exit strategy. The commitment by donors would need to be longer-term and more predictable if reliable social transfer systems are to be co-financed. The EU, with the six-year MDG contracts, and DFID, with ten-year partner agreements, have shown that donors can be pushed in that direction. But what would such an aid contract look like if it is to satisfy both the partner countries' need for predictable long-term financing and the donors' need for a credible exit at some point in the future? What would be needed is a contract with a formula to shift burden-sharing over time, and with both parties confident the other will deliver its share. Preferably, the contract should also have inbuilt flexibility for cases where partner countries are unable to expand their social transfer systems as expected. A recently proposed aid modality now under discussion in aid circles, which claims to at least partially resolve that dilemma, is Cash-on Delivery aid, or COD-aid.

-Cash on delivery, COD-aid: This aid modality has been proposed by CGD, Centre for Global Development (Birdsall and Savedoff 2010). It has some similarities with the MDG contract approach of the European Commission, but has taken additional steps in refining the idea of paying for results. It also contains a financing modality that would establish the formula to shift burden-sharing over time between donors and partners.

The core idea is a contract that defines a mutually desired outcome and a fixed payment for each unit of progress towards it. The contract is about results: the choices about how to reach these results are left to the partner and disbursements are made upon delivery and after independent monitoring. The approach avoids the disadvantages of project aid

(fragmentation, transaction costs, donors becoming micro-managers and auditors), while still keeping very clear "what has been delivered for taxpayers' money". It is hence designed to satisfy both the requirement for public accountability in donor countries and the requirement that the aid contract should be credible. As the contract would be open and transparent, it is argued that it could also be monitored by civil society groups, making recipient governments more accountable to their citizens.

Expansion of primary schooling has been the showcase for COD-aid, with rather detailed proposals drawn up on what such a contract should look like. This example is of interest here, as expansion of primary education, just as with social transfers, means that long-term recurrent cost obligations (teacher salaries, etc.) build while donor engagement is time-bound. "COD-aid" has a contract feature that somehow deals with this dilemma: we label it "matching increments financing". In the case of primary education, it has been stipulated that there should be a five-year contracts, with the expectation that they be renewed in five-year increments (donor funding should ideally be paid upfront and put in escrow based on projected disbursements for coming years). Payment is a fixed amount for each additional primary student passing a final exam over and above a baseline. An expansion that is achieved in year 1 will, if maintained, be rewarded in each of the following five years. After five years, the base-line is moved on an annual basis. The partner country must be ready to cover the full cost of a unit of expansion after five years. When expansion stops, because full coverage is met or because the government finds further expansion unaffordable, it will take an additional five years for external funding to gradually fade. This reduces the risk of partner countries being trapped into expanding beyond affordability, as they gradually have to take responsibility for each step of expansion. In other words, the contract is of a kind that would define a predictable formula for a gradual shift in burden-sharing over time between donor and partner country, while retaining some inbuilt flexibility for unforeseen events. Donors can rightly claim they pay exclusively for additional expansion and have a predefined exit strategy, while partner countries know beforehand that they will bear the full cost of a unit of expansion after a certain number of years.

The initiative is recent and at present there are no real-world instances of its being practised on scale (although aid-modalities with some similarities are being implemented, such as the EC MDG contracts and "output based aid"). Efforts are under way to design a number of COD pilots.[3]

COD-aid is obviously not without its limitations (see de Renzio and Woods 2006 for a critical overview). The risk of creating perverse incentives, as when a quantitative measure is rewarded while important qualitative aspects are neglected, is a feature common to any performance-pay system (as seen in

---

[3] Updated information on COD-aid can be found at: http://www.cgdev.org/section/initiatives/_active/codaid

A COD-aid contract for social transfers, what could it look like?
(inspired by Birdsall and Savedoff 2010)**:**

Parties: Country X (the Country) and a group of donor agencies (the Funders)

Purpose: The Country has defined increased coverage of social transfers to certain target groups as an essential ingredient in its social protection strategy. The purpose of this contract is to facilitate this expansion.

Goal: Long-term and predictable social transfers should be made available to individuals in groups defined by a set of criteria C [i.e., eligibility criteria for different kinds of social transfers defined by the Country: children, unemployed, elderly, disabled...]. Expansion towards full coverage will be gradual, estimated to take X years/decades. [Benefit levels may vary over time and depending on target group and do not have to be predefined in this contract, except possibly by a ceiling.]

Base-line: In year 2010 social transfers to groups defined by criteria C amounted to US$ XXX at current value.

Unit of measurement and payment: The Funders commit to pay, on an annual basis, the Country 75% of the value of social transfers delivered the previous year over and above the base-line, provided the transfers have reached individuals in groups defined by criteria C. Upon first renewing the contract (after 5 years) the base line will be adjusted annually, becoming equal to the amount of social transfers paid five years earlier.

Once disbursed by the Funders, there are no restrictions on the use of the funds by the Country.

In providing the transfers, no discrimination shall be made by the Country based on ethnic, religious or political affiliation of potential beneficiaries. Apart from that, the Country may set priorities while expanding towards intended coverage (i.e., adjusting benefit levels, targeting criteria, conditions, starting with certain sub-groups or geographical areas, etc.).

Reporting: The Country will report on the number of beneficiaries and benefit levels, in a format that facilitates analysis of the validity of the information. Reporting should be made open to the public.

Verification: An independent Verification Agent will assess the report, based on random sampling. The Verification Agent will also assess if the process of delivering transfers has been affected by any form of systematic discrimination not permitted under this contract.

Term: The contract term is five years, with the expectation that it will be renewed in five-year increments.

Other possible conditions:
-cap on benefit levels: benefit levels to fall below some specified ceilings.
-cap on annual disbursement by Funders.
-more generosity in the start-up phase by financing some percentage of social transfers below base-line the first x number of years

the "bonus-debate"). It is for obvious reasons that the COD showcase has been constructed around primary education, which produces a relatively homogeneous and easily measured outcome (although not without complicating qualitative aspects). Many development outcomes do not share that characteristic. However, in relation to social transfers, with a target such as "social transfers delivered to beneficiaries within a set of pre-defined target groups", one could argue that outcomes are even more "digital" and quantifiable than primary schooling. So, while the risk of creating perverse incentives, or of overlooking important qualitative aspects, is indeed a critical aspect of COD-aid, this is probably less the case for social transfers than for many other aid targets.

