UNITED NATIONS UNIVERSITY
UNU-WIDER

WIDER Working Paper 2016/96

# Resilience to crisis through social protection

## Can we build the case?

Thomas Roca[1] and Hélène Ferrer[2]

August 2016

United Nations University World Institute for Development Economics Research
wider.unu.edu

**Abstract:** This paper investigates the linkage between social protection and economic resilience. Does social protection have an impact on income? What role do social protection policies play in strengthening a society's capacity to overcome economic hardships? The recent crisis has brought these questions to the forefront of the discussions among development institutions. Our panel analysis suggests a positive answer to the first question and provides empirical evidence showing that social protection may be an effective means of reducing poverty and accelerating economic development. The answer to the second question remains more elusive as data availability issues hamper fine-tuning our investigation.

**Keywords:** social protection, public spending, growth, financial crisis, resilience
**JEL classification:** O11, O4, H50, I31

[1] Agence Française de Développement (AFD), Paris, France, corresponding author: rocat@afd.fr; [2] University of Paris Dauphine, Paris, France.

This study has been prepared within the UNU-WIDER project on 'The political economy of social protection systems', which is part of a larger research project on 'The economics and politics of taxation and social protection'.



Information and requests: publications@wider.unu.edu

ISSN 1798-7237 ISBN 978-92-9256-139-0

Typescript prepared by Lesley Ellen.

The United Nations University World Institute for Development Economics Research provides economic analysis and policy advice with the aim of promoting sustainable and equitable development. The Institute began operations in 1985 in Helsinki, Finland, as the first research and training centre of the United Nations University. Today it is a unique blend of think tank, research institute, and UN agency—providing a range of services from policy advice to governments as well as freely available original research.

The Institute is funded through income from an endowment fund with additional contributions to its work programme from Denmark, Finland, Sweden, and the United Kingdom.

Katajanokanlaituri 6 B, 00160 Helsinki, Finland

# 1 Introduction: social protection at the forefront

The global financial and economic crisis that broke out in 2008 has exacerbated an already present trend driven by economic globalization: the widening disparities among social groups and individuals in terms of opportunities and welfare improvements. If no policy measures are put in place, increased trade, technological innovation, and greater mobility of production factors may bring economic gains and better living standards for one part of the population, but could also lead to income loss and social downgrading for other groups. Greater opportunities come with greater risks, and fostering the former while managing the latter raises a huge challenge for policy makers.

Against this backdrop, social protection has emerged as a key development priority over the past decades and has gained momentum following the recent crisis. International institutions such as the World Bank and the United Nations are supporting the expansion of social protection mechanisms as a means to ending poverty. Although recommendations on specific measures to be implemented vary from one organization to another, there is a growing consensus on the need to help individuals and groups facing the risks—above all income risks—associated with health, age, family, work, hazards, and the like.

The purpose of this paper is to explore the concept of social protection and look for evidence of its linkage with economic resilience. More specifically, we examine whether the capacity of societies to overcome economic and social hardships bears any correlation to their level of social protection, using the 2008 crisis as a 'stress test'. Did the countries recognized for their 'social model' prove more resistant to the crisis? Were individuals and households able to maintain their level of welfare, and is this related to the social protection mechanisms existing in their countries?

We find that the level of income and growth of a given country is positively correlated to the level of public spending in social welfare sectors such as health and education. However, the role of social protection as a cushion against income variability during a crisis is more difficult to gauge. The methodological approach that we propose nonetheless lays the groundwork for further analysis as soon as more data become available.

This paper is structured as follows. Section 2 provides background elements to frame the subject. Section 3 presents our empirical approach, based on panel analysis to assess the relation between social protection and economic resilience across countries. We provide concluding remarks in Section 4 with a word of caution about the interpretation of results.

# 2 Background and literature survey

## 2.1 Some historical references

Social protection, in the sense commonly accepted in the European countries that forged it, refers to collective insurance mechanisms designed to cover basic social risks or, in other words, situations that may affect individuals' income security, such as illness and invalidity, old age, family duties, loss of employment, etc. Historically, it refers to the idea of welfare state that emerged in Europe in the 18$^{th}$ century.

Going back through history, the European welfare state had been preceded by social assistance to the poor and destitute, mainly in the form of charity inspired by religious or secular ethics.

Here, we draw on the work of Rosanvallon (1981, 1985), who presents the main thinkers of political philosophy and gives a perspective on how things changed at the turn of the 18th century. According to Rosanvallon, the prerogatives of the state as addressed in Hobbes' Léviathan (Hobbes 1651) and in Locke's Second Treatise of Civil Government (Locke 1689) can be gathered under the concept of a 'protective state', reflecting the twofold duty to ensure security and reduce uncertainty. These responsibilities are met through law enforcement to prevent or punish social destabilization.

The underpinnings for the modern conception of the welfare state (i.e. a system of collective insurance mechanisms involving both the state and citizens) can be found in the work of Leibniz (1864). In the late 1670s, Leibniz proposed the creation of a tax-financed insurance fund in post-war Germany as a rational way of integrating individuals into a common dynamic of responsibility. This need for the collective care of the most disadvantaged people to ensure public security and a well-functioning society is the cornerstone of what Leibniz calls the *Wohlfahrt* or 'general welfare'. Rosanvallon analyses the emergence of the notion of welfare state in the light of Leibniz's pioneering work on statistical models, which he applied to risk management and to the optimization of social utility.

The transition from the 'protective state' to the 'welfare state' in western countries gradually led to the establishment of governments with a broad range of regulatory competences in economic and social areas. A classic typology distinguishes between the 'Bismarckian model' and the 'Beveridgian model', and many national systems actually fall somewhere between the two.

The historical distinction between the Bismarckian and Beveridgian models may no longer be valid for describing the diversity of social protection systems. Yet, certain features are still crucial when analysing the approaches to social protection foregrounded by international organizations. For instance, the concept of 'social protection floors' is based on the Beveridgian idea of universality. Those who introduced this concept intentionally left open options to tailor-make, in each country, the implementation of social policies guaranteeing universal social protection. Thus, this makes it possible to develop national schemes that combine Bismarckian and Beveridgian approaches, with a mix of contributory and non-contributory mechanisms, as well as diverse sources of public revenue—in line with each country's starting point and specific context.

## 2.2 Literature survey: what place for social matters in the economy?

*Social spending, human capital, and economic growth*

According to Musgrave (1959), the state fulfils three economic functions: the allocation of resources to encourage efficiency and reduce negative externalities; the redistribution of wealth; and the mitigation of economic cycles for smoothing GDP fluctuations, price levels, and employment outcomes. Within this framework, social investments relate to the allocation of resources, while social safety nets and cushioning measures have a distributive and stabilizing effect.

On the allocation front—and building on endogenous models introduced early on by Romer (1986) and Lucas (1988)—a large strand of the empirical literature emphasizes the role of human capital in economic growth. The positive relationship between schooling and growth is brought to the forefront (Levine and Renelt 1992; Psacharopoulos 1994; Sala-i Martin 1997b), as is the link between health capital and economic output (Bloom and Canning 2003).

The literature focusing on the interaction between social spending and human capital has brought mixed conclusions. Studies by Anand and Ravallion (1993) and Psacharopoulos and Patrinos (2002) support a positive correlation between public social spending and education and health outcomes. Baldacci et al. (2003) come to the same conclusion, with education outlays showing up as a stronger determinant of social indicators than health expenditure. On the other hand, a number of studies find no significant relationship between public spending on education and education outcomes (Mingat and Tan 1992, 1998) or between health outlays and health status (Filmer et al. 1998). Possible explanations for this absence of significant results relate to the quality of institutions and the role of governance practices in converting spending into actual outcomes (Gupta et al. 2002).

At the aggregate level, Arjona et al. (2002) find a positive association between certain categories of social spending and growth in OECD countries. In a review of the different impacts of various government expenditures on economic growth, Fan and Rao (2003) find that i) spending on health has a particularly strong positive effect on economic growth in Africa, along with spending on agriculture; ii) in Asia, education expenditures have a significant impact on aggregate output, and iii) in Latin America, health proves to be the only sector to display a significant correlation between public spending and growth.

When it comes to income redistribution, no consensus emerges. However, the idea of a trade-off between equality and growth is widespread. Countries choosing to implement social protection policies might have to accept economic losses; an idea that has been largely developed in the literature. One of the main arguments is that social transfers lower people's incentives to work, thus reducing labour availability and ultimately the level of output, capital investment, and growth Mirlees (1971). Over time, benefits mechanisms modify the economic behaviour of individuals and societies, substituting redistributive policies for innovative and entrepreneurial dynamics (Lindbeck 1975). Noble et al. (2008) search for evidence of this theoretical 'dependency culture' in the South African context but were unable to identify any linkage between social grants and disincentives to work.

Another strand of the literature develops the idea that social protection is too costly for governments in both developed and developing countries. Tanzi (2002) argues that the consequences of economic globalization (e.g. tax competition at the global level, increased mobility of production factors, and the 'e-commerce' boom) undermine the ability of OECD country governments to raise taxes, which prevents them from expanding social policies. Before Tanzi, economists had pointed to the diminishing capacities of old 'welfare states' to ensure redistribution (Atkinson 1999; Leamer 1999).

Alesina and Rodrik (1994) explore the relationship between redistributive policies and growth. They find that initial inequality is a sound predictor of long-term growth across countries, and that inequality results in the adoption of growth-retarding policies. Other studies confirm the negative correlation between initial inequality and long-term growth and investment (Pearson and Tabellini 1994; Barro 1999).

The idea that inequalities do not matter for development continues to lose ground in light of the recent crisis (Ostry et al. 2014). While the pioneering work of Kuznets (1955) predicted a long-term reduction of inequality once societies had reached industrial age, Piketty (2013) supports the idea that income and wealth inequality has been rising over the past century, and that wealth concentration is bound to continue, unless redistributive action is taken. Moreover, the assumption that markets are always efficient in allocating resources has been nuanced (Gowan 2009), and the overall capacity of liberalization to ward off growing vulnerability has been questioned (Utting et al. 2012). In a recent paper providing a long historical perspective,

Ravallion (2013) documents the progressive transition over the last two hundred years from the mainstream belief that poverty was normal and even necessary for economic development to the 'antipoverty paradigm', which considers poverty as a social disease to be combatted and calls for public intervention to correct resource misallocations.

*Poverty and vulnerability in times of crisis*

Our choice to take the 2008 financial crisis as a backdrop for our study stems from two intertwined considerations. First, the financial crisis has widely propagated into the real economies of low- and middle-income countries, although it initially broke out in richer countries, starting with the United States and Europe. Difficulties arise when trying to comprehensively assess the economic and social impacts of this global shock on societies, as much depends on the level of integration, the size of the economy, and the structural conditions of each country (te Velde 2010). However, research on multidimensional poverty shows that the poorest segments of the population are prone to a wider range of risks than the rest of the population, and have been the most exposed to the consequences of the recent economic turmoil in terms of unemployment, inflation, and reduced public expenditure (IDS 2009). At a time when the international community has moved towards a new development agenda, it is crucial to identify solutions that protect the most vulnerable against the perils of greater crises in the future.

