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Resilience to Crisis and Social Protection

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Summary

This paper investigates the linkage between social protection policies and economic resilience. Does social protection have an impact on income and growth? What role do social protection policies play in strengthening a society's capacity to overcome economic and social hardships? These are questions that the recent crisis has again propelled to the forefront of the debate among international development institutions.

Our panel analysis has found a positive answer to the first question and provides some empirical evidence showing that the promotion of social protection may be an effective means of reducing poverty and accelerating economic development. The answer to the second question, however, remains elusive insofar as our initial hypothesis comes up against methodological limitations and data availability issues that hamper the fine-tuning our investigation.

Resilience to Crisis and Social Protection

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Abstract

This paper investigates the linkage between social protection policies and economic resilience. Does social protection have an impact on income and growth? What role do social protection policies play in strengthening a society's capacity to overcome economic and social hardships? These are questions that the recent crisis has again propelled to the forefront of the debate among international development institutions. Our panel analysis has found a positive answer to the first question and provides some empirical evidence showing that the promotion of social protection may be an effective means of reducing poverty and accelerating economic development. The answer to the second question, however, remains elusive insofar as our initial hypothesis comes up against methodological limitations and data availability issues that hamper the fine-tuning our investigation.

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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, that of 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 committed to poverty reduction.

Against this backdrop, social protection has emerged as a key development priority over the past few decades and has gained momentum particularly following the recent crisis. Major international institutions such as the World Bank and the United Nations are supporting the expansion of social protection mechanisms as a means of 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 face the risks - above all income risks - associated with health, age, family, work, hazards, and the like.

The purpose of this paper is to deepen the concept of social protection and explore whether evidence of its linkage with increased resilience to risks is to be found. More specifically, we examine whether the capacity of societies to overcome economic hardships and social recessions 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 in terms of economic and social performance? How were individuals and households able to maintain their level of consumption, and is this related to the types of social protection mechanisms in place 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 and consumption variability in times of crisis is more difficult to gauge. The methodological approach that we propose nonetheless lays the groundwork for further analysis as soon as more data on the current period become available.

To explain our approach, this paper is structured as follows: Section 2 provides background elements to frame the subject, including 2.1) a brief insight into the European conception of social protection from a historical perspective, 2.2) a review of how the literature addresses the relationship between social spending and economic development, as well as the notions of vulnerability, risks, and crisis management, 2.3) a brief survey of the main definitions of social protection used by researchers and development agencies, and 2.4) a descriptive sample of social protection schemes implemented in various countries. In Section 3, we present our empirical approach based on panel analysis to assess the relation between social protection and economic resilience across countries. We give some 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 the welfare state that emerged in 18th-century Europe. During this period, the role of the State evolved from the traditional and liberal duty to ensure order and security to one that also took on social functions.

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) and Rosanvallon (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 this author, the prerogatives of the State as addressed in Hobbes' *Leviathan* [1] and in Locke's *Second Treatise of Civil Government* [2] can be grouped 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. In the late 1670's, 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. Rosenvallon analyzes the emergence of the notion of welfare state in light of Leibniz's pioneering work on mathematical and 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.

Following Leibniz's approach, the system introduced in Germany in the 1880's by Chancellor von Bismarck was initially intended as an accident insurance system and this was progressively extended to cover health, invalidity, and old age. The main feature of what is referred to as "Bismarckian social insurance" is its link with labor status. Workers - and only workers - have the legal "right" to insurance cover and, accordingly, funding is compulsory for both employers and employees. This approach does not aim for universal coverage since the unemployed are excluded. The purpose of the system is rather to keep workers healthy and productive and stave off labor unrest. From the beginning of the 20th century, social protection systems drew on this rationale in a number of countries including France, Belgium, Holland, Spain, and Japan.

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[1] Hobbes (1651)
[2] Locke (1689)

On the other hand, the "Beveridgian model" of social protection, named after the British Minister Lord Beveridge who launched it in the wake of World War II, is based on the principle of universality. The entire population is covered with no conditionality of contributions payment and funding is provided through general taxes levied on enterprises and citizens. North European countries have historically adopted this logic, as well as the United Kingdom, before gradually moving away from it.

Over time, most countries have struck a balance between the two approaches. A number of countries operating on the Bismarckian model have introduced universal components, as for example, Spain and Portugal in the area of health insurance, or France, which developed universal minimum benefits for working age people and the elderly. Conversely, the United Kingdom has progressively transferred a large share of the social risk coverage to the private sector.

The historical distinction between the Bismarckian and Beveridgian models may no longer be conceptually adequate to describe the diversity of social protection systems now found in Europe or more generally worldwide. Yet, certain features are still key when it comes to analyzing the approaches to social protection foregrounded by international organizations. In particular, the concept of "social protection floors" adopted by a number of institutions is based on the idea of universality, which links it to the Beveridgian model. At the same time, those who introduced this concept intentionally left options open regarding the approach to be followed in each country for the implementation of social policies guaranteeing universal social protection. This makes it possible to develop national systems that combine Bismarckian and Beveridgian components, 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 the framework developed by Musgrave (1959), the State fulfills three economic functions: the allocation of resources to encourage efficiency and reduce negative externalities, the redistribution of wealth, and the mitigation of economic cycles in view of smoothing GDP fluctuations, price levels, and employment outcomes. Within this theoretical framework, social investments relate to the allocation of resources, while social safety nets and cushioning measures have a distributive and stabilizing effect. For the purpose of this study, we will explore more particularly the redistribution and stabilization roles of social policies.

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 fore (see Levine and Renelt (1992), Psacharopoulos (1994), Sala-i Martin (1997b)), as is the link between health capital and economic output (see Bloom and Canning (2003)).

Beyond its impact on economic growth, human capital has been recognized as a key determinant of human development (Sen (1999)). In this perspective, the Millennium Development Goals agenda can be considered as a driver of awareness-raising on the

importance of human capital.

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 (see Mingat and Tan (1992), Mingat and Tan (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 in the developing world, 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 tradeoff between the goals of 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 labor availability and ultimately the level of output, capital investment, and growth Mirlees (1971). Over time, benefits mechanisms modify the economic behavior 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 statistically significant predictor of long-term growth across countries, and that inequality results in the adoption of growth-retarding policies. Other studies based on a variety of data and periods 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 a society had reached its 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 (see 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 wrong to be combated and calls for public intervention to correct resource misallocations.