Another crucial factor is the requirement that donors enter into a binding commitment to provide a variable amount of funding over a period as long as five years or more. This is a feature COD-aid shares with the MDG contract. It would also require partner countries to initiate expansion with their own resources, which, on the other hand, would have the advantage of reducing the risks associated with purely donor-driven initiatives. Furthermore, COD-aid is an aid modality that would require a change of mindsets among donors and partners more used to traditional modalities. At present, the approach has still not established itself on the menu of aid modality options for large-scale interventions.

Summing-up the "benign" case, where "political ownership" is not a worry:

-First, we may simply repeat what has already been stated by donors in their Policy Statement and Policy Guidance Note negotiated within the OECD/DAC (OECD/DAC 2009): i) stay aligned, build on developing countries' own efforts and respect ownership, ii) provide support through harmonized financing mechanisms, iii) commit to long-term engagement.

-On aid modalities, it is clear that traditional *project aid* is not appropriate, except to support very specific actions in the planning and design phase. *General budget support* has the advantage of leaving the partner country to set priorities and allocate resources. However, as presently implemented by the donor community, this has some clear limitations, in that it is sensitive to political ups and downs and is hard to sell to donors' home constituencies. *Sector Wide Approaches* (SWAPs) or a *special budget support tranche* linked to social transfers, with reduced conditionality, could facilitate a more long-term and predictable approach that could also be sold to home constituencies in donor countries.

- Support from donors, even if long-term, cannot be assumed to last forever. A credible aid contract would ideally need a formula for burden-sharing over time that is both predictable and has some inbuilt flexibility for unforeseen events. COD-aid, with cash on delivery contracts that reward "units of

progress" above a baseline for a certain number of years, is an example of such a formula. The "delivery of social transfers" is a relatively homogeneous output that could lend itself to the kind of straightforward measurement that COD-aid requires. COD-aid would also have the advantage of making donors take a complete hands-off approach, with partner countries taking full responsibility for design and implementation, while still making clear to donors' home constituencies what aid money has paid for.

5. The second case: Lack of "political ownership" with external actors seeking leverage

Some country case studies of the political economy of cash transfers in sub-Saharan Africa have concluded that national ownership is weak and that what transpires is mainly donor-driven. Cash transfers are "tolerated" if they are externally funded and targeted to the very poor who are unable to work, but do not really reflect domestic priorities (McCord 2009). On the other hand, one may point out that in quite a few sub-Saharan African countries, as well as elsewhere in the developing world, scaled-up social transfers have been implemented on the basis of purely domestic political processes and without external funding (Hanlon et al. 2010). This has happened not only in sub-Saharan African middle-income countries, where a handful of countries have introduced near-universal social pension schemes, but also in low-income Lesotho, where the introduction of social pensions took the donor community by surprise (Pelham 2007). Malawi is another case: the introduction of a universal fertilizer voucher for farms was made after a deal in the parliament but against the advice of donors (Devereux and Cipryk 2009). Mozambique seems to be an incipient case: since 2009 a government decree regulates social protection priorities, one of them being to expand unconditional and regular social transfers to certain target groups, building on an existing government programme that was established as early as the 1990s (Rep. de Mozambique 2009). So the jury may still be out on cash transfers and the continent seems to be is just as diverse in this respect as in many others.

However, let us turn now to an imaginary case where political ownership is indeed lacking: social transfers are tolerated as long as they are mainly externally funded but domestic political processes afford them little priority. Is there still a role for external financing of social transfers? Or should donors simply stay away?

Donors could of course bypass government structures and run pilot cash-transfer schemes more or less on their own or through civil society organizations. This is what is being done at present. Donor-driven pilots are to be seen across sub-Saharan Africa, but this approach has obvious limitations in terms of reach, financial sustainability and institutionalization (Barrientos et al. 2010). A widespread view seems to be that the "pilot

project route" to domestic policy agendas has, for various reasons, not delivered (CSP et al. 2010).

Another more radical and futuristic idea would be to bypass governments with the creation of a truly global and more permanent redistribution mechanism, with a Global Welfare Agency using taxes from the rich in rich countries (possibly an international tax on air fuel) and transferring them directly to poor individuals in poor countries as cash grants. In the literature, there are some proposals along those lines (Milanovic 2007, Ortiz 2009). However, as the global architecture needed to make that idea feasible is lacking, we may treat it as a non-option for present purposes.

Leaving the bypass solutions aside, an option for donors (apart from staying away) would be to seek some form of impact on the development of policies and institutions in partner countries. "Small but important things" can obviously be done, such as promoting cross-country learning, dialogues, giving inspiration and support to drivers of change, etc. But could temporary external financing of social transfers, brought to scale, also be designed to stimulate the formation of policies and institutions capable of sustaining these transfers in the long-run?

There is a large literature on the role of aid in promoting various forms of policy reform or institutional change. Its dominant message is how difficult, or impossible, this is and how many risks there are for projects to backfire on donors, even those acting benevolently. "You can't buy policies" is a message that echoes in the literature as well as in the rhetoric of institutions such as the World Bank. We will review some of these arguments here (without any claim to exhausting this huge literature), and how they relate to the special case of policies and institutions that could sustain social transfer systems.

There are some apparent contradictions in the debate on aid and conditionality. While the official rhetoric of the World Bank and many other donors is that "conditionality does not work", it is quite obvious that conditionality is still practised (even if there are attempts to reform it, as in the case of the MDG contract). And while the North preaches that conditionality has not been effective in changing policies, in the South there seems to be an equally strong conviction that its policy space has been drastically reduced by these practices.

Why cannot policies be "bought", or at least influenced? One may distinguish between two rather different strands in the literature. One approach is to focus on aid contracts as such. The driving force in this strand of the "you can't buy policies" literature is a combination of moral hazard, asymmetric information and the lack of credibility of donor threats (due to incentives to disburse ex-post, etc). A large number of theoretical aid models have illustrated this point (Mosley et al. 1991, Svensson 2000, White and Morrisey 1997, Mosley 1996, Killick 1997, Collier 1997). These theoretical arguments

have subsequently coloured the analyses made in policy documents of the World Bank and other donors (World Bank 1998,"Assessing Aid", an early and influential example). Without going into detail, the point is that when the critique of conditionality is limited to the shortcomings of the aid contract *per se*, then a solution could be to reformulate the contract, making it credible with conditions that bite with increased precision (make donors disburse only after conditions are implemented, let conditions relate to outcomes that are easier to observe, handle asymmetric information by formulating tournament contracts, etc.). In principle, this is doable and there are various proposals trending in this direction in the literature (Svensson 2003, Gunning 2006). COD-aid is an example of a contract that at least in theory addresses the principal agent problem.