One positive outcome of large-scale crises is that they are opportunities to shake up certainties about what is good for growth and development (Traub-Merz 2012). According to the literature from international organizations and academics, there has been a growing consensus in the aftermath of the crisis that raising social standards and institutionalizing social protection at the global level may be indispensable for international stability and sustainable development (Sumner and McCulloch 2009). In its last Global Risks Report, the World Economic Forum identifies income inequality, food insecurity, and the precarious situations experienced by young generations worldwide as some of the main sources of systemic risk for the next decade (World Economic Forum 2014).

Evidence from previous periods tells us that poverty increases dramatically during crisis. Cline (2002) analyses what impact the 1990s' major financial crises in emerging markets had on the incidence of poverty. He estimates that a typical crisis causes an average increase of 7 per cent in the poverty headcount ratio. Out of a total population of 800 million in the eight countries covered by his study—Mexico, Thailand, Indonesia, Korea, Russia, Brazil, Argentina, and Turkey—40 to 60 million people fell into poverty as a result of the 1990s' financial crises.

Knowles et al. (1999), Booth (1999), and the UNESCAP (2002) focus on the Southeast Asian crisis (1997–99) and point to its impacts in terms of constricted access to credit, savings loss, unemployment, and reduced wages, which mostly affected the poor, women, youth, and the elderly. Jones et al. (2000) underline the fact that the crisis exposed already existing social and demographic fragilities rather than producing them. For the last financial crunch, Habib et al. (2010) use a micro-simulation setting and conclude that the crisis harshly affected populations in the Philippines, Bangladesh, and Mexico, increasing both the level and depth of poverty.

Jalan and Ravallion (2000) examine household poverty dynamics, using poverty indicators (household expenditures, income, consumption, nutritional measures, etc.) to categorize households according to their position above or below the poverty line and the risk they face of falling into deeper poverty in event of shocks. They distinguish between vulnerability, which characterizes the transient poor, and chronic poverty. Both vulnerability and chronic poverty increase during a crisis, and evidence suggests that these consequences can persist even after

economic recovery, with high numbers of newly poor still trapped in poverty years after the crisis has ended Mendoza (2009).

The adverse effects of shocks depend on how people prepare for, ensure against, and react to risk. These three components combined are a bedrock for resilience, which can be defined as the capacity of people, societies, and countries to withstand or recover from the effect of shocks to which they may be inherently exposed (Briguglio et al. 2007). On the contrary, vulnerability characterizes people who are particularly at risk of loss in the event of external shocks due to the combination of high exposure, weak internal conditions, and inadequate risk preparedness. The World Development Report 2014 (World Bank 2014) sets out a 'social risk management' framework in which the World Bank introduces a risk preparation index based on eight measures of assets and services across four key areas—human capital (years of schooling and immunization rate for measles), physical and financial assets (net assets and access to financial markets), social support (contribution to a pension scheme and perception of 'trust' in society) and state support (access to sanitation facilities and a fiscal space indicator). Using this index, the authors show that the extent of people's preparation for risk tends to be correlated with national income across countries. However, differences within regions and between countries with relatively similar income levels also suggest that policies are an important determinant of people's ability to effectively prepare against risk.

*Policy responses to increased social risks*

Although awareness of social risk is permeating through the international community, no major revisions of development or social protection policies have yet been widely undertaken. Some countries, however, are endeavouring to extend their existing social programmes and introduce new ones. Contributory social and health insurance mechanisms are the prevalent forms of social security in high-income countries. They also exist in emerging economies, but their coverage is much narrower as they are generally restricted to the higher end of income distribution and to workers in the formal sector. Two illustrations of this are Uganda, which recently introduced a pilot pension scheme for the elderly, and Togo, where the government set up a National Health Insurance Institute in 2011 operating through social contributions but also highly dependent on government financing. Although this new scheme applies mainly to civil servants, the Togolese Government aims to gradually introduce a more universal system to include the private sector and rural populations. Indonesia is another example of the proactivity of some governments, as it plans to extend the social security system and programmes nationwide as from 2015, with full implementation by 2029.

Back to economic theory, one feature that could fruitfully be explored is the potentially countercyclical function of social protection and thus its possible role in minimizing the social consequences of economic turbulence. An abundant empirical literature has found that, while fiscal policy tends to be countercyclical, or at least acyclical in high-income countries, it exacerbates cyclical fluctuations in most developing countries (Ilzetzki and Vegh 2008; Frankel et al. 2011). The hypotheses highlighted to explain this difference either focus on low-income countries' difficulties to access international credit markets during economic downturns (Riascos and Vegh 2003), or on the 'voracity effect', whereby positive income shocks in developing countries are followed by disproportionate hikes in public spending (Velasco 1997). As for the linkage between social spending and the economic cycle, Arze del Granado et al. (2010) examine empirical evidence on 150 countries between 1987 and 2007 and find that, while the procyclical pattern holds in developing countries when considering total public expenditures, education and health outlays are procyclical during periods of a positive output gap but acyclical in periods of a negative output gap. This could be explained by the fact that health and education spending mostly consists of recurrent expenditures, which the authors find to be generally acyclical during

difficult periods. They finally argue that their results invalidate the need to further step up social spending during difficult periods and call for continuing recourse to cushioning measures during periods of economic expansion.

In a working paper produced for the European Commission, Bontout and Lokajickova (2013) review the trends in social spending in the European Union (EU) between 2009 and 2012. They stress that social protection systems were a key determinant of automatic stabilization immediately after the peak of the crisis. This corresponds to an overall increase in social protection expenditure of about 7 per cent in the 27 countries of the EU in 2009, mainly due to the rise of unemployment outlays. However, the results of this survey also indicate that, in a second phase, the stabilizing effect tended to weaken under the impact of austerity measures. Social spending increased slightly in 2010 and declined in 2011 and 2012 in most countries.

Alternative options to contributory social security schemes are non-contributory mechanisms, including cash and in-kind transfers funded by general taxation or by international development assistance for the poorest countries. Government cash transfers can be defined as 'direct, regular and predictable non-contributory payments that raise and smooth incomes with the objective of reducing poverty and vulnerability' (Arnold et al., 2011: 2). Cash transfers cover a variety of design and implementation options (targeting of beneficiaries, means-testing, integration of conditionality) as well as a wide range of development objectives and financing choices, which depend on the regional context and existing constraints. In particular, conditional cash transfers are a widespread form of cash transfer programmes tied, for example, to children's school attendance, or health check-ups for pregnant women and young children.

In recent years, many emerging and developing countries have used cash transfer programmes to support households affected by the global financial crisis and to reduce inequalities and poverty. Among the best-known government cash transfer schemes are the *Bolsa Familia* in Brazil and the *Mexican Oportunidades* (formerly *Progresa*), which both target poverty reduction and human capital enhancement by providing cash payments to poor families with children in exchange for regular school attendance, regular health check-ups and vaccination for children. Another programme attracting a lot of attention is the Indian National Rural Employment Guarantee Scheme (NREGS), which provides a legal guarantee of 100 days of public sector employment per year to all rural households on a voluntary basis.

The ILO-World Bank report (2012) demonstrates the importance of social protection policies in building crisis response, showing that countries with few social protection schemes in place before the financial crisis had fewer options when faced with a surge in demand for social protection. The pressing need to find rapid solutions when no social protection floor already exists may undermine the effectiveness and coordination of the measures taken. Weaknesses in the welfare state also leave room for more uncertain factors to shape crisis response, such as the influence of political lobbies and the party composition of governments at the time of a crisis (Starke et al. 2012).

### 2.3 Defining social protection

There is no one single definition of social protection. Three main approaches can be distinguished among development institutions. As mentioned earlier, the risk management framework developed by the World Bank lays emphasis on the need to reduce the vulnerability characterizing people who are especially susceptible to losses from negative shocks due to the combination of high exposure, weak internal conditions, and deficient risk management (World Bank 2014). This approach refers to the work of Holzmann and Jorgensen (1999), among others, who define social protection as public interventions that help individuals, households, and

communities to manage income risks more effectively. In their view, income is the key component of welfare as it determines the consumption levels that individuals and households can afford. In this sense, social protection helps to smooth consumption over time, foster a more equal distribution of welfare among households, and increase equity in terms of exposure to shocks and their consequences.

A number of countries such as Finland and France as well as multilateral organizations and non-governmental organizations advocate a rights-based approach, building on international human rights instruments that have recognized the fundamental right to social protection. Article 22 of the 1948 Universal Declaration of Human Rights states that everyone, as a member of society, has the right to social security, a principle reaffirmed in Article 9 of the 1966 International Covenant on Economic, Social and Cultural Rights, as well as in the decent work agenda of the International Labour Organization (ILO). The basic definition adopted by the ILO refers to 'entitlement to benefits that society provides […] against low or declining living standards arising out of a number of basic risks and needs' (Van Ginneken 2003). The analytical framework underpinning this definition, as proposed by the United Nations Special Rapporteur on Extreme Poverty and Human Rights, adopts a normative lens and stipulates that i) ensuring minimum essential levels of non-contributory social protection is not a policy option for states but rather a legal obligation under international human rights law, ii) national social protection systems should be established and defined by law, and iii) states should adopt legislation to ensure equity and access to social protection services (Sepulveda and Nyst 2012).

Depending on the approach, the design and implementation of social protection measures are considered to be either the sole responsibility of public authorities, or a concern for both public and private actors. Nevertheless, in terms of social objectives, we can see that the common denominator in all approaches is to ensure sufficient levels of consumption for all households, across the life cycle and in the event of contingencies and shocks. Beyond this focus on consumption and its corollary, income, which is the core component of the risk-based approach (Holzmann and Jorgensen 1999), the needs-based approach insists on building human capital, capabilities, and opportunities for all (Barrientos and Hulme 2008; Ilzetzki and Vegh 2008) while the rights-based paradigm stresses the goal of enhancing individuals' social rights and status (Van Ginneken 2003; Devereux and Sabates-Wheeler 2004). When it comes to instruments and how they can be organized according to objectives and targets, the options proposed in the literature vary considerably, either placing emphasis on the formal/informal criteria (Holzmann and Jorgensen 1999), or distinguishing between social insurance and social assistance (Van Ginneken 2003), or extending the scope to 'promotive', 'transformative', and growth-oriented measures (Norton et al. 2001; Devereux and Sabate-Wheeler 2004).