Finally, a major strand of the literature we wish to include in our review and thinking is the "capability approach" initiated and developed by Amartya Sen and Martha Nussbaum. Focusing on what individuals are able to become and accomplish, Sen's theoretical enterprise (see Sen (1984), Sen (1993), Sen (1999)) considers economic growth to be an unsatisfactory proxy for the quality of life, as not only does it sideline the fact that some individuals, and particularly the poor, women, and the disabled, are deprived of the capability to seize development opportunities, but it also overlooks distributional inequality. The capability approach offers an alternative theoretical underpinning for economic and human development. It entails two core normative statements: the first, in line with Rawls' theory of justice, is that individual freedom to achieve well-being is of primary moral importance; the second goes beyond the liberal creed by conditioning freedom to people's capabilities, i.e. their real opportunities to perform valuable acts or reach valuable states of being (which taken together constitute human functioning). Although Sen argues that the deployment of an individual's capabilities requires certain conditions, such as participatory decision-making processes, he does not draw up a clearly defined list of the capabilities that, in his view, are unique to each society. Nussbaum (2003) and Nussbaum (2006) goes a step further and define a set of ten "central human capabilities" reflecting the moral entitlements of every human being.

What this theoretical contribution implies for policy is that governments need to foster valuable capabilities by providing public services and measures that promote political empowerment (Mehrotra (2008)) and through policies that address poverty (Alkire (2002)) and vulnerabilities such as those targeting the rights of people with disabilities (Trani et al. (2011)) or enhancing gender equity (Fukuda-Parr (2003)). Devereux and Sabate-Wheeler (2004) support the idea of "transformative social protection", establishing linkages between social policies and enhanced empowerment, capabilities, equity, and social rights. The Human Development Report first published in 1990 under the initiative of UNDP and Mahbub ul Haq embodies a similar aspiration and one espoused by a growing number of economists and development actors who would like to see the assessment of economic and social progress encompass all dimensions of human development, with GDP growth as only one among many other indicators.

- 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 and foremost, 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 a great deal 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 is advancing towards the post-2015 development agenda, it is crucial to identify solutions that protect the most vulnerable against the peril 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 emanating from international policy-making 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 actually 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 a crisis. Cline (2002) analyzes what impact the 1990's major financial crises in emerging markets had on the incidence of poverty. He estimates that a typical crisis causes an average increase of 7% in the poverty headcount ratio whatever the country in the sample. 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 1990's financial crises. Knowles et al. (1999), Booth (1999), and the UNESCAP (2002) focus on the Southeast Asian crisis of 1997-1999 and point to its impacts in terms of constricted access to credit, loss of savings, 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 recent 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 thus 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 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 undertaken. Some countries, however, are endeavoring to extend their existing social programs 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 associated programs nationwide as from 2015, with full implementation by 2029.

Returning to the prism of economic theory, one feature that could usefully 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 advanced to explain this difference either focus on low-income countries' difficulties to access international credit markets during economic downturns (Riascos and Vegh (2003)), or highlight 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 consist 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 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% in the 27 countries of the European Union 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 mecha-

nisms, 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" (DFID (2011)). 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 programs 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 programs 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 program 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 objectives and effectiveness of cash transfers are widely discussed in the literature. Devereux and Sabate-Wheeler (2004) distinguish four objectives: prevent shocks, alleviate extreme poverty, improve capabilities and opportunities for the poor, and change power relations to include marginalized groups. Although data limitations constrain cross-country comparisons, evidence on the impacts of cash transfers according to the aforementioned four objectives is drawn from a number of country case studies based on micro data. Maluccio and Flores (2004) examined Nicaragua's Red de Proteccicial implemented from 2000 and find that this antipoverty program was effective in improving the nutritional, health and educational status of poor households, particularly in low-income areas. In a study centered on the large-scale program PROGRESA implemented in Mexico, Barrientos and Sabates-Wheeler (2006) suggest significant local economy effects in the form of increased levels of consumption and asset-holding of households receiving transfers. For the same Mexican program, Gertler (2004) finds a positive impact of girls' enrollment in secondary school on the illness rate of babies in their first six months of life. Other evidence indicates that in the two countries with the largest non-contributory social pension schemes, Brazil and South Africa, a significant impact on poverty reduction and poverty prevention can be measured (Barrientos (2003)). On the aggregate level, Soares et al. (2009) decompose changes in the Gini coefficients for Brazil, Mexico and Chile in order to investigate whether conditional cash transfers (CCTs) have had an effect on inequality in these countries. They conclude that about 21% of the decrease in the Brazilian and Mexican Gini coefficients between the mid-1990's and the mid-2000's was due to CCTs, whereas the impact was more modest in Chile partly because of the very limited amount of transfers.

A recent ILO-World Bank report (2012) demonstrates the importance of national social protection policies in building crisis response, by showing in particular that countries with few social protection schemes in place before the 2008 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 contemporary development institutions, which build on the work of researchers and development practitioners. 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.

Somewhat broader than the World Bank's approach, the international consensus on the Millennium Development Goals and the current post-2015 agenda supported by the United Nations are both grounded in human needs- and capabilities-based approaches. Barrientos and Hulme (2008) point to the "quiet revolution". This means the growing consensus on the need to relinquish short-term safety nets and extend social protection conceptualization and practice to policies and programs combining interventions that protect basic levels of consumption among the poor and poorest households, facilitate investment in human capital and other productive assets that ensure escape routes from persistent and intergenerational poverty, and strengthen the agency of those in poverty so as to increase their capabilities to overcome their predicament.

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 Labor 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 lense 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)).

Table 1 sets out the main differences in the conceptual underpinnings and practical implications arising from the above definitions. 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. In terms of social objectives, we can see quite clearly that the common denominator in all the definitions 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), the needs-based approach insists on building human capital, capabilities and opportuni-

ties for all (Norton et al. (2001); Barrientos and Hulme (2008)) while the rights-based paradigm stresses the goal of enhancing individuals' social rights and status (Van Ginneken (2003); Devereux and Sabate-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 fueled by the work of an ad hoc advisory group chaired by Michelle Bachelet (former president of Chile) and composed of eight policy makers from mainly emerging countries. 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.