The other strand of the conditionality critique is less concerned with whether the stick and carrots used by donors lack credibility or precision. Its point is rather that what seriously limits the scope of conditionality is its potentially negative political economy impact. Conditionality undermines domestic ownership by disturbing the political processes that are needed for the creation of more lasting policies and institutions. It might work in the short run, but may not lead to processes of change that are sustained at a deeper level. This statement by Joseph Stiglitz (while chief economist of the World Bank) summarizes the critique:

> *Rather than learning how to reason and developing analytic capacities, the process of imposing conditionality undermines both the incentives to acquire those capacities and confidence in the ability to use them. Rather than involving large segments of society in a process of discussing change – thereby changing their ways of thinking – it reinforces traditional hierarchical relationships. Rather than empowering those who could serve as catalysts for change within these societies, it demonstrates their impotence. Rather than promoting the kind of open dialogue that is central to the democracy, it argues at best that such dialogue is unnecessary, at worst that it is counterproductive.* (Stiglitz 1998, pp. 10-11)

If this critique is valid, then much of the literature on defining the optimal aid contract is misdirected. This critique expressed by Stiglitz cannot be addressed by simply making the conditionality imposed by donors more credible. This critique could also be directed at a strategy whereby donors try to provide strong (and credible/enforced) incentives to unconvinced governments to implement social transfer systems.

A first conclusion is hence that there are many instances in which the conditionality will not work at all, or work only to promote limited short-run changes that are not sustained.

Are there then at least some specific instances in which conditionality can work to produce genuine and sustained changes? If so, are any of these instances relevant to the case of social transfers?

In the debate on the use of conditionality, some arguments in its defence have been put forward claiming that it may work at least in some cases. We refer to three groups of such arguments here: i) Time-bound inducement producing *irreversible changes*, ii) *Process conditionality* being different, and iii) Aid as *commitment device.*

-*Inducing irreversible changes*: There are some cases, it is claimed, where changes that are externally induced tend to become irreversible (Dreher 2008). Conditionality would still have to be credible in these cases, so we have to imagine an aid contract that solves the credibility problem of donors*.* A case could be where a country is in difficulty at point A and clearly would prefer to be at the better point B but fails to agree on how to get there, perhaps because of uncertainties over the distribution of gains and losses. Once induced by external incentives to move to point B there is then no pressure for policy reversal and the change becomes permanent. External pressure for privatization reforms could be another example: once entities are privatized, new interest groups come into existence and shift the political economy equilibrium so that the reform is kept in place. According to this reasoning, in some cases changes are of such a nature that they tend to reinforce themselves.

Could a case be made that this line of defence of conditionality would also hold for externally induced social transfers – that once introduced, they lead to a process of "self-reinforcement"? An argument along these lines could be constructed around the "path dependence" concept that is frequently referred to in the literature on comparative social policy. The concept posits that, once introduced, social policies shape interest groups, economic incentives, institutions and the values that tend to reinforce them (see Pierson (2000) or Béland and Myles (2005) for an overview). Studies of social pensions in countries in Southern Africa sometimes make the same claim, namely that once introduced, political dynamics have tended to make such systems irreversible (Pelham 2007). The argument here is a somewhat theoretical, as most donor interventions support small-scale pilots, which cannot be expected to have this impact on path dependency and policy irreversibility. Furthermore, one may question how strong this factor of self-reinforcement would be if policies were introduced as a product of external inducement rather than as a result of domestic political processes. If the mechanisms Joseph Stiglitz points out in the citation above are at work, then a strategy relying on temporary inducements to produce permanent social transfers may backfire.

-*Process conditionality*: Donors can avoid conditioning their aid on specified actions, policies or outcomes, and instead simply demand that the

programme they are to support has followed certain processes (being transparent and democratically processed, consultation with interest groups representing "the poor", etc.). The way the external community relates to the Poverty Reduction Strategies (PRS) has some elements of inbuilt process conditionality. Rather than dictating outcomes, the idea is to stimulate domestic consultative processes that will have beneficial outcomes. Political economy models have been developed in which it is shown that under ideal conditions this form of conditionality could work as intended (Hefeker and Michaelowa 2005). But these ideal conditions are quite restrictive (particularly on donor motivations and ability to understand political economy). Process conditionality is hardly a panacea, but one could at least argue that some conditions on process, such as requiring transparency and openness (as is done in the COD-aid proposal), is a form of conditionality that would be less prone to produce harmful political economy effects that undermine long-term domestic ownership.

-*Aid as commitment device*: A third line of defence of conditionality relates to the idea that aid may serve as a commitment device in cases where a government's lack of credibility blocks an outcome desired by everyone. In relation to IMF programmes, it is sometimes claimed that they may work as a commitment device to address time inconsistency problems, for instance by tying the government to a policy that minimizes investors' risk perceptions (Dhonte 1997, Dreher 2008). To be tied by certain conditions is then in the direct interest of the recipient government. There are also some case studies supporting the view that conditionality has sometimes worked in this way (Devarajan et al. 2001). Another case illustrating the commitment device argument is the way the international community, at least sometimes successfully, intervenes in peace processes: lack of trust between adversaries is an obstacle to a mutually desired peace agreement, but external actors may play the role of a broker, providing independent verification and committing aid that is conditioned to the implementation of undertakings in the peace agreement (Frerks 2006). The external actors then compensate for the lack of trust between the parties by providing a commitment device.

It has been argued that lack of a "contract" for social protection between states and citizens often constitutes the largest barrier to the expansion of successful social protection policies in sub-Saharan Africa (Hickey 2007). We also know that lack of trust – being unable to commit with credibility – can be a reason contracts are not entered into. So the question then becomes: Could aid conditioned to the implementation of social transfer systems serve as a commitment device that supports the formation of social contracts?