The attempt to reconcile the rights-based and the needs-based paradigms and go beyond these categories gave rise to the social protection floor initiative. This was endorsed by the United Nations and fuelled by the work of an ad hoc advisory group chaired by Michelle Bachelet and composed of eight policy makers from mainly emerging countries (ILO 2011). Social protection floors are defined as a set of social policies designed to guarantee income security and access to social services for all, paying particular attention to vulnerable groups, and protecting and empowering people across the life cycle. Although derived from the recognition of the right to social protection and ultimately aimed at covering all individuals for the full spectrum of risks they have to face, social protection floors rely on a gradual and differentiated approach tailored to national development contexts and needs. We quote the following lines from the 'Bachelet Report':

> The social protection floor is neither a prescription nor a universal standard. It is an adaptable policy approach that should be country-led and responsive to

national needs, priorities and resources. It facilitates a comprehensive approach to social protection, focusing on basic benefits first, having been conceived and developed on the basis of recent innovative experiences. These benefits can be introduced gradually and in a pluralistic way, according to national aspirations, to fit specific circumstances and prevailing institutional and financial capacities. The floor can help promote coherence and coordination in social protection and employment policies, so as to ensure that individuals may benefit from services and social transfers across the entire life cycle. The concept promotes a 'whole government' that links social protection with other policy objectives. (ILO 2011: xxvi )

## 3 Social protection and resilience: a panel analysis

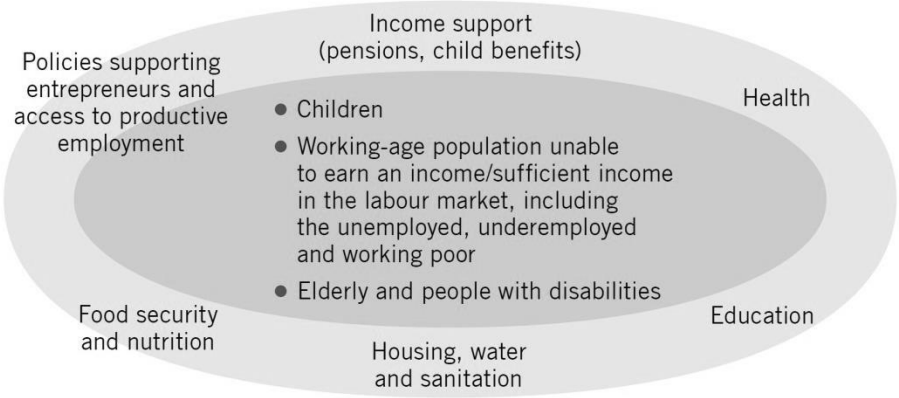
Our objective here is to examine whether linkages exist between the level of social protection and resilience of the economy across countries. In a second phase, we focus on a deeper exploration of the relationship between social protection policies and the volatility of GDP. To this end, we carry out a panel analysis over a 17-year period (from 1995 to 2012).

In the study, we embrace the definition of economic resilience proposed by Briguglio et al. (2007), that is the 'nurtured ability of an economy to withstand or recover from the effects of adverse shocks to which it may be inherently exposed'. Resilience is built up over time and depends on various economic, political, and social dynamics. Some of its key traits include macroeconomic stability, market efficiency, governance, and social development (Briguglio et al. 2007). We focus on the latter aspect and assume that countries which adopt sound social protection policies also improve their ability to adjust to shocks and cyclical downturns.

### 3.1 Data description and selection of variables

Building a panel dataset proved challenging considering the scarcity of data on public policies, particularly (but not only) in social areas and for emerging and developing countries (but not only). Our initial intent was to follow the approach outlined in the 'Bachelet Report' on social protection floors (ILO 2011). This framework is based on six dimensions which translate a broad understanding of social protection encompassing income support, health, education, food security and nutrition, housing and water sanitation, and employment. It targets three specific population groups: children, working age people unable to work or generate enough income, and the elderly and disabled persons as shown in Figure 1.

Figure 1: Social protection floors—integrated policies to protect and empower people over the life cycle




Source: ILO (2011).

The lack of data covering the spectrum of policies mentioned in the social protection floor initiative prompted us to scale down our ambitions. We compiled our dataset using international databases including ADB, AfDB, CEPAL, ILO, IMF, OECD, and the World Bank (the descriptions of our variables are displayed in Table 1).

With regard to social protection policies, we wanted to incorporate data covering the various areas of social protection, measuring both benefit coverage and the levels of government expenditure. Per capita expenditure reflects the share of domestic income dedicated to an individual's welfare and, when possible, per capita spending is expressed in real terms. Our dataset includes variables on public spending on health and education for 144 countries, as well as minimum wage levels for 111 countries. In addition, we integrated data on specific benefits coverage (i.e. the percentage of entitled individuals actually covered by some programme or other) for unemployment insurance, sickness insurance, and old age pensions. These data are available for 33 middle-and high-income countries thanks to the recent work of Scruggs et al. (2014), who compiled a 'comparative welfare entitlement data set' for research purposes.

Finally, regional statistics from the Economic Commission for Latin America and the Caribbean (CEPAL 2013) allowed us to compile information on 21 countries: levels of public spending per capita on health, education, and pensions. Although the number of units (i.e. countries) is limited, these regional data are interesting on account of their homogeneity and time coverage. For this reason, we relied on them to question the complementarity of social expenditures (Section 3.2).

Tables 2 and 3 provide the descriptive statistics of our panel and subpanel data on social protection.

Table 1: List of variables used, in order of appearance

| Variable name | Description | Source |
|---|---|---|
| **Variables for global GDP analysis** | | |
| GDPpc | GDP per capita, PPP (constant 2011 international $) | World Bank – WDI* |
| Consumption_PPP | Household final consumption expenditure, PPP (current int. $) | World Bank – WDI |
| Inflation | Inflation, consumer prices (annual %) | World Bank – WDI |
| Domestic_Credit_Private | Domestic credit to private sector (% of GDP) | World Bank – WDI |
| Investment | Gross capital formation (% of GDP) | World Bank – WDI |
| Labour_participation | Labour force participation rate (% of population age 15–64, ILO est) | World Bank – WDI |
| Unemployment | Unemployment, total (% of total labour force, modelled ILO estimate) | World Bank – WDI |
| Tax revenue | Tax revenue (% of GDP) | World Bank – WDI |
| **Social protection variables for global panel analysis** | | |
| Health_exp_pc | Health expenditure per capita, PPP (constant 2005 int. $) | World Bank – WDI |
| Publ_sp_Education_pc | Public spending on education per capita (% of GDP) | Calculation using WDI |
| Min_wage | Minimum nominal yearly wage (US$ – PPP) | OECD |
| Pencov | % of those above official retirement age contributing to a pension system | Scruggs et al. ** |
| Sickcov | % of the labour force with sick pay insurance | Scruggs et al. ** |
| Uecov | % of the labour force insured for unemployment | Scruggs et al. ** |
| PCA_welfare_coverage | Aggregation of coverage variables using Principal Component Analysis | Authors' calculation |
| **Variables for global GDP growth analysis** | | |
| GDPgrowth | GDP growth (annual %) | World Bank – WDI |
| GDPpcLag | GDP per capita in the previous year (Y-1) | Calculation using WDI |
| Consumption_pc growth | Household final consumption expenditure per capita (annual % growth) | World Bank – WDI |
| Population_growth | Population growth (annual %) | World Bank – WDI |
| **Social protection variables for Latin America only** | | |
| Education_CEPAL | Public spending per capita on education, PPP (constant 2005 int. $) | CEPALSTAT |
| Health_CEPAL | Public spending per capita on health, PPP (constant 2005 int. $) | CEPALSTAT |
| Pensions_CEPAL | Public spending per capita on pensions, PPP (constant 2005 int. $) | CEPALSTAT |
| Dispersion_at_geo | Indicator of dispersion using Atkinson family of inequality measure *** | Calculation CEPALSTAT |
| **Variables used for growth volatility analysis** | | |
| GDPTrend | Average GDP growth rate over the 1995–2008 period | Calculation using WDI |
| GDP_no_crisis | Virtual GDP in 2009–12 according to the 1995–2008 trend | Calculation using WDI |
| GDPgapNominal | Gap between virtual GDP and actual GDP per capita (nominal ) | Calculation using WDI |
| GDPgap | Gap between virtual GDP and actual GDP per capita (in %) | Calculation using WDI |
| Export_pGDP | Exports of goods and services (% of GDP) | World Bank – WDI |
| Total _reserves | Total reserves (includes gold, current $) | World Bank – WDI |
| M_capitalization_pGDP | Market capitalization of listed companies (% of GDP) | World Bank – WDI |

Note: * World Development Indicators, downloaded 2015; ** Scruggs et al. (2014); *** Cf. Ax = 1 – GEO(X) / ARM(X)

Source: Authors' compilation.

Table 2: Descriptive statistics: world data

| Variable | Obs | Mean | Std Dev | Min | Max |
|---|---|---|---|---|---|
| Health_exp_pc | 3352 | 795.11 | 1131.59 | 8.35 | 8895.12 |
| Publ_sp_Education_pc | 2037 | 80258.01 | 88862.55 | 0 | 579716.80 |
| Min_wage | 355 | 12175.08 | 5606.74 | 1693.037 | 22127.68 |
| Pencov | 368 | 91.54 | 23.63 | 0 | 190.00 |
| Uecov | 526 | 78.33 | 20.05 | 0 | 109.00 |
| Sickcov | 542 | 83.56 | 22.20 | 0 | 123.79 |
| PCA_welfare_coverage | 325 | 0.00 | 1.54 | -6.43 | 1.91 |

Source: Estimations by authors using data downloaded from the World Bank, OECD, and Scruggs et al. (2014).

Table 3: Descriptive statistics: CEPAL data

| Variable | Obs | Mean | Std Dev | Min | Max |
|---|---|---|---|---|---|
| Education_CEPAL | 412 | 158.7767 | 128.9048 | 13 | 866 |
| Health_CEPAL | 411 | 108.365 | 92.76576 | 3 | 543 |
| Pensions_CEPAL | 394 | 178.6878 | 195.5398 | 1 | 780 |
| Dispersion_at_geo | 415 | .1225846 | .1258094 | 0 | .6121695 |

Source: Estimations by authors using data downloaded from CEPAL.

## 3.2 Empirical analysis

*Social protection effects on GDP level and growth*

As a preliminary step we investigate the relationship between social protection and economic outcomes, i.e. income and growth. To avoid the debate on growth determinants (Sala-i Martin 1997a), we choose a pragmatic approach in line with GDP construction at the macroeconomic level. Thus, we opt for the expenditure approach, which best matches our goal of examining the relationship between public spending on social protection and economic outcomes. To explain GDP per capita, we consider a set of variables reflecting household consumption expenditures (consumption), gross capital formation (investment), as well as the labour market situation, which impact the overall income level (unemployment and labour participation). As the development of financial systems impacts the level of income, through capital accumulation, trade of goods and services, savings mobilization for investment purposes (Levine 2005), we chose to include bank credit to the private sector (credit) as a measure of banking intermediation. Finally, we included inflation and taxation level. By exposing to global competition, scale economy, technology dissemination, and openness to international trade may positively impact income and growth. However, reverse causality is also conceivable, especially for middle- and high-income countries (Chow 1987). Bearing this in mind, we decided not to include net exports in our model.