Table 1: Main conceptualizations of social protection in the literature (compilation by the authors)

Authors	Definition of social protection (quotes)	Concept or objectives emphasized	Typology of instruments
HHolzmann and Jorgensen (1999)	'Social protection consists of public interventions to assist individuals, households and communities in better managing income risks. (...) Specifically SP seeks to: • Reduce the vulnerability of low-income households with regard to consumption and access to basic services; • Allow for better consumption smoothing over the lifecycle for all households and, consequently, for more equal welfare distribution of households; • Enhance equity particularly with regard to the exposure to shocks and the effects of shocks.'	• consumption smoothing • access to basic services • equity in welfare distribution • equity in shock exposure	• Informal/personal arrangements, e.g. marriage, community support, real assets such as cattle, estate... • formal/market based arrangements, e.g. financial assets and insurance contracts • formal/publicly mandated or provided arrangements, e.g. rules and regulations, social insurance, transfers, and public works
Norton et al. (2001)	'[SP is] the public action taken in response to levels of vulnerability, risk and deprivation, which are deemed socially unacceptable within a given polity or society'	• The security channel aims to help people sustain their livelihoods in the face of economic, political, environmental, health or other shocks • The equality channel aims to promote levels of livelihood sufficient to ensure enhanced equality of opportunity through basic education and standards of health and nutrition, and by raising the levels of consumption and livelihood of the poorest • The growth channel aims to enable all households to take part in a skilled, productive workforce, encourage social solidarity, and provide an environment in which individuals can adapt and change livelihood strategies without fear of failure	
Van Ginneken (2003)	'[SP includes] benefits that society provides to individuals and households - through public and collective measures - to guarantee them a minimum standard of living and to protect them against low or declining living standards arising out of a number of basic risks and needs'	• SP as a right • not-for-profit arrangements • protection, as opposed to promotion of employment and the economy	• social insurance, financed by contributions, awarded when a specific risk or contingency occurs (unemployment, sickness, injury, maternity, old age) • tax-financed social benefits, targeted on the needy and means-tested
Devereux and Sabate-Wheeler (2004)	'Social protection describes all public and private initiatives that provide income or consumption transfers to the poor, protect the vulnerable against livelihood risks, and enhance the social status and rights of the marginalized; with the overall objective of reducing the economic and social vulnerability of poor, vulnerable and marginalized groups.'	• transfer income or consumption • protection against livelihood risks • enhance social status and rights • reduce economic and social vulnerability	• protective measures, i.e. social assistance to the chronically poor and those who have not been able to avert deprivation (disability benefit, single-parent allowances..) • preventive measures, i.e. to avert deprivation, like social insurance either formal (pensions, health insurance, unemployment benefits, etc.) or informal (e.g. saving clubs) • promotive measures, i.e. to enhance real income and capabilities, such as microfinance • transformative measures, i.e. against exclusion, such as actions for workers' of minority ethnic groups' rights
Barrientos and Hulme (2008)	"[SP includes] policies and programs that combine interventions protecting basic levels of consumption among poor and poorest households; facilitating investment in human capital and other productive assets which provide escape routes from persistent and intergenerational poverty, and strengthening the agency of those in poverty so their capability to overcome their predicaments is increased."	• protect basic levels of consumption • facilitate investment in human capital and productive assets • strengthen individual capabilities	No typology brought forward, emphasis on the combination of income tranfers with basic services, employment guarantees or asset building

2.4 Selected policies implemented by different countries

To illustrate the variety of policies that may be classed as social protection, this section gives an overview of the types of measures and programs put in place by governments of developing and emerging countries to reduce the vulnerability of their most disadvantaged citizens. Some are examples of policies implemented on a large-scale, but we also want to highlight targeted and one-off measures that we were not able to include in our econometric analysis (see Section 3) due to a lack of comparable data across countries, but which fall nonetheless within of the scope of our investigation.

- Strengthening the national pension system in Botswana

Botswana is one of the few African countries to have 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 of age living in the country. The basic benefit amount is 220 pula (USD 31, as of 2008) per month, with periodic adjustments depending on changes in the cost of living. In 2009, 85% of people aged 60 and over were covered, i.e. 90,639 beneficiaries (Help Age International).

Figure 1: Percentage of people over 60 receiving an old age social pension in selected countries
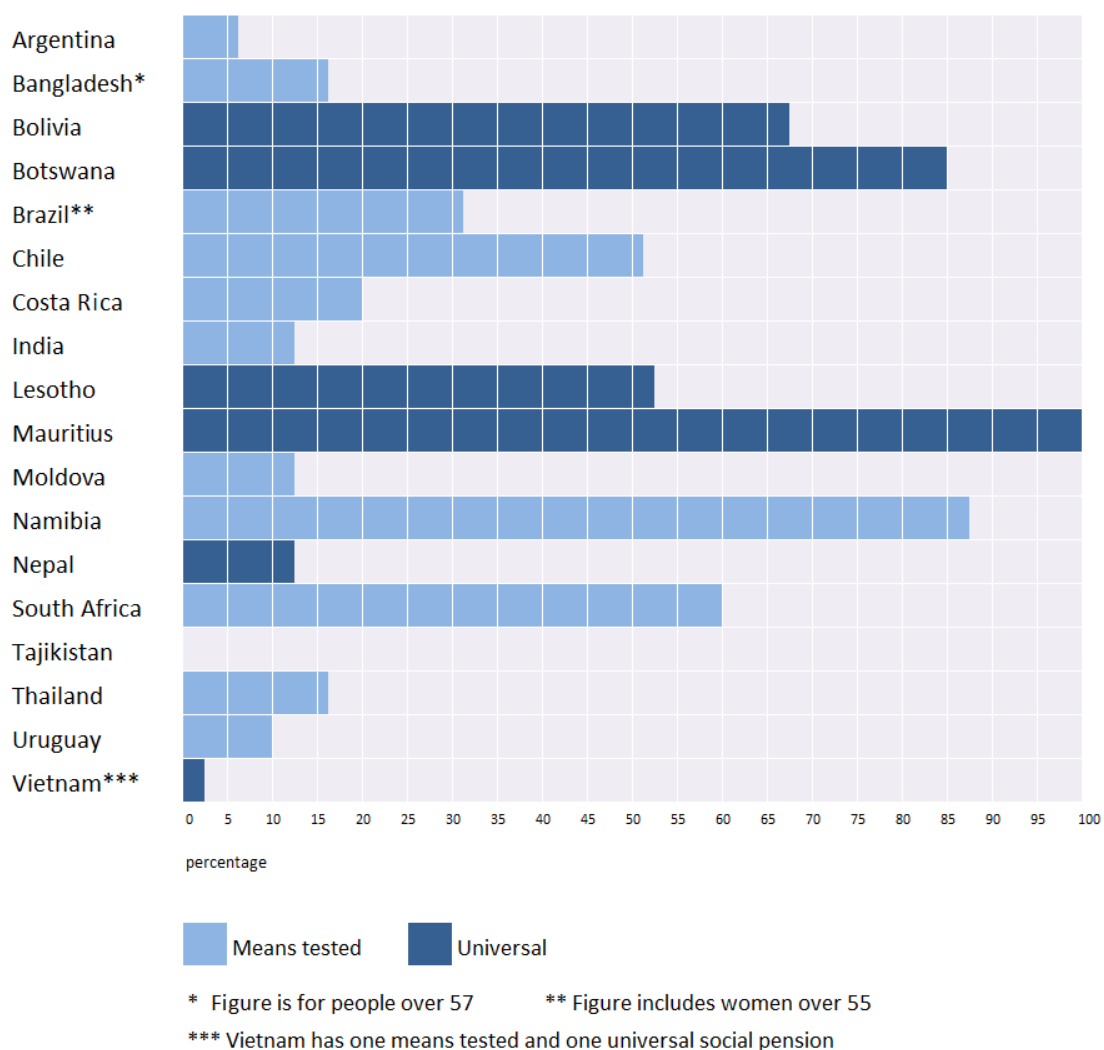
Source: OECD(2009).