Let us look at a hypothetical case where a government embarks on certain structural reforms that are in the country's long-term interest, but also lead to increased insecurity among certain segments of the population. Popular protests block these reforms. Combining the structural reforms with a package of social transfers could be a remedy. However, the government

lacks the credibility both to sell the idea of social transfers to the protestors, and to convince taxpayers to accept necessary tax increases. The social contract is hence blocked by lack of trust in the government. We may then imagine that the international community enters the scene and provides financial support that is conditioned to the implementation of a social transfer system, with some transparency guarantees. The incentives provided by the external community, if credible, could in an ideal case make the intentions of the government to implement transparent social transfers more trustworthy.

Could paving the way for social contracts in countries where the idea of social transfers is not fully "politically owned" be a strategy for donors to pursue in at least some cases? And would it be riskless? In the literature on political economy, in particular that which builds on theories linking redistribution and democratization, the findings indicate that such a strategy would be far from risk-free. In redistributive theories of democratization (Acemoglu and Robinson 2006, a frequently cited contribution) the assumption is that democratization develops as a response to claims for redistribution by "the people". In periods when the masses are unusually mobilized, these claims become threatening to "the elite". The elite then seeks a deal – redistribution for law and order – but is unable to strike one because its monopoly on power does not preclude it from running away from its promises in the future when the masses are less mobilized. The solution then becomes building institutions, i.e., democracy, that makes it possible for the elite to commit with credibility. So, in this class of models, institution-building and redistribution go hand in hand.

Using a formalized political economy model with these features, and then adding foreign aid conditioned to redistribution, what is the result? In Morrison (2007), a formal analysis is made along these lines, adding foreign aid to the basic model presented in Acemoglu and Robinson (2006). The results are as discouraging as they are intuitive: if the creation of strong institutions such as democracy is driven by the need of rulers to make credible commitments, and aid is introduced and plays a role that substitutes for that, then the incentives to build these institutions are undermined. This is a result that captures some of the basic complexities about aid relationships: if aid works as a "by-pass" around more fundamental problems, then it risks delaying the correction of these problems. "By-pass does not work" is a frequently cited lesson learnt in aid evaluations.

How relevant are distributional theories of democratization, with its inspiration mainly in European history, to African political economies? A much more common way of portraying African political economies is in terms of weakly institutionalized democracies marked by patronage and clientilism (rather than in terms of Acemoglu's "masses on the barricades demanding

redistribution and an equal vote").[4] To the extent that patronage is a key concern, the question that follows is how the externally induced introduction of social transfers may relate to it. There are two points to be made here. First, if micro-level insecurity feeds patronage, and there are good reasons to believe that it does, then to the extent that social transfers reduce people's insecurity they may also reduce the need for patrons. Second, the design of social transfer schemes is crucial, as some designs lend themselves more readily than others to patronage politics. Designs in which the benefits are transparent – in the sense that the intended beneficiaries can easily know what their benefits are – reduce the risk for patronage as claims can then be made from below and accountability is reinforced. Simple forms of categorical targeting have a great political economy advantage in this respect, as they underline the "common interest" character of the social transfer and are less useful for discretionary politics.[5] On the other hand, designs of social transfer schemes in which the benefits are "awarded" based on criteria that are not fully transparent to the beneficiaries, and where the sophistication of the targeting mechanism places high demands on local administrative capacity, increase the risk that social transfer schemes fall prey to patronage politics.[6] If donors are concerned about patronage politics, they should encourage simplicity and transparency in benefits rather than sophistication in targeting mechanisms. However, what is done by donors in the social policy area often seems to be the complete opposite (Mkandawire 2007, p. 321).

We may conclude this section thus:

-By-passing governments altogether is a non-option: To run entirely donor-driven social transfer schemes is not recommended if the objective is to build up financially and politically sustainable social transfer systems. The idea of a global welfare agency, with its own permanent tax base, would require a global architecture that appears remote.

-The scope for external actors to use financial leverage with a view to influencing the political economy of social transfers in partner countries is limited. The key message in the literature on aid and conditionality is that externally imposed conditions rarely produce intended policy reforms that last. This is not simply an issue of the difficulties in formulating a credible aid contract, but also of how external involvement may distort domestic political economy processes. If conditionality ever works to induce more fundamental and lasting change, it is under quite restrictive assumptions. As a strategy, it

---

[4] This is a broad class of perspectives, which entails divergent views on how "patronage politics" is to be understood and what its historical roots in Africa are. Booth 2009 provides an overview of some of the issues.
[5] Robinson 2005, 41, elaborates on this theme in a paper written for the World Bank on "Politician-Proof Policy": promoting a universalistic and blunt policy has a better chance of remaining robust in the face of "broad types of political pathologies".
[6] A comparative review of administrative capacities to handle five different pilot cash-transfer schemes in Zambia concludes that only the scheme with the least complicated means-testing criteria (a universal pension scheme) matched existing administrative capacities (Chiwele 2010).

is far from riskless. This does not preclude at least some instances where the international community could play a role by giving a mild push in the right direction: paving the way for social contracts, asking for transparency and possibly betting on the self-reinforcing nature of social transfers and their potential to reduce patronage. However, lesson number one for donors is to recognize their limitations in reshaping a political economy that is not ripe for the introduction of social transfers.

6. Concluding remarks

Social transfers have reached the policy agenda of low-income countries in Africa, where affordability is a key concern while aid dependency is high. In terms of magnitude, aid could make a substantial difference in relaxing the affordability constraint. The opportunities and risks associated with external financing then become an issue.

Within the framework of OECD/DAC, donors have defined policy guidelines on social protection (OECD 2009). These may be summarized as:

- stay aligned: build on nationally defined strategies and on developing countries' own efforts;
- stay harmonized: provide support through coordinated financing mechanisms;
- commit to a long-term engagement with predictable financing.

If the objective is to support social protection strategies that are nationally owned, institutionalized and sustainable in political and financial terms, then there is not much room to question these recommendations. Moreover, they are far from superfluous, since the donor community still has a long way to go to live up to them.

As an extension of these recommendations, two questions beg for an answer: a) What about the cases where there are no nationally owned efforts to build on? b) For the cases where that ownership is in place, what should the appropriate aid modality be?