We keep the same determinants for our GDP growth model, except that we include flows instead of levels for consumption and investment. We also chose to incorporate population growth rate as a standard determinant of GDP growth, as well as the income level for the previous year (GDPpcLag) in order to control for the different levels of development and the associated 'catch-up' effect. Model (1) and (2) can thus be considered as our starting point:

$$GDPpc_{ij} = \alpha_{ij} + \beta_1 Consumption_{ij} + \beta_2 Inflation_{ij} + \beta 3 Credit_{ij} + \beta_4 Investment_{ij} + \beta_5 LaborParticipation_{ij} + \beta_6 Unemployment_{ij} + \beta_7 TaxRevenue_{ij} + u_i + \varepsilon_{ij} \quad (1)$$

$$GDPgrowth_{ij} = \alpha_{ij} + \beta_1 GDPpcLag_{ij} + \beta_2 ConsumptionGrowth_{ij} + \beta_3 PopulationGrowth_{ij} + \beta_4 Inflation_{ij} + \beta_5 Credit_{ij} + \beta_6 InvestmentGrowth_{ij} + \beta_7 LaborParticipation_{ij} + \beta_8 Unemployment_{ij} + u_i + \varepsilon_{ij} \quad (2)$$

*Where index i=1. . . N, stands for countries and j=1. . . T, the years.*

The following statistical tests were implemented to assess our models' specifications and avoid potential biases: i) Breusch-Pagan Lagrangian multiplier test; ii) Hausman test for fixed effects; iii) Heteroskedasticity test; and iv) Wooldridge test for serial correlation. As a result, we find that correcting for serial autocorrelation, including a fixed effect for each country would provide robust estimations.

Tables 4 and 5 display the results of the regressions for equations (1) and (2), as well as augmented models including social protection variables. The first column of Table 5 displays estimates for our basic model. It shows that household consumption, credit to the private sector, unemployment, and labour participation are significant estimators of GDP per capita. Columns 2 to 5 question the relationship between social protection and GDP per capita. In column 2, we include public spending per capita on health and education while removing tax revenue (suspecting colinearity). We find that both education and health expenditures have a significant and positive impact on the level of GDP per capita. These positive correlations stand, even though the significance declines slightly for health spending when an indicator of minimum wage level is added, while the latter is also positively and significantly correlated with GDP per capita.

In columns 4 and 5, 'PCA welfare coverage' aggregates three social welfare indicators expressing benefit coverage for unemployment, sickness insurance, and old age pensions. As these indicators are strongly correlated with one another (see Table A3 in the Appendix), we use a principal component analysis (PCA) to construct a welfare coverage indicator. A PCA allows retaining the specific effect of each variable while avoiding multicolinearity. However, colinearity persists between the resulting indicator and the minimum wage level (see Table A4 in the Appendix). We decided to exclude the latter from the last regression (column 5).

These first results establish a significant and positive relationship between social protection policies providing health, education, and minimum wages, and the level of income. A positive correlation is also found with our welfare coverage indicator, although the limited number of observations calls for caution.

Table 4: Regression table: income

| | (1) GDPpc | (2) GDPpc | (3) GDPpc | (4) GDPpc | (5) GDPpc |
|---|---|---|---|---|---|
| Consumption_PPP | 2.57e-09*** | -6.69e-10 | 6.15e-10 | 1.81e-09 | -3.89e-09** |
| | (4.19) | (-0.96) | (1.13) | (0.88) | (-2.32) |
| Inflation | -0.0661 | -10.16*** | -62.45*** | 32.71 | 146.3 |
| | (-0.57) | (-6.22) | (-3.72) | (0.36) | (1.63) |
| Domestic_Credit_Private | 42.99*** | 8.667 | -5.769 | 3.573 | -4.929 |
| | (3.18) | (1.04) | (-0.65) | (0.74) | (-0.68) |
| Investment | -50.72 | -6.194 | 40.26 | 334.4*** | 247.4*** |
| | (-1.37) | (-0.21) | (0.71) | (4.20) | (3.75) |
| Labour_participation | 451.4* | 25.95 | 402.1** | 144.8 | -117.4 |
| | (1.83) | (0.61) | (2.45) | (0.78) | (-1.12) |
| Unemployement | -425.3*** | -275.0*** | -435.2*** | -108.6 | -404.7** |
| | (-5.31) | (-4.89) | (-4.66) | (-1.01) | (-2.23) |
| Tax_revenue | 247.5 | | | | |
| | (0.97) | | | | |
| Health_exp_pc | | 3.376*** | 0.958* | 1.689** | 3.372*** |
| | | (5.02) | (1.93) | (3.02) | (7.69) |
| Publ_sp_Education_pc | | 0.0256* | 0.0383*** | 0.00951 | 0.0317*** |
| | | (1.75) | (3.23) | (1.17) | (3.10) |
| Min_wage | | | 0.389** | 0.307* | |
| | | | (2.34) | (1.92) | |
| PCA_welfare_coverage | | | | 1021.8 | 2790.9*** |
| | | | | (1.45) | (3.78) |
| _cons | -15634.4 | 11381.4*** | -8103.6 | 4255.3 | 28273.7*** |
| | (-0.81) | (3.91) | (-0.74) | (0.36) | (3.56) |
| Number of obs | 1 690 | 1457 | 246 | 91 | 191 |
| Number of groups | 137 | 144 | 26 | 11 | 19 |
| $R^2$ within | 0.23 | 0.616 | 0.790 | 0.920 | 0.927 |
| $R^2$ between | 0.178 | 0.672 | 0.647 | 0.798 | 0.738 |
| $R^2$ overall | 0.218 | 0.754 | 0.825 | 0.790 | 0.775 |

Note: *t* statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Source: Estimations by authors using data downloaded from the World Bank, OECD, and Scruggs et al. (2014).

Table 5 shows how the aforementioned social protection-related variables are related to GDP growth. While controlling for consumption growth, population growth, inflation, credit, investment, labour participation, and unemployment, we find that public spending on health and education are significantly and positively correlated to growth (columns 2 and 3). The indicator of welfare coverage also displays a positive correlation, but its introduction into the regression tends to minimize the effect of the other variables related to social spending, possibly a consequence of colinearity (columns 4 and 5).

Table 5: Regression table: income growth

| | (1) GDPgrowth | (2) GDPgrowth | (3) GDPgrowth | (4) GDPgrowth | (5) GDPgrowth |
|---|---|---|---|---|---|
| GDPpcLag | -0.0000358 | -0.000385*** | -0.000317*** | -0.000712*** | -0.000405*** |
| | (-0.42) | (-4.62) | (-3.66) | (-4.95) | (-7.65) |
| Consumption_pc_growth | 0.191*** | 0.260*** | 0.529*** | 0.470*** | 0.527*** |
| | (3.31) | (6.51) | (9.50) | (6.68) | (9.27) |
| Population_growth | 0.577*** | 0.413 | 0.154 | 0.734* | 0.107 |
| | (3.18) | (1.47) | (0.58) | (1.92) | (0.37) |
| Inflation | -0.000768** | -0.0299*** | -0.0143 | 0.114 | 0.196* |
| | (-2.60) | (-2.79) | (-0.64) | (1.20) | (2.09) |
| Domestic_Credit_Private | -0.0190** | -0.0194** | -0.00888 | -0.000695 | -0.00742** |
| | (-2.01) | (-2.36) | (-1.44) | (-0.16) | (-2.72) |
| Investment_growth | 0.0101*** | 0.0527*** | 0.154*** | 0.128*** | 0.111*** |
| | (3.72) | (3.38) | (8.08) | (4.16) | (5.74) |
| Labour_participation | -0.0635 | 0.00825 | 0.133 | 0.111 | 0.0617 |
| | (-1.03) | (0.13) | (1.17) | (0.43) | (0.90) |
| Unemployement | -0.163** | -0.226** | -0.186* | -0.237** | -0.212*** |
| | (-2.09) | (-2.24) | (-1.94) | (-2.83) | (-4.69) |
| Health_exp_pc | | 0.000648** | 0.0000909 | 0.000774 | 0.000799** |
| | | (2.19) | (0.24) | (1.18) | (2.71) |
| Publ_sp_Education_pc | | 0.0000245*** | 0.0000196** | 0.0000184 | 0.0000126 |
| | | (3.36) | (2.19) | (1.59) | (1.51) |
| Min_wage | | | 0.000151 | 0.000214 | |
| | | | (1.18) | (1.28) | |
| PCA_welfare_coverage | | | | 0.689** | 0.588** |
| | | | | (2.98) | (2.57) |
| _cons | 10.15** | 8.911* | -0.873 | 9.910 | 8.554 |
| | (2.51) | (1.80) | (-0.11) | (0.57) | (1.70) |
| Number of obs | 2 442 | 1281 | 244 | 91 | 191 |
| Number of groups | 132 | 126 | 26 | 11 | 19 |
| $R^2$ within | 0.216 | 0.382 | 0.843 | 0.878 | 0.845 |
| $R^2$ between | 0.317 | 0.298 | 0.158 | 0.0667 | 0.0729 |
| $R^2$ overall | 0.225 | 0.251 | 0.627 | 0.300 | 0.509 |

Note: *t* statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Source: Estimations by authors using data downloaded from the World Bank, OECD, and Scruggs et al. (2014).

### 3.3 Analysing the complementarity of social protection spending using CEPAL data on Latin America

We decided to further explore the relationship between social protection and economic performance at the national level on the basis of subpanel data covering 17 Latin American countries (Tables 6 and 7). Control variables follow those used in our global analysis. We take advantage of the homogeneity of these subpanel data—as the three variables of social spending are based on CEPAL data—to examine the level of policy complementarity, i.e. whether a balanced level of health, education, and pensions spending affects economic output (GDP level and growth) regardless of spending levels in the same sectors. To do so, we built an indicator reflecting the dispersion of social spending. We opted for an approach proposed by Atkinson:

$$A_x = 1 - GEO(X)/ARM(X) \quad (3)$$

*Where GEO(X) is the geometric mean of vector X, and ARM(X) is the arithmetic mean.*

According to the results reported in Tables 6 and 7, the level of public spending on social welfare is positively correlated with the level of income of Latin American countries, education spending per capita being the most significant variable among the three sectors (columns 2 and 3). The minus sign associated with the coefficient of the dispersion indicator matches our initial intuition: a higher dispersion among social expenditures is associated with a lower GDP per capita level. However, the dispersion indicator becomes significant only after the three social spending variables have been removed from the regression (column 4). Regarding GDP growth, Table 8 reports mixed results. A positive correlation is clear between all three variables of social welfare expenditure and GDP growth. However, while the significance is strong for public spending on pensions, it shrinks slightly for education expenditures, and vanishes for health outlays (columns 2 and 3). As for the dispersion indicator, we are not able to show a significant correlation (columns 3 and 4). Overall, and despite some caveats relating to the limited number of observations, the results from this analysis are consistent with those obtained with the global panel data. This tends to demonstrate a positive impact of social protection policies on GDP level and growth.