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 analyzing 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 2009-2010 ran significantly over budget, with no cost-efficiency assessment being carried out.

• Government employment programs in times of crisis: the example of Argentina

Argentina experienced a four-year depression from 1998 to 2002, during which the economy shrank by 28%. Possible causes cited to explain this include Argentina's fixed exchange rate regime and its default on foreign debt, whether this hung on poor policy advice from the IMF (Stiglitz (2002)) or the Government's irresponsibility (Krueger (2002)). World Bank (2003) estimates that the rate of poverty rose from 37% in 2001 to a peak of 58% by the end of 2002, mainly due to the increase in food prices following the devaluation of the peso.

In January 2002, the Government of Argentina introduced the Jefes y Jefas Plan as a response to the severe economic crisis of 2001. It consisted of direct income transfers to families with dependents and whose the head had become jobless during the crisis. A counterpart work condition was imposed requiring participants to dedicate a minimum number of hours per week to community work, school attendance or training sessions. Beneficiaries could also enter employment in a private company and receive a wage subsidy. Conditionality was meant to ensure explicit targeting of the poor, even though the lack of organizational capacity prevented the Government from monitoring work requirements at the local level and rigorously enforcing the program's eligibility criteria.

Galasso and Ravallion (2003) use counterfactual comparisons and panel data to assess the impact of the Jefes y Jefas Plan. They find that about half of the participants found work as a result of the program, representing about a 2.5 percentage point reduction in the country's unemployment rate. A further finding was that participants would have had a larger drop in real income had there been no program. The authors conclude that despite difficulties in effectively targeting the poorest, the program contributed to social protection during the crisis. World Bank (2003) also considers that government employment schemes such as the Jefes y Jefas Plan have had mitigating effects, as unemployment rose to "only" 18% in 2002.

Figure 2: Unemployment trend in urban Argentina, 1974-2003
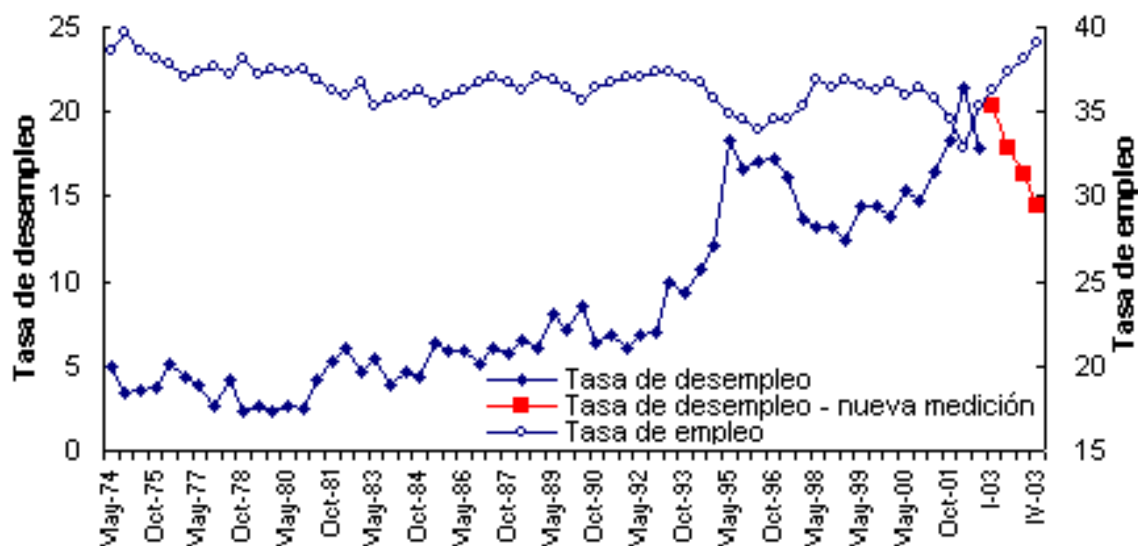
• Guaranteed employment against rural poverty in India

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 program, 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 takeoff in the 1980's. 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% 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 program. 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 programs were introduced in the mid 1990's. In 2003, newly elected President Lula announced the launch of the Bolsa Familia Program (BFP) as part of a national strategy to eradicate hunger and fight poverty throughout the country. This program 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% of the total population. Government spending on the BFP accounts for 0.48% of GDP, or USD 10,711 million (CEPAL 2013).