As regards the first question, this paper has argued that the first lesson for donors is to recognize their limitations in reshaping political economy constraints. To by-pass governments is not a road that leads to sustained policies and institutions. Many "small but important" things may of course be done – to engage in dialogues, evidence building, sharing of experiences, etc. – but using financial leverage to induce countries to institutionalize permanent social protection policies is a strategy that could easily backfire. Supporting partner countries to do more of the good things they are already doing is a more realistic ambition for the donor community.

As regards the second question, this paper has reviewed the pros and cons of different aid modalities in relation to the financing of social transfer systems. There are three requirements that an external financing mechanism of social transfers would have to meet: i) being supported by donor countries' home constituencies, ii) being based on a credible aid contract, where the permanent character of transfers has to be reconciled with the time-bound character of aid, and iii) build on, and avoid disturbing, political ownership in partner countries. Traditional *project aid* is not appropriate, unless to support very specific actions in the planning and design phase. *General budget support* has the advantage of leaving the partner country to set priorities and allocate resources accordingly, but as currently implemented by the donor community has clear limitations (sensitive to political ups and downs and hard to sell to donors' home constituencies). *Sector Wide Approaches* (SWAPs) or a *special budget support tranche* linked to social transfers or to a wider social protection strategy, with more reduced conditionality, could facilitate a more long-term and predictable approach that could also be sold to home constituencies in donor countries. The fact that aid is time-bound would still have to be reconciled with the permanent recurrent cost of social transfers: ideally a formula for predictable burden-sharing over time should be in place.

Cash on delivery aid, COD-aid, is an aid contract that provides such a formula, with predictability for partner countries and an exit strategy for donors. The delivery of social transfers to a universe of eligible groups is a relatively homogeneous target that could lend itself to the kind of straightforward measurement that the COD-aid presupposes. It would have the advantage of making donors take a complete hands-off approach, while still making it clear to their home constituencies what aid money has paid for. It would have to build on partner countries' own efforts, paying on a retroactive basis for additional units of expansion above a base-line. Such an approach would require long-term engagement by donors, aligned with country-owned strategies and harmonized around a joint financing mechanism. It would also require a considerable change in mindsets among donors and partners: at present it is not really on the menu of available aid modality options when it comes to large-scale financing.

A question that follows from this is the extent to which these "nationally owned efforts to build on" are to be found in the real world? Few countries might be as "benign" as the benign case presented above, but, on the other hand, we do see cases of apparently home-grown initiatives popping up. European history tells us that political economy conditions do not have to be spotless for social protection policies to be introduced and sustained. A number of African middle-income countries have institutionalized ambitious social transfer programmes largely on their own. The cases of low-income countries such as Lesotho, Malawi and Mozambique have been mentioned above. An interesting process of cross-country learning on social protection takes place under the leadership of the African Union and elsewhere. The

efforts to build on are to be found among these large-scale and institutionalized initiatives.

This article has mainly dealt with what donors should and should not do. What is the message in all this for the partner countries, governments as well as stakeholders in society? It is straightforward: take the lead, define strategies and invite donors when your direction is set! If there are financing needs for social transfers in your strategy, then COD-aid could be a way of getting the donors on the hook without inviting them to share the driver's seat.

References

Acemoglu D. and J. Robinson (2006) *Economic Origins of Dictatorship and Democracy*, Cambridge University Press

Barrientos, A. (2007) *Financing Social Protection,* BWPI working paper 5

Barrientos A. and D. Hulme (2008) *Social Protection for the Poor and the Poorest in Developing Countries - Reflections on a Quiet Revolution,* BWPI Working Paper 30

Barrientos A., Hickey S., Hulme D. and M. Nino-Zarazúa (2010) *Social protection in Sub-Saharan Africa, Will the green shots blossom?,* BWPI working paper 116

Birdsall N. and W. Savedoff (2010) *Cash on Delivery – A New Approach to Foreign Aid*, Centre for Global Development

Booth, D (2009) *Elites, Governance and the Public Interest in Africa: Working with the Grain?,* Africa Power and Politics Programme, discussion paper 6, downloaded at: http://www.institutions-africa.org/filestream/20090820-appp-discussion-paper-6-elites-goverenance-and-the-public-interest-in-africa-working-with-the-grain-david-booth-august-2009

Chiwele, D.K. (2010) *Assessing Administrative Capacity and Costs of Cash Transfer Schemes in Zambia – Implications for Rollout,* IPC/International Policy Centre for Inclusive Growth, Country Study no. 20

CSP, IDS, ODI, RHVP, UEA-DEV (2010) *Social Protection in Africa: Where Next?,* Joint discussion paper, downloaded at: http://www.ids.ac.uk/go/news/social-protection-in-africa-where-next

de Renzio P. and N. Wood (2006) *The Trouble with Cash on Delivery Aid: A note on its potential effect on recipient country institutions*, note prepared for the CGD initiative on Cash on Delivery, downloaded at: http://www.cgdev.org/doc/Cash%20on%20Delivery%20AID/Derenzio%20Woods.pdf

Devarajan, S., Dollar D. and T. Holmgren eds. (2001) *Aid and Reform in Africa*, World Bank

Devereux S. and R. Cipryk (2009) *Social Protection in Sub-Saharan Africa: A Regional Overview,* IDS/Centre for Social Protection

Dreher, A. (2008) *IMF Conditionality: Theory and Evidence*, KOF working papers no 188, Swiss Federal Institute of Technology.

Dhonte, P. (1997) *Conditionality as an Instrument for Borrower Credibility*, Paper on Policy Analysis and Assessment of the IMF 97/2.