Table 6: Regression table: income CEPAL

| | (1)<br>GDPpc | (2)<br>GDPpc | (3)<br>GDPpc | (4)<br>GDPpc |
|---|---|---|---|---|
| Consumption_PPP | 3.12e-09*** | -1.51e-09 | -1.52e-09* | 2.44e-09*** |
| | (4.29) | (-1.59) | (-1.90) | (5.56) |
| Inflation | -0.416 | 0.267 | 0.191 | -0.614 |
| | (-0.61) | (0.63) | (0.47) | (-0.87) |
| Domestic_Credit_Private | -2.804 | -11.27 | -9.379 | 1.937 |
| | (-0.13) | (-1.50) | (-1.24) | (0.09) |
| Investment | -68.04 | -17.00 | -19.21 | -77.86 |
| | (-1.16) | (-0.62) | (-0.68) | (-1.23) |
| Labour_participation | 250.7** | 131.4** | 132.2** | 243.2*** |
| | (2.91) | (2.71) | (2.82) | (3.04) |
| Unemployement | -613.3*** | -287.5*** | -282.5*** | -566.0*** |
| | (-3.25) | (-5.30) | (-5.41) | (-3.23) |
| Education_CEPAL | | 12.60*** | 11.50*** | |
| | | (5.84) | (4.45) | |
| Health_CEPAL | | 9.408** | 10.27** | |
| | | (2.44) | (2.39) | |
| Pensions_CEPAL | | 5.326*** | 4.909** | |
| | | (3.04) | (2.66) | |
| Dispersion_at_geo | | | -1101.8 | -3195.1** |
| | | | (-1.40) | (-2.83) |
| _cons | -2070.5 | -195.3 | -30.35 | -1279.1 |
| | (-0.41) | (-0.07) | (-0.01) | (-0.28) |
| Number of obs. | 292 | 283 | 283 | 287 |
| Number of groups | 17 | 17 | 17 | 17 |
| $R^2$ within | 0.662 | 0.883 | 0.884 | 0.682 |
| $R^2$ between | 0.0534 | 0.541 | 0.533 | 0.0497 |
| $R^2$ overall | 0.000202 | 0.493 | 0.484 | 0.0000166 |

Note: *t* statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Source: Estimations by authors using data downloaded from the World Bank and CEPAL.

Table 7: Regression table: income growth CEPAL

| | (1) GDPgrowth | (2) GDPgrowth | (3) GDPgrowth | (4) GDPgrowth |
|---|---|---|---|---|
| GDPpcLag | -0.00042*** | -0.00113*** | -0.00111*** | -0.00041*** |
| | (-3.66) | (-4.25) | (-4.32) | (-3.06) |
| Consumption_pc_growth | 0.149* | 0.155* | 0.153* | 0.148* |
| | (1.97) | (2.09) | (2.08) | (2.01) |
| Population_growth | 0.203 | 0.941 | 0.833 | 0.0745 |
| | (0.25) | (1.02) | (0.95) | (0.09) |
| Inflation | 0.000911 | 0.00145* | 0.00157** | 0.00106 |
| | (1.10) | (1.88) | (2.10) | (1.35) |
| Domestic_Credit_Private | -0.0579** | -0.0553** | -0.0588** | -0.0622** |
| | (-2.15) | (-2.47) | (-2.62) | (-2.44) |
| Investment_growth | 0.0830*** | 0.0817*** | 0.0819*** | 0.0844*** |
| | (5.10) | (4.97) | (4.87) | (5.11) |
| Labor_participation | 0.214* | 0.231* | 0.225* | 0.213* |
| | (2.10) | (2.03) | (1.94) | (2.02) |
| Unemployement | -0.565*** | -0.637*** | -0.646*** | -0.573*** |
| | (-3.24) | (-3.98) | (-4.00) | (-3.33) |
| Education_CEPAL | | 0.0141* | 0.0157* | |
| | | (1.91) | (1.78) | |
| Health_CEPAL | | 0.00399 | 0.00200 | |
| | | (0.46) | (0.22) | |
| Pensions_CEPAL | | 0.00832** | 0.00871*** | |
| | | (2.82) | (3.37) | |
| Dispersion_at_geo | | | 1.715 | 0.750 |
| | | | (0.78) | (0.42) |
| _cons | -1.354 | -0.536 | -0.315 | -1.025 |
| | (-0.19) | (-0.07) | (-0.04) | (-0.14) |
| Number of obs. | 290 | 281 | 281 | 285 |
| Number of groups | 16 | 16 | 16 | 16 |
| $R^2$ within | 0.403 | 0.438 | 0.44 | 0.408 |
| $R^2$ between | 0.273 | 0.261 | 0.282 | 0.296 |
| $R^2$ overall | 0.0306 | 0.017 | 0.0165 | 0.0304 |

Note: *t* statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Source: Estimations by authors using data downloaded from the World Bank and CEPAL.

### 3.4 Investigating resilience through an analysis of the GDP growth

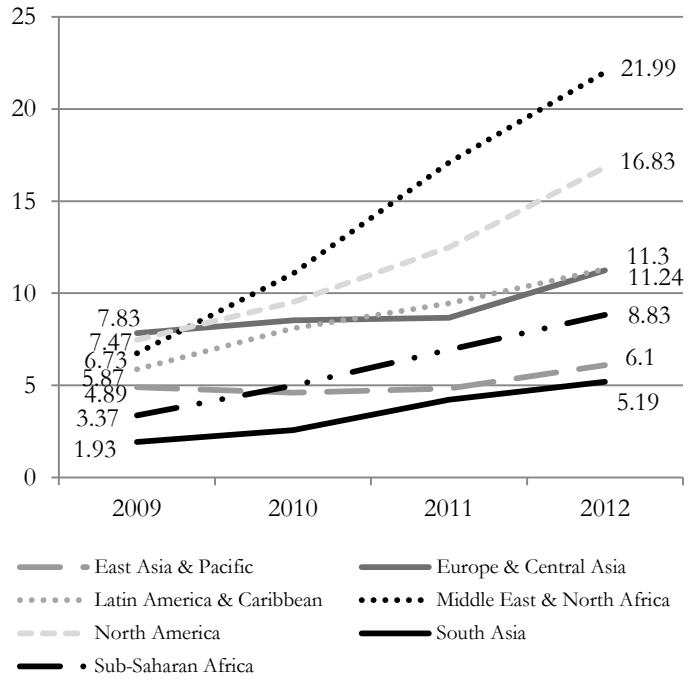
In this section we attempt to probe whether the growth differentials following the 2008 crisis relate to countries' level of social protection. As data on global growth reveals (Table 8), 2009 appears as a clear-cut break. To question this rupture, we compute each country's average GDP growth rate for the period 1995–2008, the 'GDP trend'. We then calculate 'expected' GDP levels for the years 2009–12 ('GDP no crisis value', i.e. the GDP levels that would have been expected according to the 1995–2008 trend). Our 'GDP gaps' thus measure the spread between observed GDP and 'GDP no crisis values' (as a percentage).

Table 8: GDP growth, world average 1995–2012

| Year | Obs | Growth | SD | Min | Max |
|---|---|---|---|---|---|
| 1995 | 187 | 3.76 | 5.23 | -12.4 | 35.22 |
| 1996 | 188 | 4.58 | 7.62 | -16.7 | 88.96 |
| 1997 | 188 | 5.1 | 9.98 | -11.4 | 106.28 |
| 1998 | 189 | 3.46 | 5.13 | -28.1 | 29.7 |
| 1999 | 191 | 3.42 | 5.04 | -11.2 | 41.45 |
| 2000 | 193 | 4.06 | 3.97 | -14.27 | 25.7 |
| 2001 | 194 | 3.58 | 6.22 | -14.79 | 63.38 |
| 2002 | 195 | 3.22 | 4.89 | -12.67 | 31.89 |
| 2003 | 196 | 3.92 | 5.64 | -33.1 | 17.32 |
| 2004 | 196 | 5.78 | 6.02 | -5.81 | 54.16 |
| 2005 | 195 | 5.14 | 3.86 | -8.68 | 26.4 |
| 2006 | 194 | 5.92 | 4.53 | -4.51 | 34.5 |
| 2007 | 195 | 5.93 | 4.3 | -4.14 | 25.05 |
| 2008 | 191 | 3.97 | 4.3 | -17.67 | 17.66 |
| 2009 | 189 | 0.08 | 5.53 | -17.95 | 21.02 |
| 2010 | 185 | 4.24 | 4.24 | -9.53 | 27.5 |
| 2011 | 185 | 4.1 | 3.89 | -10.48 | 21.82 |
| 2012 | 184 | 3.11 | 5.27 | -47.55 | 15.22 |

Source: Authors' calculation based on World Bank's World Development Indicators.

Figure 2: Mean GDP gap by region




Source: Authors' compilation based on World Bank's World Development Indicators.

The determinants of growth gaps remain the same as those used in our estimations of revenue and growth. However, since the 2008 crisis was initially propagated via financial flows, we include a variable reflecting the degree of financialization of economies, in the form of a commonly used indicator that captures the market capitalization of listed companies expressed as a percentage of GDP. In addition, we include the share of exports in GDP to account for the fall in export volumes that followed the financial crisis—although time-lagged. It particularly

impacted those countries whose economies were largely based on good exports (UNCTAD 2009: 8). Finally, total reserves held by national monetary authorities are also incorporated into the model for their potentially cushioning role. Equation (4) below takes these components into account:

$$\text{GDP gap}_{ij} = \alpha_{ij} + \beta_1 \text{GDP pc}_{ij} + \beta_2 \text{Consumption}_{ij} + \beta_3 \text{PopulationGrowth}_{ij} + \beta_4 \text{Unemployment}_{ij} +$$

$$\beta_5 \text{Investment}_{ij} + \beta_6 \text{TaxRevenue}_{ij} + \beta_7 \text{Exports}_{ij} + \beta_9 \text{Financialization}_{ij} + \beta_8 \text{TotalReserves}_{ij} +$$

$$\beta_9 \text{Financialization}_{ij} + u_i + \varepsilon_{ij} \quad (4)$$

*Where index i=1. . . N, stands for countries and j=1. . . T, the years*

As our gap estimations only cover the period 2009–12, our dataset now differs from the previous one (the time dimension might lose some of its importance). We thus need to assess again our estimation procedure. We followed the previous testing sequence. The results show that the previous estimation procedure stills hold (correction for serial autocorrelation, fixed effects).

Endogeneity is a common source of measurement error in a regression analysis. In our study, we assume the 2008 financial crisis to be an external shock, due to poor regulation of the financial market. We thus assume the crisis to be exogenous from the initial level of social protection existing in countries. People could argue that in countries where financial regulation is less tight, the level of state intervention would be lower, so as social protection. Whether or not this relation holds in particular countries, we suggest that overall, the extent of the financial connectedness and interdependencies worldwide explains the crisis expansion whatever the initial social spending of countries. Endogeneity could occur in a dynamic setting if the rise of social spending in the aftermath of the crisis (e.g. increased spending for unemployment allowance) triggers a new shock due to an uncontrolled public deficit in the country. However, unfortunately, this issue would not affect our results since very little consistent (longitudinal) data exist on unemployment allowances or other mitigation mechanisms. Thus, we were bound to rely on more available data, but these proved to be more 'sticky' determinants of social spending, such as education and health spending, which are thus less prone to generate loop causation.