Table 2: Economics of the Bolsa Familia Program

BOLSA FAMILIA PROGRAM	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
No.of beneficiary households (millions)	3.60	6.57	8.70	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 (million USD)	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	0.20	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 program 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% between 1995 and 2004 (see Figure 3) 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 3: Evolution of the Gini index in Brazil
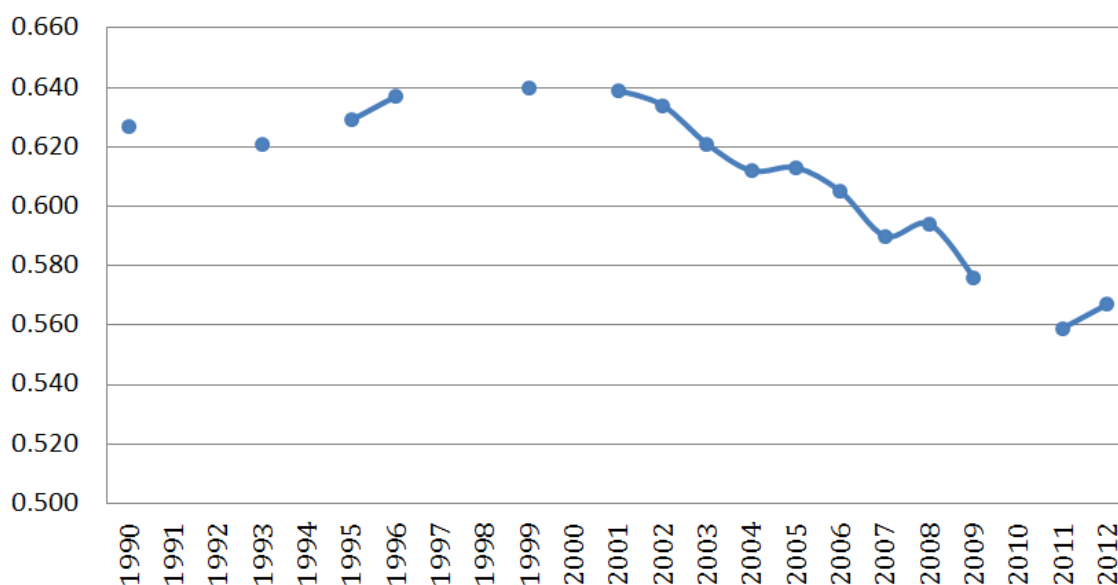
Source: CEPAL 2013.

However, criticism has been leveled 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.

- Healthcare reform in China

To meet the changing needs of its 1.3 billion citizens in a context of rapid economic transformation, the Chinese Government has been engaged in ambitious social reforms since 2009, particularly in the health sector. This came after repeated attempts to improve risk-pooling mechanisms: in 1996, with the re-creation of cooperative medical schemes (CMS) and, in 2002, with the introduction of co-funding systems for CMS, which mix budgetary support from the central government and contributions from local governments and households. In urban areas, the Urban Employees' Basic Medical Insurance system (UEBMI) was launched in 1998 to expand insurance coverage based on wage labor and, in 2007, an additional program was initiated to provide voluntary coverage for urban residents not covered by the employee insurance system (Eggleston (2012)). As shown in the figure below, total health spending rose from 3.02% of GDP in 1978 to more than 5% in 2010.

Figure 4: China's total health expenditure and its share in GDP
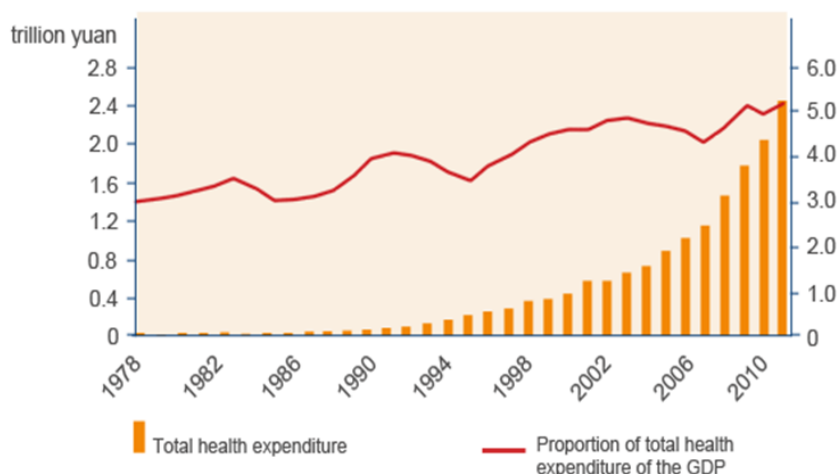
Source: Embassy of PRC in the USA, 2012.

The main priority announced in 2009 was the extension of social health insurance coverage to provide ''safe, effective, convenient, and affordable basic health services'' to urban and rural citizens (quote from the Guidelines for Deepening Health Systems Reform issued by official sources). Eggleston (2012) reviewed a number of empirical studies showing that the overall objective of universal access to essential health services has been met, yet with a number of shortcomings and distortions, including relatively low reimbursement ceilings and rates, the lack of portability of benefits particularly for migrant workers, and perverse incentives leading to unnecessary care and waste. Moreover, the gaps between central government's will and local governments' commitment to effectively implement reforms may be an obstacle, as may the issue of financial resources, which need to be increased and sustained to ensure universal coverage (Meng and Tang (2010)). In rural areas most notably, government health spending comes primarily from county-level governments, which means that the level of spending and quality of care actually depends on the economic capacity of local authorities (Barber and Yao (2010)).

3 Social protection, economic dynamics, and resilience: panel analysis

The objective of our empirical analysis is to examine whether linkages exist between the level of social protection across countries and their economic dynamics. In a second phase, we focus on a deeper exploration of the relationship between social protection policies and the volatility of GDP growth and household consumption, which we take as indicators of the soundness and resilience of an economy. To this end, we carry out panel analysis covering as many countries as data availability allows, over a 17-year period (from 1995 to 2012) in order to have a sufficient number of observations on which to base our results.

The definition of economic resilience that we espouse in this study, along the lines of that proposed by Briguglio et al. (2007), 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 that adopt appropriate social protection policies also improve their ability to adjust to shocks and cyclical downturns.

3.1 Data description and selection of variables

Here, we were faced with a challenge that many researchers encounter when conducting panel analysis, namely the scarcity of time-series data on public policies, particularly (but not only) in social areas and for emerging and developing countries (but not only). Our initial intent as we began to explore the topic of social protection was to follow the approach outlined in the ''Bachelet Report'' on social protection floors, already discussed in Section 2.3. This framework is based on six dimensions that 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. Figure 5 below illustrates these components.