European Commission (2008) *The "MDG contract", An Approach for Longer Term and more Predictable Budget Support*, downloaded at: http://ec.europa.eu/development/icenter/repository/MDG-Contract-Paper-0608_en.pdf

Frerks, G. (2006) *The Use of Peace Conditionalities in Conflict and Post Conflict Settings: A Conceptual Framework and a Checklist*, Netherlands Institute of International Relations

Foster M. and J. Leavy (2001) *The Choice of Financial Aid Instruments*, Working Paper 158, ODI, downloaded at: http://www.odi.org.uk/resources/download/1393.pdf

Gunning, J. (2006) "Budget Support, Conditionality and Evaluation" in Koeberle, S. et al. eds., *Budget Support as More Effective Aid,* World Bank

Hanlon, J. Barrientos A. and D. Hulme (2010) *Just Give Money to the Poor – the Development Revolution from the South,* Kumarian Press

ILO/WHO (2009) *The Social Protection Floor,* downloaded at: http://www.un.org/ga/second/64/socialprotection.pdf

ILO (2008) *Can Low-Income Countries Afford Basic Social Security,* downloaded at: http://www.ilo.org/public/libdoc/ilo/2008/108B09_73_engl.pdf

IMF (2010) *Regional Economic Outlook: Sub-Saharan Africa,* IMF, downloaded at: http://www.imf.org/external/pubs/ft/reo/2010/AFR/eng/sreo0410.htm

Jain, S. (2007) "Project Assistance versus Budget Support: An Incentive-Theoretic Analysis of Aid Conditionality", *Review of World Economics,* vol.143:4

Killick T. (1988) *Aid and the Political Economy of Policy Change*, London Routledge

Knoll, M (2008) *Budget Support: A Reformed Approach or Old Wine in new Skins*, UNCTAD Discussion Paper 190, downloaded at: http://www.unctad.org/en/docs/osgdp20085_en.pdf

Lister, S. et al. (2006) *Joint Evaluation of Budget Support 1994-2004 – Synthesis report*. Downloaded at: https://www.dfid.gov.uk/Documents/publications1/evaluation/gbs-synthesis-report.pdf

McCord, A. (2009) *Cash Transfers: Affordability and Sustainability*, ODI Project Briefing, downloaded at: http://www.odi.org.uk/resources/download/3508.pdf

Milanovic, B. (2007) *Ethical case and economic feasibility of global transfers*, downloaded at: http://mpra.ub.uni-muenchen.de/2587/1/MPRA_paper_2587.pdf

Mkandawire, T. (2007) "Targeting and Universalism in Poverty Reduction" in Ocampo, J. et al. eds., *Policy Matters,* Zed Books

Morrison, K. (2007) "Natural resources, aid and democratization: A best case scenario", *Public Choice* 131:365-386

Mosley P. and J. Hudson (1996) *Aid, Conditionality and Moral Hazard*, (Mimeo)

OECD/DAC (2008) *Aid Targets Slipping out of Reach,* downloaded at: http://www.oecd.org/dataoecd/47/25/41724314.pdf

OECD/DAC (2009) *Promoting Pro-Poor Growth – Social Protection, Policy Guidance Note,* downloaded at: http://www.oecd.org/document/31/0,3343,en_2649_34621_41169119_1_1_1_1,00.html

OECD (2010a) *Development Aid rose in 2009 and most donors will meet 2010 aid targets,* downloaded at: http://www.oecd.org/document/11/0,3343,en_2649_34487_44981579_1_1_1_1,00.html

OECD (2010b) International development statistics on-line data bases for aid and other resource flows, downloaded at: http://stats.oecd.org/qwids/

Ortiz, I. (2009) "Financing for Development: International Redistribution" in Huju, K. and McClanahan, S. eds., *Financing Social Policy – Mobilizing Resources for Social Development,* UNRISD/Palgrave MacMillan

Pelham, L. (2007) *The Politics Behind the Non-contributory Old-age Social Pensions in Lesotho, Namibia and South Africa,* Working Paper 83, Chronic Poverty Research Centre

Rep. de Mocambique (2009) *Regulamento da Seguranca Social Básica - Decreto No 85/2009,* downloaded at: *http://www.cipsocial.org/components/com_eps/ficheiros/REGULAMENTO_P.S.BASICA_APROVADO_CM_24.11.2009.pdf*

Robinson, J. (2005) "Politician-Proof Policy", *Desarrollo y Sociedad,* 2005:55

Svensson J. (2000) "When is Foreign Aid Policy Credible? Aid Dependence and Conditionality", *Journal of Development Economics 61:61-84*

Svensson, J. (2003) "Why conditional aid does not work and what can be done about it", *Journal of Development Economics 70, 381-402*

Stiglitz J. (1998) *Distribution, Efficiency and Voice: Designing the Second Generation of Reforms*, Speech presented at the conference on Asset Distribution, Poverty, and Economic Growth, Brazil July 14, 1998

White, H. and O. Morrisey (1997) Conditionality when Donor and Recipient Preferences Vary, *Journal of International Development:* Vol 9, No 4, pp 497-505

Whitfield, L. (2009) "Aid and Power – A Comparative Analysis of the Country Studies" in Whitfield, L. ed., *The Politics of Aid- African Strategies for Dealing with Donors*, Oxford University Press

World Bank (1998) *Assessing Aid*, Oxford University Press

Svensk sammanfattning

Sammanfattning på svenska (Summary in Swedish)

Denna avhandling behandlar frågor relaterade till ekonomisk ojämlikhet och sociala trygghetssystem. Det är en sammanläggningsavhandling bestående av en inledning och fyra fristående artiklar. Ett antal konkreta frågeställningar står i fokus för de fyra artiklarna:

- Är det så att ekonomisk ojämlikhet leder till mer kriminalitet och ökad spridning av HIV i ett samhälle, och i så fall via vilka mekanismer sker detta?

- Bidrar införandet av pensioner i Afrika – pensioner som täcker en majoritet av de äldre i befolkningen – till att fertiliteten minskar?

- Är det möjligt och rimligt att utnyttja externfinansiering i form av bistånd när låginkomstländer inför sociala trygghetssystem?

Det här är en typ av frågor som väcks när utvecklingspolitik formuleras – bland politiker, tjänstemän och andra aktörer – men de knyter också an till en bred samhällsvetenskaplig litteratur. Inte minst inom fältet freds- och utvecklingsfrågor har ojämlikhetsproblematiken uppmärksammats, både som en faktor som kan bidra till konflikter och som något som kan påverka utvecklingens förutsättningar på ett mer generellt plan.