Table 9 presents the results of our new estimations. For each of the regressions (1), (2) and (3), the positive or negative signs associated with coefficients are difficult to interpret. Indeed the magnitude of the growth gap does not indicate whether it draws upon a positive or negative deviation from the trend, it only informs the gap variations (whether we deal with a growth surplus vis-a-vis the trend or not). However, few countries recorded growth accelerations between 2009 and 2012. In order to simplify the analysis, we excluded those observations in estimations (1.1), (2.1), and (3.1). In the remaining cases, the gap is thus positive, which means that growth has been lower than expected.

Column 1 shows that a higher level of investment is associated with a smaller gap. However, this result does not hold when specifications change (i.e. when negative gaps are excluded). Unemployment and the share of exports in GDP are positively correlated with the magnitude of the growth gap. The negative correlation between market capitalization and the GDP growth gap is surprising, as we expected that a higher degree of financial integration would have led to greater variation of the growth rate. In columns 2 and 3, evidence of a significant relationship between social welfare policies (i.e. the level of public health and education spending per capita and the minimum wage level) and the GDP gap appears weak. The only significant positive

correlation is shown for health expenditures (in columns 2 and 2.1) and education expenditures (in columns 3 and 3.1).

Note that columns 3 and 3.1 produce the same estimation, since in the resulting—small—sample there is no country with a negative gap (i.e. the sample only contains countries that were worse off during the crisis—these are OECD countries since the variable minimum wage only covers those countries).

The mixed results we obtained highlight the difficulty of analysing the impact of the 2008 crisis within a global analysis, using the same set of explanatory variables for every country. Despite the global aspect of the crisis, we need to recognize that it did not materialize in the same way and at the same time across the different regions and countries due to the differing structures of their economies. On closer scrutiny, our data on GDP growth gaps reveal that the impact of the crisis on economic growth has spread over time. As shown in Figure 2 and Table A2 in the Appendix, North America and Europe were hit first in 2009, while North Africa and the Middle East were affected a year later, and Latin America in 2011, although less heavily. East Asia, Sub-Saharan Africa, and South Asia thus far remained the least affected regions, but their respective average GDP growth gaps gradually rose between 2009 and 2012.

Table 9: Regression table: income growth gap

| | (1) GDPgap | (1.1) GDPgap>0 | (2) GDPgap | (2.1) GDPgap>0 | (3) GDPgap | (3.1) GDPgap>0 |
|---|---|---|---|---|---|---|
| GDPpc | -0.000755 | -0.000795 | -0.000408 | -0.000498 | 0.000940 | 0.000940 |
| | (-1.26) | (-1.27) | (-1.45) | (-1.64) | (0.62) | (0.62) |
| Consumption_PPP | 3.49e-12 | 4.96e-12** | 3.37e-12 | 5.88e-12 | -6.00e-12 | -6.00e-12 |
| | (1.50) | (2.11) | (1.43) | (0.71) | (-1.32) | (-1.32) |
| Unemployement | 0.819** | 0.887** | 1.040** | 0.989** | 0.327 | 0.327 |
| | (2.09) | (2.11) | (2.49) | (2.59) | (1.17) | (1.17) |
| Investment | -0.415*** | -0.150 | -0.451*** | -0.216 | -1.250* | -1.250* |
| | (-3.24) | (-0.76) | (-3.69) | (-1.28) | (-2.02) | (-2.02) |
| Tax_revenue | -0.00741 | -0.0576 | | | | |
| | (-0.02) | (-0.16) | | | | |
| Export_pGDP | 0.193* | 0.236* | -0.0209 | 0.00945 | 0.203** | 0.203** |
| | (1.77) | (1.91) | (-0.23) | (0.11) | (2.79) | (2.79) |
| Total_reserves | 2.67e-13 | -3.12e-12 | 4.57e-12 | 4.79e-13 | 1.19e-11 | 1.19e-11 |
| | (0.05) | (-0.64) | (0.46) | (0.05) | (1.50) | (1.50) |
| M_capitalization_pGDP | -0.0455* | -0.0498* | 0.0182 | 0.0100 | -0.0304 | -0.0304 |
| | (-1.73) | (-1.97) | (1.34) | (0.82) | (-1.10) | (-1.10) |
| Health_exp_pc | | | 0.00934** | 0.00859* | 0.00481 | 0.00481 |
| | | | (2.10) | (1.92) | (1.15) | (1.15) |
| Publ_sp_Education_pc | | | 0.0000308 | 0.0000249 | 0.0000787* | 0.0000787* |
| | | | (0.83) | (0.77) | (2.07) | (2.07) |
| min_wage | | | | | -0.000576 | -0.000576 |
| | | | | | (-0.61) | (-0.61) |
| _cons | 20.52 | 15.75 | -3.364 | -5.871 | -22.77 | -22.77 |
| | (1.31) | (0.93) | (-0.41) | (-0.62) | (-0.85) | (-0.85) |
| Number of obs | 316 | 291 | 211 | 197 | 66 | 66 |
| Number of groups | 88 | 87 | 82 | 81 | 23 | 23 |
| $R^2$ within | 0.309 | 0.279 | 0.299 | 0.163 | 0.578 | 0.578 |
| $R^2$ between | 0.162 | 0.151 | 0.0317 | 0.008 | 0.124 | 0.124 |
| $R^2$ overall | 0.107 | 0.085 | 0.0399 | 0.008 | 0.107 | 0.107 |

Note: *t* statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01.

Source: Estimations by authors using data downloaded from the World Bank and OECD.

## 4 Conclusions

In the first part of our empirical analysis, we found substantial positive linkages between the level of social protection expenditures and economic dynamics, both questioning GDP levels and GDP growth, either on a global scale or in Latin America. We suggest our results would have been reinforced if a more comprehensive set of social protection data were available, particularly regarding unemployment benefits and old age pensions across countries, as well as indicators on subsidies targeting children, food allocations, and other forms of social support. The lack of consistent and comparable data (including for high-income countries) renders this type of broad analysis very difficult. The correlations that we were able to identify can nonetheless provide a sound basis for further research.

We were able to show that, in the Latin American context, the complementarity of social policies (i.e. the dispersion in public spending on health, education, and pensions) is correlated with countries' economic performance. The more complementary and cohesive the social policies, the higher the economic output. While limited in scope—the associated regressions rely on 285 observations—this result argues for a structured approach to social protection, in which the various social requirements are addressed in a comprehensive manner, be it through a risk-based approach as encouraged by the World Bank or through social protection floors as advocated by the ILO and other international organizations.

In the second part of our analysis, we attempted to establish connections between social protection and the deviations from expected growth, following the 2008 crisis. Those results appear to provide little evidence and leave the door open for methodological and data improvements. Furthermore, in this study, we came up against the limits of using a quantitative approach to reflect a multifaceted reality in which the post-crisis regional and even national economic trends varied considerably. Our attempt to obtain more homogenous samples by sub-dividing the global sample of countries according to income levels was hampered by the insufficient number of observations. The fact that the crisis effects are still ongoing may also have complicated the analysis, as we saw that the timing of events differs from one region to another. Overall, the existence and the development of social protection systems and policies may well play a role in improving countries' resilience to economic crises, but a thorough analysis of this topic would require taking into account all the parameters—both quantitative and qualitative—that shape a country's development trajectory.

## References


Alesina, A., and D. Rodrik (1994). 'Distributive Politics and Economic Growth'. *The Quarterly Journal of Economics*, 109(2): 465–90.

Anand, S., and M. Ravallion (1993). 'Human Development in Poor Countries: On the Role of Private Income and Public Services'. *Journal of Economic Perspectives*, 7(1): 133–50.

Arjona, R., M. Ladaique, and M. Pearson (2002). 'Social Protection and Growth'. *OECD Economic Studies*, 35(2): 7–45.

Arnold, C., T. Conway, and M. Greenslade (2011). 'Cash Transfers: Evidence Paper'. London: Department for International Development.

Arze del Granado, J., S. Gupta, and A. Hajdenberg (2010). 'Is Social Spending Procyclical?'. IMF Working Paper 10/234. Washington, DC: International Monetary Fund.

Atkinson, A.B. (1999). *The Economic Consequences of Rolling Back the Welfare State*. Cambridge, MA: MIT Press.

Baldacci, E., M. Guin-Siu, and L. De Mello (2003). 'More on the Effectiveness of Public Spending on Health Care and Education: A Covariance Structure Model'. *Journal of International Development*, 15: 709–25.

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

Barro, R.J. (1999). 'Inequality, Growth, and Investment'. NBER Working Paper 7038. Cambridge, MA: National Bureau of Economic Research.

Bloom, D., and D. Canning (2003). 'Health as Human Capital and its Impact on Economic Performance'. *The Geneva Papers on Risk and Insurance* 28(2): 304–15.

Bontout, O., and T. Lokajickova (2013). 'Protection Budgets in the Crisis in the EU'. Working Paper of the European Commission (1/2013). Luxembourg: European Union.

Booth, A. (1999). 'The Social Impact of the Asian Crisis: What Do We Know Two Years On?'. *Asian-Pacific Economic Literature*, 13(2): 16–29.

Briguglio, L., G. Cordina, S. Bugeja, and N. Farrugia (2007). 'Conceptualizing and Measuring Economic Resilience'. Unpublished Paper. Economics Department, University of Malta. Msida: University of Malta.

CEPAL (Comisión Económica para América Latina y el Caribe) (2013). 'Conditional Cash Transfer Programmes, Non-Contributory Social Protection Programmes in Latin America and the Caribbean Database'. Update 29 July 2013. Available at: http://dds.cepal.org/bdptc/programa/?id=6 (accessed October 2014).

Chow, P. (1987). 'Causality between Export Growth and Industrial Performance: Evidence from NICS'. *Journal of Development Economics*, 26(1): 55–63.

Cline, W. (2002). 'Financial Crises and Poverty in Emerging Market Economies'. Center for Global Development Working Paper 8. Washington, DC: Center for Global Development

Deininger, K., and Y. Liu (2013). 'Welfare and Poverty Impacts of India's National Rural Employment Guarantee Scheme: Evidence from Andhra Pradesh'. World Bank Policy Research Working Paper 6543. Washington, DC: World Bank.

Devereux, S., and R. Sabates-Wheeler (2004). 'Transformative Social Protection'. IDS Working Paper 232. Brighton: Institute of Development Studies.

Fan, S., and N. Rao (2003). 'Public Spending in Developing Countries: Trends, Determination, and Impact'. EPTD Discussion Paper 99. Washington, DC: Environment and Production Technology Division, International Food Policy Research Institute.

Filmer, D., J. Hammer, and L. Pritchett (1998). 'Health Policy in Poor Countries: Weak Links in the Chain'. World Bank Policy Research Working Paper 1874. Washington, DC: World Bank.

Frankel, J.A., C.A. Vegh, and G. Vuletin (2011). 'On Graduation from Fiscal Procyclicality'. NBER Working Paper 17619. Cambridge, MA: National Bureau of Economic Research.

Gowan, P. (2009). 'Crisis in the Heartland. Consequences of the New Wall Street System'. New Left Review 55, January–February.