Figure 5: Social protection floors: integrated policies to protect and empower people over the life cycle
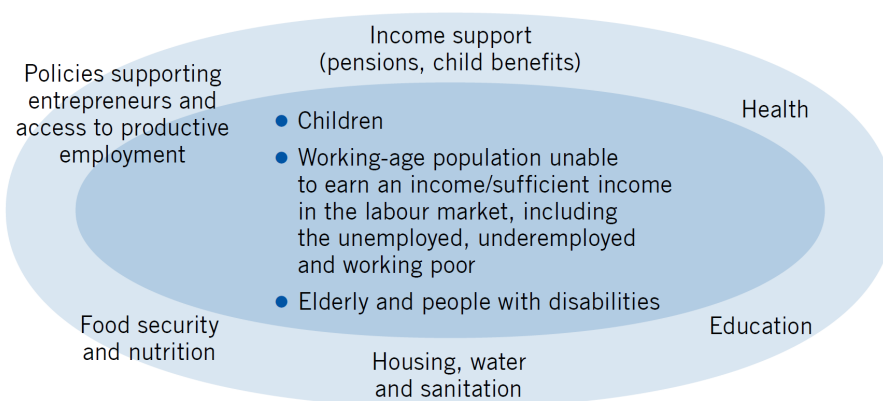
Source: *Bachelet Report, 2011, 'Social protection floor for a fair and inclusive globalization'.*

The lack of aggregate data covering the full spectrum of policies mentioned in the social protection floor initiative prompted us to scale down our ambitions somewhat and decide whether a worthwhile analysis was feasible with less material. We searched international databases, including ADB, AfDB, CEPAL, ILO, IMF, OECD, and the World Bank, so as to build our own dataset covering a variety of economic and social indicators to be used for panel regression analysis. Table 3 lists all the variables extracted from various databases, mainly World Development Indicators from the World Bank, as well as variables derived from our own calculations based on existing data.

With regard to social protection-related policies, we wanted to incorporate variables 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, where possible, per capita spending is expressed in real terms (rather than as a percentage of GDP) to clearly show what actually goes to every citizen. 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 program 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. Their entire data set can be found on `http://cwed2.org/`.

Finally, regional statistics from the Economic Commission for Latin America and the Caribbean (CEPAL) enabled us to compile information on 21 countries regarding the 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 long sample period. For this reason, we used them particularly to examine the complementarity of social expenditures, as explained later in Section 3.2. More generally, we are aware that the data we were able to gather allow only a partial analysis of our question. Certainly, the results need to be interpreted with caution, but we believe that there are some interesting findings that could lay the ground for further research. Tables 4 and 5 provide the descriptive statistics of our panel and subpanel data on social protection.

Table 3: 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
Labor_participation	Labor force participation rate (% of population age 15-64, ILO est.)	World Bank - WDI
Unemployment	Unemployment, total (% of total labor force, modeled 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_wageILO	Minimum nominal monthly wage	ILO
pencov	% of those above official retirement age contributing to a pension system	
uecov	% of the labor force insured for unemployment	
sickcov	% of the labor force with sick pay insurance	Scruggs, L. & al.†
PCA_welfare_coverage	Aggregation of coverage variables using Principal Component Analysis	Calculation CWEDS2
● 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. $)	CEPALSTAT
dispersion_at_geo	Indicator of dispersion using Atkinson family of inequality measure ‡	Calculation CEPALSTAT
● Consumption analysis		
Consumption_pc	Household final consumption expenditure per capita	World Bank - WDI
lag_Consumption_pc	Consumption per capita in the previous year (Y-1)	Calculation using WDI
● Variables used for growth volatility analysis		
GDPTrend	Average GDP growth rate over the 1995-2008 period	Calculation using WDI
GDP_no_crisis	Virtual GDP in 2009-2012 according to the 1995-2008 trend	Calculation using WDI
GDPgapNominal	Gap between virtual GDP and actual GDP per capita (nominal)	Calculation using WDI
GDPgap	Gap between virtual GDP and actual GDP per capita (in %)	Calculation using WDI
Export_pGDP	Exports of goods and services (% of GDP)	World Bank - WDI
Total_reserves	Total reserves (includes gold, current US$)	World Bank - WDI
M_capitalization_pGDP	Market capitalization of listed companies (% of GDP)	World Bank - WDI
● Variables used for consumption volatility analysis		
ConsoTrend	Average consumption growth rate over the 1995-2008 period	Calculation using WDI
Conso_no_crisis	Virtual consumption in 2009-2012 according to the 1995-2008 trend	Calculation using WDI
ConsoGapNominal	Gap between virtual consumption and actual consumption (nominal)	Calculation using WDI
ConsoGap	Gap between virtual consumption and actual consumption (in %)	Calculation using WDI

*World Development Indicators; †Scruggs, Lyle, Detlef Jahn and Kati Kuitto,2014, "Comparative Welfare Entitlements Data Set 2, Version 2014-03" - CWEDS2; ‡See UNDP(2010) Cf. $A_x = 1 - \frac{GEO(X)}{\overline{X}}$

Table 4: Descriptive statistics: World data

Variable	Obs	Mean	Std. Dev.	Min	Max
Health_exp_pc	3352	795.1074	1131.587	8.351728	8895.116
Publ_sp_Education_pc	2037	80258.01	88862.55	0	579716.8
min_wageILO	1660	54934.62	201546.2	0	3030000
pencov	368	91.53967	23.62568	0	190
uecov	526	78.33452	20.05173	0	109
sickcov	542	83.55559	22.20012	0	123.7894
PCA_welfare_coverage	325	-6.57E-10	1.537313	-6.432463	1.907642

Table 5: 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_harm	411	0.6094619	0.1482741	0.1703151	0.9405086

3.2 Empirical Analysis

• Social protection effects on GDP level and growth

As a preliminary step in our analysis of economic resilience, we investigate the relationship between social protection and indicators of economic outcomes, i.e. income and growth. For the economic modeling, we choose not to follow any "specific theory theory", be it a neoclassical or endogenous growth model, as our concern is not academic debate and we are aware that empirical growth analyses conducted in line with one particular theory often involve difficulties linked to identifying explanatory variables to fit the theoretical model (Sala-i Martin (1997a)). In light of this, we decided to adopt a practical approach and refer to methods of calculating GDP, which is to say the monetary value of final goods and services produced in a country in a given period of time (e.g. one year). These methods can be divided into three groups.The production approach sums the value-added at each stage of production, value-added being defined as total sales less the cost of intermediate inputs into the process of production. The income approach adds up the incomes generated by production (that is, sales less costs). Lastly, the expenditure approach sums the value of goods and services purchases made by final users, including households, enterprises and the government.