   Två av artiklarna behandlar sambandet mellan ekonomisk ojämlikhet och två fenomen – kriminalitet och HIV – som särskilt kommit att prägla utvecklingsproblematiken i Afrika och Latinamerika. De sista två artiklarna behandlar två specifika aspekter relaterade till införandet av sociala trygghetssystem i låginkomstländer: sambandet mellan införandet av ålderspensioner och fertilitet samt förutsättningarna för externfinansiering av sociala trygghetssystem. Även om de fyra artiklarna bör läsas som självständiga bidrag så finns en gemensam nämnare i så måtto att de försöker bidra till en förståelse av ojämlikhetens konsekvenser och av instrument som har en potential att påverka ojämlikhet. Artiklarna är publicerade.[1]

---

[1] De fyra artiklarna är:

i) "Latin American Crime and the Issue of Inequality", *Iberoamericana, Nordic Journal of Latin American and Caribbean Studies*, Vol XXX:2 2000.

ii) "HIV and Income Inequality – If there is a link what does it tell us?" International Policy Centre for Inclusive Growth/UNDP, Working Paper 54, April 2009.

iii) "Fertility Impact of High-coverage Public Pensions in sub-Saharan Africa" *Global Social Policy (forthcoming)*.

iv) "External Financing of Social Protection – Opportunities and risks", *Development Policy Review (forthcoming).*

Ojämlikhetens konsekvenser för kriminalitet och HIV-spridning (artikel 1 och 2)

Folkhälsovetare var tidiga med att relatera olika uttryck för ohälsa till ekonomisk ojämlikhet. Kriminologer, statsvetare, sociologer och ekonomer har producerat liknande resultat inom sina fält. Kriminalitet och HIV är två sådana fenomen som har studerats inom flera samhällsvetenskapliga discipliner och mängder av resultat har presenterats som pekar på ett samband med ekonomisk ojämlikhet. De båda artiklarna redovisar denna litteratur, replikerar en del av resultaten och ifrågasätter andra. Av intresse att notera är att såväl när det gäller kriminalitet som HIV så tycks det gå att belägga denna typ av samband både inom länder, inom kontinenter och olika typer av länderkategorier samt på global nivå. Med hjälp av regressionsanalys pekas inkomstjämlikhet ut som en signifikant faktor i förhållande till mordfrekvens bland annat inom delstater i USA, provinser i Brasilien och Colombia samt för hela kategorin låginkomstländer. På motsvarande sätt hittar man signifikanta samband mellan inkomstojämlikhet och HIV inom Afrika söder om Sahara, för världens länder exklusive Afrika söder om Sahara, för olika distrikt i Malawi eller för provinser i Kina. Dessa samband förefaller vara robusta i förhållande till olika modellspecifikationer, kontrollvariabler och test. Resultaten pekar på hur ekonomisk ojämlikhet kan vara förknippad med en betydande social kostnad.

En tvärdisciplinär läsning av den här litteraturen visar att forskare inom olika discipliner ofta etablerat liknande statistiska samband – baserat på snarlika metoder och data – men tenderat att tolka sina resultat i ljuset av de teorier som dominerar inom respektive vetenskapsgren. När en ekonom finner ett samband mellan inkomstojämlikhet och kriminalitet, eller HIV, så ligger det nära till hands att se resultaten som en bekräftelse på teorier av typen *"economics of crime"* eller *"economics of sexual behaviour"*, där individen förutses göra rationella val baserade på optimering av förväntad nytta. En folkhälsovetare kan på motsvarande sätt tolka samma typ av resultat som ett uttryck för individers psykosociala stress, som antas förstärkas i ojämlika samhällen. För den som studerar länders politiska ekonomi, och noterar en oförmåga att organisera en effektiv offentlig sektor i ojämlika länder, ligger det nära till hands att söka mekanismerna bakom sambandet inom detta fält. I sociologisk litteratur, avslutningsvis, är det vanligare att tolka den här typen av samband i termer av försvagat socialt kapital och en oförmåga att etablera gemensamma normer och värderingar i samhällen som präglas av stora klyftor.

I de båda artiklarna görs vissa preliminära försök att ställa den här typen av teorier mot varandra. Det görs utan anspråk på att kunna etablera något slutgiltigt avgörande men terrängen kartläggs, vissa preliminära resultat presenteras och uppgifter för framtida forskning pekas ut. Det understryks samtidigt att det är en nyckelfråga att bättre förstå de mekanismer som styr sambandet mellan ojämlikhet och den här typen fenomen. Utan en djupare

förståelse av dessa mekanismer är det också svårt att ta det fulla steget till slutsatser på policy-nivå.

Sociala trygghetssystem(artikel 3 och 4)

Miljoner och åter miljoner fattiga människor runt om i världens utvecklingsländer har under de senaste decennierna inkluderats i olika typer av sociala trygghetssystem. Somliga har till och med beskrivit detta som något av en "tyst revolution". De latinamerikanska länderna har blivit omtalade för sina bidrag till fattiga hushåll, där bidragen villkoras med att barn sätts i skolan eller tas till hälsoklinik. I åtta afrikanska länder finns numera pensionssystem som täcker majoriteten av de äldre och som i sin utformning faktiskt påminner en del om de folkpensioner som infördes i Sverige för snart hundra år sedan. I Indien finns ett omfattande beredskapsarbetsprogram som ger landsbygdens fattiga en rättighet, garanterad i konstitutionen, till hundra dagars beredskapsarbete. Även i Etiopien har det upprättats ett omfattande beredskapsarbetsprogram i tidigare svältdrabbade områden. Många av de här initiativen har inletts som en slags nödinsatser i samband med ekonomiska kriser – i Latinamerika på 1990-talet, i Asien tidigt 2000-tal, i Etiopien efter svältkatastroferna – för att sedan utvecklas till ett permanent inslag i ländernas politik. I några fall har det internationella biståndet varit inblandat som impulsgivare och finansiär, men det hör till undantagen. I de allra flesta fall, när det rör sig om institutionaliserade system med nationell räckvidd, har såväl initiativtagare som finansieringskällor varit inhemska.

En forskningsagenda har uppstått som försöker belysa olika aspekter relaterade till sociala trygghetssystem i utvecklingsländer. Till de olika frågor som forskningen fokuserat på hör bland annat följande:

- Effekterna: Vad vet vi om effekterna av den här typen av system, inklusive ej avsedda sidoeffekter?

- Kostnaderna: Har låginkomstländer verkligen råd med detta?

- Politiken: Hur ser de politiska förutsättningar ut som medger införandet av denna typ av system, och vilka är deras politiska effekter?

- Utformning: Hur kan och bör sådana här system vara utformade, exempelvis vad gäller villkor och behovsprövning?