Gupta, S., M. Verhoeven, and E. Tiongson (2002). 'The Effectiveness of Government Spending on Education and Health Care in Developing and Transition Economies'. *European Journal of Political Economy*, 18(4): 717–37.

Habib, B., A. Narayan, S. Olivieri, and C. Sanchez (2010). 'The Impact of the Financial Crisis on Poverty and Income Distribution: Insight from Simulations in Selected Countries'. Economic Premise, Washington, DC: World Bank.

Hobbes, T. (1651/2000). *Le Léviathan.* Paris: Gallimard/Folio.

Holzmann, R., and S. Jorgensen (1999). 'Social Protection as Social Risk Management—Conceptual Underpinnings for the Social Protection Sector Strategy Paper'. *Journal of International Development*, 11: 1005–27.

IDS (Institute of Development Studies) (2009). 'The Global Financial Crisis, Developing Countries and Policy Responses'. *IDS In Focus Policy Briefing*, Issue 07, Policy Responses to the Global Financial Crisis, March.

ILO (International Labour Organization) and the World Bank (2012). 'Inventory of Policy Responses to the Financial and Economic Crisis'. Joint Synthesis Report. Geneva: International Labour Organization and Washington, DC: World Bank.

ILO (International Labour Organization) (2011). *Social Protection Floor for a Fair and Inclusive Globalization.* Report of the Advisory Group Convened by the ILO with the Collaboration of the World Health Organization and Chaired by Michelle Bachelet. Geneva: ILO.

Ilzetzki, E., and C. Vegh (2008). 'Procyclical Fiscal Policy in Developing Countries: Truth or Fiction?'. NBER Working Paper 14191. Cambridge, MA: National Bureau of Economic Research.

Imbert, C. (2013). *Travailler pour être aidé? L'emploi garanti en Inde*. Paris: CEPREMAP.

Jalan, J., and M. Ravallion (2000). 'Estimating the Benefit Incidence of an Antipoverty Program by Propensity Score Matching'. *Journal of Business and Economic Statistics*, American Statistical Association 21(1): 19–30.

Jones, G.W., T. Hull, and D. Ahlburg (2000). 'The Social and Demographic Impact of the Southeast Asian Crisis of 1997–99'. *Journal of Population Research*, 17(1): 39–62.

Knowles, J.C., E.M. Pernia, and M. Racelis (1999). 'Social Consequences of the Financial Crisis in Asia'. Economic Staff Paper 60. Manila: Asian Development Bank.

Kuznets, S. (1955). 'Economic Growth and Income Inequality'. *American Economic Review*, 45(1): 1–28.

Leamer, E. (1999). 'Competition in Tradables as a Driving Force of Rising Income Inequality'. In H. Siebert (ed.), *Globalization and Labor.* Tübingen: Mohr Siebeck.

Leibniz, G.W. (1864). *Die Werke.* 1ste Reihe, Hannover: Onno Klopp.

Levine, R. (2005). 'Finance and Growth: Theory and Evidence'. In P. Aghion and S. Durlauf (eds), *Handbook of Economic Growth, Vol 1.* Amsterdam: Elsevier.

Levine, R., and R. Renelt (1992). 'Cross-Country Growth Regressions'. *The American Economic Review*, 82(4): 942–63.

Lindbeck, A. (1975). 'Inequality and Redistribution Policy Issues (Principles and Swedish Experience)'. In OECD (ed.), *Education, Inequality and Life Chances.* OECD: Paris.

Locke, J. (1689/1986). *Second Treatise of Civil Government.* Buffalo, NY: Prometheus Books.

Lucas, R. (1988). 'On the Mechanics of Economic Development'. *Journal of Monetary Economics*, 22: 3–42.

Mendoza, R.U. (2009). 'Aggregate Shocks, Poor Households and Children: Transmission Channels and Policy Responses'. UNICEF Social Policy Working Paper. New York, NY: UNICEF, Division of Policy and Strategy.

Mingat, A., and J.-P. Tan (1992). 'Education in Asia: A Comparative Study of Cost and Financing'. World Bank Regional and Sectoral Studies. Washington, DC: World Bank.

Mingat, A., and J.-P. Tan (1998). 'The Mechanics of Progress in Education: Evidence from Cross-Country Data'. World Bank Policy Research Working Paper 2015. Washington, DC: World Bank.

Mirlees, J. (1971). 'An Exploration in the Theory of Optimum Income Taxation'. *The Review of Economic Studies*, 38(2): 175–208.

Musgrave, R. (1959). *The Theory of Public Finance.* New York, NY: McGraw-Hill.

Noble, M., P. Ntshongwana, and R. Surender (2008). *Attitudes to Work and Social Security in South Africa*. Cape Town: HSRC Press.

Norton, A., T. Conway, and M. Foster (2001). 'Social Protection Concepts and Approaches: Implications for Policy and Practice in International Development'. Overseas Development Institute Working Paper 143. London: Overseas Development Institute.

Ostry, J.D., A. Berg, and C.G. Tsangarides (2014). 'Redistribution, Inequality, and Growth'. IMF Staff Discussion Note 14.02. Washington, DC: International Monetary Fund.

Oxford Policy Management (2010). 'Evaluation of Retirement Systems of Countries within the Southern African Development Community–Country Profile: Botswana'. Oxford: Oxford Policy Management.

Pearson, T., and G. Tabellini (1994). 'Is Inequality Harmful for Growth? Theory and Evidence'. *American Economic Review*, 84: 600–21.

Piketty, T. (2013). *Le Capital au 21ème Siècle*. Paris: Seuil.

Psacharopoulos, G. (1994). 'Returns to Investment in Education: A Global Update'. *World Development*, 22(9): 1325–134.

Psacharopoulos, G., and H.A. Patrinos (2002). 'Returns to Investment in Education: A Further Update'. World Bank Policy Research Working Paper No.2881. Washington, DC: World Bank.

Ravallion, M. (2013). 'The Idea of Antipoverty Policy'. In A.B. Atkinson and F. Bourguignon (eds), *Handbook of Income Distribution*. Amsterdam: Elsevier Science.

Riascos, A., and C.A. Vegh (2003). 'Procyclical Government Spending in Developing Countries: The Role of Capital Markets Imperfections'. Preliminary Draft UCLA NBER and Banco de la Republica.

Romer, M. (1986). 'Increasing Returns and Long Run Growth'. *Journal of Political Economy*, 94(5): 1002–37.

Rosanvallon, P. (1981). *La Crise de l'Etat Providence*. Paris: Seuil.

Rosanvallon, P. (1985). *La Nouvelle Question Sociale*. Paris : Seuil.

Sala-i Martin, X. (1997a). 'I Just Ran Two Million Regressions'. *The American Economic Review*, 87(2): 178–83.

Sala-i Martin, X. (1997b). 'Transfers, Social Safety Nets, and Economic Growth'. *International Monetary Fund Staff Papers*, 44(1).

Scruggs, L., D. Jahn, and K. Kuitto (2014). 'Comparative Welfare Entitlements Dataset 2. Version 2014-03'. University of Connecticut and University of Greifswald. Available at: http://cwed2.org/ (accessed October 2014).

Sepulveda, M., and C. Nyst (2012). *The Human Rights Approach to Social Protection*. Helsinki: Ministry for Foreign Affairs of Finland.

Soares, S.S., R.G. Osório, F.V. Soares, M.M. Sousa, and E.M. Zepeda (2007). 'Conditional Cash Transfers in Brazil, Chile and Mexico: Impacts upon Inequality'. Working Paper 35. Brasilia: International Poverty Centre.

Soares, S., R. Ribas, and R. Osorio (2009). 'Evaluating the Impact of Brazil's Bolsa Familia: Cash Transfer Programmes in Comparative Perspective'. International Poverty Centre Evaluation Note 1. Brasilia: International Poverty Centre.

Starke, P., A. Kaasch, and F. Van Hooren (2012). 'Comparing Social Policy Responses to Global Economic Crises: Constrained Partisanship in Mature Welfare States'. University of Bremen Paper Presented at ESPAnet Annual Conference, Edinburgh, 6–8 September.

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

Sumner, A., and N. McCulloch (2009). 'Will the Global Financial Crisis Change the Development Paradigm?'. *International Development Studies Bulletin*, 40(5): 101–08.

Tanzi, V. (2002). 'Globalization and the Future of Social Protection'. *Scottish Journal of Political Economy*, 49: 116–27.

te Velde, T.W. (2010). 'The Global Financial Crisis and Developing Countries—Phase 2 Synthesis'. ODI Working Paper 316. London: Overseas Development Institute.

Traub-Merz, R. (2012). *Redistribution for Growth? Income Inequality and Economic Recovery*. Shanghai: Friedrich Ebert Stifung.

UNCTAD (United Nations Conference On Trade And Development) (2009). 'The Global Economic Crisis: Systemic Failures and Multilateral Remedies'. UNCTAD/GDS/2009/1. New York and Geneva: United Nations.

UNESCAP (United Nations Economic and Social Commission for Asia and the Pacific) (2002). *Protecting Marginalized Groups During Economic Downturns: Lessons from the Asian Experience*. New York, NY: United Nations.

Utting, P., S. Razavi, and R. Varghese Buchholz (2012). 'Overview: Social and Political Dimensions of the Global Crisis: Possible Futures'. In P. Utting, S. Razavi, and R. Varghese Buchholz (eds), *The Global Crisis and Transformative Social Change*. London: Palgrave Macmillan.

Van Ginneken, W. (2003). 'Extending Social Security: Policies for Developing Countries'. ESS Paper 13. Geneva: International Labour Organization.

Velasco, A. (1997). 'A Model of Endogenous Fiscal Deficits and Delayed Fiscal Adjustment'. NBER Working Paper 6336. Cambridge, MA: National Bureau of Economic Research.

White, P., and S. Devereux (2011). 'Social Protection in Botswana—a model for Africa?'. Frontiers of Social Protection Brief No 9. Johannesburg: Regional Hunger and Vulnerability Programme.

World Bank (2014). *World Development Report 2014: Risk and Opportunity*. Washington, DC: World Bank.

World Economic Forum (2014). *Global Risks 2014 Ninth Edition*. Geneva: World Economic Forum.

## Appendix

### Selected policies implemented by different countries

To illustrate the variety of policies that may be labelled as social protection, we provide a short overview of measures and programmes implemented in developing and emerging countries to reduce the vulnerability of their most disadvantaged citizens. While some are examples of large-scale policies, others targeted specific groups. In the latter case, we were not able to include them in our empirical analysis (see Section 3) due to a lack of comparable data across countries.

*Strengthening the national pension system in Botswana*

Botswana is one of the few African countries that has implemented a formal social security system with broad-based coverage of the population. The Government initiated a universal old age pension system in 1996, targeting all citizens over 65 years old living in the country. The basic benefit amount is 220 pula (US$31, as of 2008) per month, with periodic adjustments depending on changes in the cost of living. In 2009, 85 per cent of people aged 60 and over were covered, i.e. 90,639 beneficiaries (Stewart and Yermo 2009).