We opt for the expenditure approach, which best matches our goal of examining the relationship between public spending on social protection and economic outcomes. In our model of GDP per capita, we consider a set of variables reflecting household consumption expenditures (consumption), gross capital formation (investment), as well as the labor market situation, which can impact the overall income level (unemployment and labor participation). The development of financial systems also impacts the level of income, as it facilitates capital accumulation, trade of goods and services, and savings mobilization for investment purposes (Levine (2005)). We therefore include bank credit to the private sector (credit) in our model as a measure of banking intermediation. Finally, we incorporate the macroeconomic factors that are usually taken into account when studying GDP level and growth: inflation and the level of taxation.

Through exposure to competition, economies of scale and the dissemination of technology, openness to international trade may positively impact income and growth. However,

reverse causality is highly possible, especially for middle- and high-income countries (Chow (1987)). Bearing this ambivalence 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 incorporate the rate of population growth 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 across countries and the associated "catch-up" effect. Our point of departure is thus a basic model of real GDP per capita followed by a model of GDP growth incorporating flow variables.

$$\text{GDPpc}_{ij} = \alpha_{ij} + \beta_1 Consumption_{ij} + \beta_2 Inflation_{ij} + \beta_3 Credit_{ij} + \beta_4 Investment_{ij} + \beta_5 LaborParticipation_{ij} + \beta_6 Unemployment_{ij} + \beta_7 TaxRevenue_{ij} + u_i + \epsilon_{ij} \qquad (1)$$

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

Where index $i=1\ldots N$ refers to the country and $j=1\ldots T$ to the year.

We then run a series of statistical tests to check hypotheses on model specification and avoid potential biases in our future estimates.

Breusch-Pagan Lagrangian multiplier test: to check whether a simple pooled ordinary least square (OLS) model would be a proper estimator compared to a random-effect model, we carry out a Breusch-Pagan Lagrangian multiplier test. The test leads us to reject the hypothesis of absence of significant difference across units, which confirms the "panel effect" associated with our data. Hence, we reject the possibility of using a pooled OLS model.

Hausman test for fixed effects: the second test we run is a Hausman test to determine whether to use a fixed-effect or a random-effect model. Comparing coefficients associated with fixed-effect and random-effect models, we find that there are significant differences between the two. This leads us to confirm that a fixed-effect model is preferable in order to take into account the individual effect associated with each country.

Heteroskedasticity test: the number of missing values in our dataset may lead to an unbalanced panel with issues of heteroskedasticity, meaning that the variances associated with the different explanatory variables are not equal across time and countries. To eliminate this concern, we run a likelihood ratio test for heteroskedasticity. The result of this test indicates that our panel has encountered no heteroskedasticity problem and that we do not therefore need to correct our estimator.

Wooldridge test for serial correlation: the final test we perform is to detect first-order autocorrelation in our panel, i.e. the fact that the values associated with each variable may be correlated with themselves in time. The Wooldridge test leads us to reject the hypothesis of absence of autocorrelation, which means that we need to correct our model to take autocorrelation into account.

As a result of the test procedure just described, it appears that a consistent estimator to be used in our regressions is a model corrected for serial autocorrelation by including a fixed effect for each country.

The results of the regressions corresponding to equations (1) and (2) as well as augmented models including social protection variables are summarized in Tables 6 and 7. The first column of Table 6 displays estimates for our basic model of GDP per capita. It shows that household consumption, credit to the private sector, unemployment, and labor participation are valid estimators of GDP per capita. Columns 2 to 5 explore more specifically the dynamics of social protection on GDP per capita with successive addition of variables. In column 2, we include public spending per capita on health and education while removing tax revenue for reasons of colinearity. We find that both education and health expenditures have a positive and significant impact on the level of GDP per capita. For an increase in health or education expenditures of one unit, GDP is expected to increase by 3.37 and 0.02 units respectively, holding all other variables constant.

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" denotes a variable aggregating three social welfare indicators which express benefit coverage for unemployment insurance, sickness insurance and old age pensions, as previously described in Table 3. As these indicators are highly correlated with one another (see Table 14 in Appendix), we use a principal component analysis (PCA) as a means of normalization. This procedure allows us to retain the specific effect of each variable while avoiding multicolinearity issues. However, multicolinearity persists between this newly created variable of welfare coverage and the minimum wage level (see Table 15 in appendix), leading us to exclude the latter from the last regression (column 5). This first set of results tends to establish a positive and significant relation between social protection policies related to health, education, and minimum wages, and the level of income. A positive correlation is also found with the indicator of welfare coverage, although the limited number of observations calls for caution.

The results reported in Table 7 provide estimates of how the same social protection-related variables as those examined previously influence GDP growth. While controlling for consumption growth, population growth, inflation, credit, investment, labor participation, and unemployment, we find that public spending on health and education as well as the level of minimum wage are positively and significantly correlated with the growth rate (columns 2 and 3). The indicator of welfare coverage also displays a positive correlation with growth, but its introduction into the regression tends to minimize the effect of the other variables related to social spending, possibly for reasons of colinearity (columns 4 and 5).

Table 6: Regression table: Income

	(1) GDPpc	(2) GDPpc	(3) GDPpc	(4) GDPpc	(5) GDPpc
Consumption_PPP	2.57e-09***	-6.69e-10	-2.58e-10	8.07e-10	-3.89e-09**
	(4.19)	(-0.96)	(-0.45)	(0.45)	(-2.32)
Inflation	-0.0661	-10.16***	-7.722***	114.0*	146.3
	(-0.57)	(-6.22)	(-4.13)	(1.94)	(1.63)
Domestic_Credit_Private	42.99***	8.667	6.673	10.43*	-4.929
	(3.18)	(1.04)	(0.76)	(1.87)	(-0.68)
Investment	-50.72	-6.194	22.77	282.2***	247.4***
	(-1.37)	(-0.21)	(0.75)	(3.60)	(3.75)
Labor_participation	451.4*	25.95	22.23	-50.36	-117.4
	(1.83)	(0.61)	(0.43)	(-0.29)	(-1.12)
Unemployment	-425.3***	-275.0***	-266.9***	-138.4	-404.7**
	(-5.31)	(-4.89)	(-3.95)	(-1.16)	(-2.23)
Tax_revenue	247.5				
	(0.97)				
Health_exp_pc		3.376***	1.680**	2.516***	3.372***
		(5.02)	(2.27)	(4.72)	(7.69)
Publ_sp_Education_pc		0.0256*	0.0768***	0.00294	0.0317***
		(1.75)	(4.22)	(0.26)	(3.10)
min_wageILO			0.000926**	0.00517***	
			(2.20)	(3.80)	
PCA_welfare_coverage				1390.8	2790.9***
				(1.65)	(3.78)
_cons	-15634.4	11381.4***	6989.8**	22213.3*	28273.7***
	(-0.81)	(3.91)	(2.22)	(1.98)	(3.56)
Number of obs	1690	1457	961	108	191
Number of groups	137	144	111	11	19
R² within	0.230	0.616	0.698	0.926	0.927
R² between	0.178	0.672	0.883	0.904	0.738
R² overall	0.218	0.754	0.904	0.800	0.775