- Administrativ kapacitet: Kan fattiga länder med svaga institutioner hantera sådana här system rent praktiskt, och vilka lösningar finns?

3

- Biståndet: Har internationellt bistånd någon roll att spela i detta?

De sista två artiklarna behandlar frågor som har sin tydliga plats på denna forskningsagenda. Frågan om effekter på fertilitet av olika typer av bidrag (artikel 3) ingår i diskussionen av systemens ej avsedda sidoeffekter. Biståndet är en potentiell finansieringskälla i låginkomstländer som vill införa denna typ av system (artikel 4), men en sådan extern finansiering är också förknippad med en del problem.

Teorier som bygger på antagandet att valet av familjestorlek påverkas av behovet av tryggad ålderdom har funnits i decennier. En hypotes som väcks som en följd av sådana antaganden är att ålderspensioner har en potential att minska detta behov av "barn som ålderdomsförsäkring". Pensioner förväntas därmed bidra till en minskad fertilitet. Det finns otaliga empiriska studier gjorda i västländer som ganska entydigt visar att pensionssystem kan ha denna förväntade effekt på fertiliteten. Samtidigt är det så att det finns skäl att förvänta sig att denna effekt borde vara särskilt stark i länder där familjerelationer är den främsta källan till social trygghet och där alternativa vägar (sparande, försäkringar) till en trygg ålderdom är begränsade. Som exempel kan nämnas att en nyligen genomförd ILO-studie i Ghana visar att ungefär hälften av de tillfrågade förväntade sig att som gamla kommer deras barn att bli deras främsta inkomstkälla. Studier av pensionernas effekter på fertiliteten i låginkomstländer lyser dock nästan helt med sin frånvaro eftersom dessa länder sällan har pensionssystem som täcker mer än en ytterst begränsad del av befolkningen. I Afrika söder om Sahara finns dock några tydliga undantag där en handfull länder har infört en form av minimala folkpensioner som täcker en klar majoritet av de äldre. Länder som Sydafrika och Mauritius införde sådana system redan på 1950-talet medan exempelvis Lesotho och Swaziland har infört dem under det senaste decenniet. De här systemen har införts under vitt skilda politiska och ekonomiska förutsättningar, men har det gemensamt att det rört sig om skattefinansierade och ej avgiftsbaserade pensionssystem. Några är strikt universella – ålder är det enda kriteriet för att kriteriet pensionen – medan andra omfattar någon typ av behovsprövning som utesluter de med de allra högsta inkomsterna.

I den tredje artikeln görs ett försök att med hjälp av regressionsanalys (paneldata för länder i Afrika söder om Sahara) slå fast om införandet av de här pensionssystemen har varit en signifikant faktor för fertilitetsutvecklingen. Resultaten tyder på att så har varit fallet. Resultatet står sig när kontroller görs för andra fertilitetspåverkande faktorer – som urbanisering, barnadödlighet och ekonomisk utvecklingsnivå – samt även för "fixed effects" (för år och land).

Den slutsats artikeln drar handlar inte om att pensioner bör utnyttjas som ett politiskt familjeplaneringsinstrument; i den mån en hög fertilitet uppfattas som problematiskt i vissa länder finns sannolikt bättre instrument än pensioner. Däremot innebär resultatet ett balanserande argument i förhållande till den oro

som utrycks i debatten, inte minst på politisk nivå, för att införande av sociala trygghetssystem med inslag av barnrelaterade bidrag skulle kunna leda till ett ökat barnafödande. Sådana argument var exempelvis framträdande när Sydafrika förberedde införandet av sitt barnbidragssystem på 1990-talet.

Finansieringsfrågan är en av de viktigaste restriktionerna när införandet av sociala trygghetssystem diskuteras i låginkomstländer. I dessa länder är samtidigt biståndet så pass högt – och åtaganden om ökat bistånd till Afrika finns dessutom – att det åtminstone rent teoretiskt skulle kunna finansiera en betydande del av kostnaderna för att införa sociala trygghetssystem. Den fjärde artikeln belyser såväl möjligheter som risker med en sådan biståndsfinansiering och diskuterar hur ett lämpligt biståndskontrakt skulle kunna utformas. Artikeln sammanfogar överväganden från litteraturen om sociala trygghetssystem med litteraturen om biståndseffektivitet och om biståndets politiska ekonomi. Det görs en åtskillnad mellan två typer av fall: Länder där införandet av sociala trygghetssystem är politiskt välförankrat och länder där det snarare är biståndsgivare som vill verka för införandet av sådana system trots att inhemsk politisk förankring saknas.

I det förra fallet, i vilket den politiska förankringen är god, återstår problemet med att biståndets varaktighet är temporär medan trygghetssystemen ofta är permanenta. Såväl mottagare som givare kan förväntas känna sig obekväma med detta: Mottagare om de gör sig beroende av oförutsägbara biståndsflöden och givare om de inte ser någon slutpunkt för sitt finansieringsåtagande. Artikeln diskuterar olika biståndskontraktsmodeller som skulle vara lämpliga för att hantera denna typ av dilemman. Vad som förespråkas är en modell där finansiering utgår retroaktivt baserat på uppnådda resultat, där resultaten definieras som de sociala transfereringarnas expansion utöver en base-line vid kontraktets startår. Det skulle kräva att biståndsgivarna ingår långsiktiga kontrakt som förlängs löpande och årligen. En sådan modell skulle skapa en förutsägbar kostnadsdelning mellan biståndsgivare och mottagare, där samarbetslandet gradvis tar över mer och mer av finansieringen i takt med att systemet expanderar. Samarbetsländerna får därmed både förutsägbarhet och flexibilitet och kan expandera systemen i takt med att ekonomin så tillåter, medan biståndsgivarna ges en eftersträvad tydlighet i vad biståndet har finansierat och hur långt deras finansieringsåtagande sträcker sig.

Artikeln diskuterar även ingående det andra fallet när biståndsgivare försöker förmå länder att upprätta sociala trygghetssystem trots att den inhemska politiska förankringen är svag. Baserat på en tillämpning av litteraturen om biståndskonditionalitet dras slutsatsen att det finns tydliga begränsningar för vad biståndsfinansiering skulle kunna åstadkomma i denna typ av situationer.