The Government introduced successive reforms to improve the system. In 2001, the Botswana Public Officers Pension Fund, the largest occupational scheme, was converted from a Defined Benefit Pension Scheme to a Defined Contribution Pension Scheme, which the vast majority of public sector workers have since joined.

A strong private pension sector also exists, with occupational pension plans set up by medium-sized and large enterprises and covering around 28,000 formal sector employees (Oxford Policy Management estimates 2010), while private plans have developed along with financial markets. Regulation and oversight of this sector are challenging tasks, which is why Botswana introduced new legislation and created a Non-Bank Financial Institutions Regulatory Authority (NBFIRA). In a recent brief assessing and analysing Botswana's social sector, White and Devereux (2011) recognize the progress made since independence in 1966, as well as the Government's strong commitment to invest mineral wealth, mainly from diamonds, in economic and social development. Yet they question the long-term sustainability of the system once mineral resources are exhausted. They also point to the costs of the public pension system, which in 2009–10 ran significantly over budget, with no cost-efficiency assessment being carried out.

*Guaranteed employment against rural poverty in India*

Renamed MG-NREGA in 2009 in honour of Mahatma Gandhi, the National Rural Employment Guarantee Act adopted by the Indian Parliament in 2005 aims to ensure a stable income for poor rural households, while developing the local economy through the construction of rural infrastructure. The Act has universal application as it guarantees 100 days of employment per year to any rural household whose adult members are willing to take on unskilled manual work. The scheme operates on a decentralized basis as responsibility for implementation is assigned to local authorities (e.g. village Panchayats).

Unlike the Argentinian *Jefes y Jefas* programme, whose initial purpose was to deal with a post-crisis rise in unemployment and poverty, MG-NREGA was conceived as a response to chronic poverty in the rural areas of India that had remained isolated from growth and development opportunities since India's economic take-off in the 1980s. In theory, making access to work an entitlement recognized by law is a strong signal in support of rural development and social

assistance. A notable feature of this social safety net is that it sets balanced wages between men and women, thus tackling gender-based income inequality.

The scheme has evolved quite spectacularly since its inception. In 2012, 2.2 billion work days were provided to more than 50 million households for a budget equivalent to 0.5 per cent of GDP (Imbert 2013). However, the implementation of MG-NREGA has faced a number of challenges that call its relevance into question. In particular, the decentralized approach gives rise to large variations from one state to another, from one district to another, and from one commune to another, as each administrative level has a role to play in managing the programme. Funding, however, is the responsibility of the federal government. In some cases, MG-NREGA's effectiveness has been hampered by weak administrative capacity and rampant corruption, in particular in the poorest states of the country, which are most in need of social protection policies (Imbert 2013). Other studies tend to show, on the contrary, that in states with better administrative records MG-NREGA has had significant positive impacts on the welfare of participating communities (Deininger and Liu 2013).

*Brazilian conditional cash transfers*

Brazil was the first country in Latin America to implement conditional cash transfers (CCTs) as an instrument of social protection. First, small-scale programmes were introduced in the mid-1990s. In 2003, newly elected President Lula announced the launch of the *Bolsa Familia Programme* (BFP) as part of a national strategy to eradicate hunger and fight poverty throughout the country (see Table A1). This programme aimed to merge and extend four existing schemes that lacked coordination and which, until then, had failed to prove their effectiveness. The BFP is the largest CCT scheme in the world. In 2013, it covered more than 14 million households in 27 states of Brazil, representing 28.8 per cent of the total population. Government spending on the BFP accounts for 0.48 per cent of GDP, or US$10,711 million (CEPAL 2013).

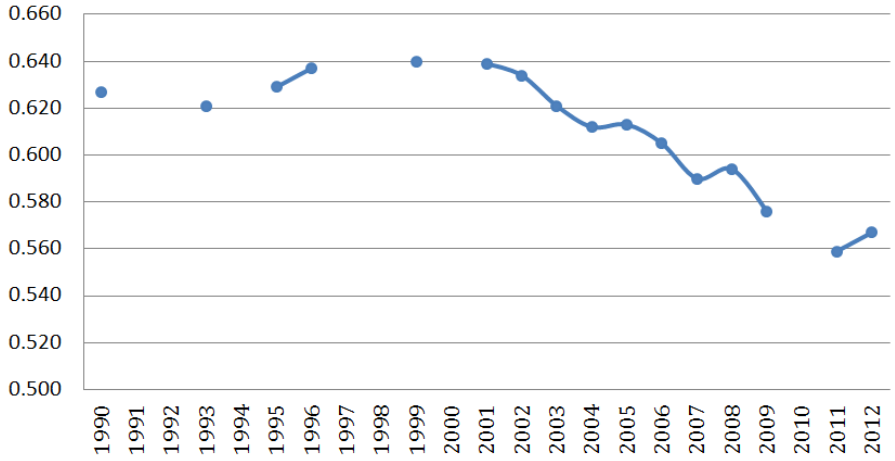
Table A1: Economics of the *Bolsa Familia Programme*

| BOLSA FAMILIA PROGRAMME | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| No. of beneficiary households (millions) | 3.6 | 6.57 | 8.7 | 10.96 | 11.04 | 10.55 | 12.37 | 12.77 | 13.17 | 13.77 |
| Population coverage (% of total) | 8.91 | 15.71 | 20.56 | 25.64 | 24.41 | 22.57 | 26.21 | 26.84 | 27.43 | 28.45 |
| Government spending (US$ million) | 975 | 1 296 | 2 338 | 3 459 | 4 605 | 5 784 | 6 229 | 8 170 | 10 332 | 10 614 |
| Government spending as % of GDP | 0.18 | 0.2 | 0.27 | 0.32 | 0.34 | 0.35 | 0.38 | 0.38 | 0.42 | 0.47 |
| Basic benefit per household (Reals) | 50 | 50 | 50 | 50 | 58 | 62 | 68 | 68 | 70 | 70 |

Source: CEPAL (2013).

The effects of the programme on poverty, inequalities, and a number of socio-economic indicators such as education, nutrition, and health outcomes have been examined in various studies. The Gini index, which measures inequality through income distribution, decreased by 4.7 per cent between 1995 and 2004 (see Figure A1) and, according to Soares et al. (2007), the BFP was responsible for one-fifth of this drop, making it the second most important factor of inequality reduction during the period—an outcome confirmed by other studies (Soares et al. 2009).

Figure A1: Evolution of the Gini index in Brazil




Source: CEPAL (2013).

However, criticism has been levelled at the use of the BFP as a political tool, with political allegiance being one of the actual conditions for the allocation of cash transfers. Other commentators consider that the BFP and its progressive national roll-out should be developed into a universal social protection system based not on cash transfers, but on welfare and redistribution mechanisms at the national level.

Table A2: GDP gap distribution across region

| Year | Region | Obs | Mean GDP gap | SD | Min | Max |
|---|---|---|---|---|---|---|
| 2009 | Europe & Central Asia | 49 | 7.83 | 6.06 | -3.26 | 22.92 |
| 2009 | North America | 3 | 7.47 | 1.36 | 6.67 | 9.03 |
| 2009 | Middle East & North Africa | 17 | 6.73 | 7.57 | 0.06 | 26.08 |
| 2009 | Latin America & Caribbean | 33 | 5.87 | 4.5 | -3.3 | 20.07 |
| 2009 | East Asia & Pacific | 28 | 4.89 | 3.94 | -3.49 | 13.84 |
| 2009 | Sub-Saharan Africa | 45 | 3.37 | 4.88 | -6.61 | 22.36 |
| 2009 | South Asia | 8 | 1.93 | 6.82 | -9.15 | 15.72 |
| 2010 | Middle East & North Africa | 17 | 11.07 | 13.1 | 1.33 | 43.38 |
| 2010 | North America | 3 | 9.51 | 3.46 | 7.14 | 13.48 |
| 2010 | Europe & Central Asia | 49 | 8.53 | 8.77 | -6.15 | 36.09 |
| 2010 | Latin America & Caribbean | 33 | 8.09 | 7.93 | -4.35 | 37.01 |
| 2010 | Sub-Saharan Africa | 45 | 4.98 | 9.68 | -15.15 | 53.56 |
| 2010 | East Asia & Pacific | 28 | 4.59 | 5.48 | -7.48 | 16.79 |
| 2010 | South Asia | 8 | 2.57 | 8.56 | -7.89 | 20.58 |
| 2011 | Middle East & North Africa | 17 | 17.1 | 16.22 | 0.43 | 54.28 |
| 2011 | North America | 3 | 12.49 | 6.15 | 8.21 | 19.53 |
| 2011 | Latin America & Caribbean | 33 | 9.44 | 10.62 | -7.32 | 48.65 |
| 2011 | Europe & Central Asia | 49 | 8.66 | 12.01 | -12.88 | 55.01 |
| 2011 | Sub-Saharan Africa | 45 | 6.93 | 14.09 | -23.03 | 80.5 |
| 2011 | East Asia & Pacific | 28 | 4.83 | 7.81 | -17.17 | 17.69 |
| 2011 | South Asia | 8 | 4.21 | 9.95 | -4.58 | 25.7 |
| 2012 | Middle East & North Africa | 16 | 21.99 | 19.75 | -1.11 | 61.2 |
| 2012 | North America | 3 | 16.83 | 10.99 | 10.39 | 29.53 |
| 2012 | Latin America & Caribbean | 32 | 11.3 | 11.51 | -7.95 | 52.1 |
| 2012 | Europe & Central Asia | 49 | 11.24 | 16.37 | -16.6 | 80.17 |
| 2012 | Sub-Saharan Africa | 45 | 8.83 | 19.8 | -25.7 | 117.2 |
| 2012 | East Asia & Pacific | 28 | 6.1 | 9.07 | -18.1 | 21.11 |
| 2012 | South Asia | 8 | 5.19 | 13.93 | -8.31 | 35.67 |

Source: Authors' calculation based on World Bank's World Development Indicators.

Table A3: Pairwise correlation matrix—insurance coverage

| Variables | Pensions | Unemployment | Sickness |
|---|---|---|---|
| Pensions | 1.0000 | | |
| | 368 | | |
| Unemployment | 0.5080*** | 1.0000 | |
| | (0.000) | | |
| | 347 | 526 | |
| Sickness | 0.6045*** | 0.7313*** | 1.0000 |
| | (0.000) | (0.000) | |
| | 334 | 483 | 542 |

Note: * p < 0.10, ** p < 0.05, *** p < 0.01.

Source: Estimations by authors using data downloaded from Scruggs et al. (2014).

Table A4: Pairwise correlation matrix—checking multicolinearity

| Variables | Welfare Coverage (PCA) | Minimum Wage |
|---|---|---|
| Welfare Coverage (PCA) | 1.0000 | |
| | 325 | |
| Minimum Wage | 0.6386* | 1.0000 |
| | (0.000) | |
| | 105 | 355 |

Note: * p < 0.10, ** p < 0.05, *** p < 0.01.

Source: Estimations by authors using data downloaded from OECD and Scruggs et al. (2014).