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Regression table: Income Growth

	(1) GDPgrowth	(2) GDPgrowth	(3) GDPgrowth	(4) GDPgrowth	(5) GDPgrowth
GDPpcLag	-0.0000358	-0.000385***	-0.000297***	-0.000655***	-0.000405***
	(-0.42)	(-4.62)	(-2.78)	(-5.44)	(-7.65)
Consumption_pc_growth	0.191***	0.260***	0.355***	0.447***	0.527***
	(3.31)	(6.51)	(5.42)	(9.58)	(9.27)
Population growth	0.577***	0.413	0.420	0.639	0.107
	(3.18)	(1.47)	(1.32)	(1.65)	(0.37)
Inflation	-0.000768**	-0.0299***	-0.0265***	0.132	0.196*
	(-2.60)	(-2.79)	(-2.80)	(1.36)	(2.09)
Domestic_Credit_Private	-0.0190**	-0.0194**	-0.0413***	-0.000348	-0.00742**
	(-2.01)	(-2.36)	(-4.60)	(-0.07)	(-2.72)
Investment_growth	0.0101***	0.0527***	0.0440*	0.128***	0.111***
	(3.72)	(3.38)	(1.81)	(6.38)	(5.74)
Labor_participation	-0.0635	0.00825	0.115	0.0608	0.0617
	(-1.03)	(0.13)	(1.36)	(0.39)	(0.90)
Unemployment	-0.163**	-0.226**	-0.161	-0.230***	-0.212***
	(-2.09)	(-2.24)	(-1.30)	(-3.62)	(-4.69)
Health_exp_pc		0.000648**	0.000880**	0.000944	0.000799**
		(2.19)	(2.53)	(1.74)	(2.71)
Publ_sp_Education_pc		0.0000245***	0.0000199*	0.0000166	0.0000126
		(3.36)	(1.82)	(1.45)	(1.51)
min_wageILO			0.00000189**	0.00000335	
			(2.37)	(1.79)	
PCA_welfare_coverage				0.734***	0.588**
				(3.78)	(2.57)
_cons	10.15**	8.911*	0.333	14.33	8.554
	(2.51)	(1.80)	(0.05)	(1.40)	(1.70)
Number of obs	2442	1281	892	108	191
Number of groups	132	126	103	11	19
R^2 within	0.216	0.382	0.467	0.904	0.845
R^2 between	0.317	0.298	0.196	0.0496	0.0729
R^2 overall	0.225	0.251	0.288	0.408	0.509

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.3 Analyzing 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 focused on 17 Latin American countries. Tables 8 and 9 show the corresponding regression outputs. Control variables follow those used in our global panel analysis, while three variables of interest are introduced that capture the level of public spending per capita on education, health and old age pensions. We take advantage of the homogeneity of these subpanel data - as the three variables of social spending are based on reliable CEPAL data - to examine the level of policy complementarily. In other words, we investigate whether the degree of balance between health, education and pensions spending affects economic output (GDP level and growth) regardless of spending levels in the same sectors. For this purpose, we build a synthetic indicator reflecting the dispersion of social spending among sectors and belonging to the Atkinson family of indices:

$$A_x = 1 - \frac{GEO(X)}{\overline{X}} \qquad (3)$$

Where GEO(X) is the geometric mean of vector X, and $\overline{X}$ is the arithmetic mean.

According to the results reported in Tables 8 and 9, 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 (column 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), possibly for reasons of colinearity. Regarding GDP growth, Table 8 reports more mixed results. A positive correlation appears quite clearly 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 connection in this regression (columns 3 and 4). Overall, and despite some caveats relating to the limited number of observations, the results from the analysis based on CEPAL data are consistent with those obtained in the global panel data analysis, and point in the direction of a positive impact of social protection policies on GDP level and growth.

Table 8: Regression table: Income CEPAL

	(1) GDPpc	(2) GDPpc	(3) GDPpc	(4) 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)
Labor_participation	250.7**	131.4**	132.2**	243.2***
	(2.91)	(2.71)	(2.82)	(3.04)
Unemployment	-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

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Incoome Growth CEPAL

	(1) GDPgrowth	(2) GDPgrowth	(3) GDPgrowth	(4) GDPgrowth
GDPpcLag	-0.000420***	-0.00113***	-0.00111***	-0.000407***
	(-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)
PopulatioNumber of groupsrowth	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)
Unemployment	-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	0.440	0.408
R^2 between	0.273	0.261	0.282	0.296
R^2 overall	0.0306	0.0170	0.0165	0.0304

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

3.4 Investigating resilience through an analysis of GDP growth gaps following the 2008 crisis

We now move to our second objective of examining the links between social protection and the capacity of societies to overcome the economic and social hardships that may impact them. Our strategy here is to explore whether the growth differentials that countries experienced in the years following the 2008 crisis relate to their level of social protection. The idea of using the recent crisis as a breakpoint stems from the fact that our data reveals a clear-cut break in the global growth rate in 2009, as shown in Table 10.

Table 10: GDP growth, world average 1995-2012

Year	Obs	Growth	SD	Min	Max
1995	187	3.76	5.23	-12.40	35.22
1996	188	4.58	7.62	-16.70	88.96
1997	188	5.10	9.98	-11.40	106.28
1998	189	3.46	5.13	-28.10	29.70
1999	191	3.42	5.04	-11.20	41.45
2000	193	4.06	3.97	-14.27	25.70
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	-33.10	17.32
2004	196	5.78	6.02	-5.81	54.16
2005	195	5.14	3.86	-8.68	26.40
2006	194	5.92	4.53	-4.51	34.50
2007	195	5.93	4.30	-4.14	25.05
2008	191	3.97	4.30	-17.67	17.66
2009	189	0.08	5.53	-17.95	21.02
2010	185	4.24	4.24	-9.53	27.50
2011	185	4.10	3.89	-10.48	21.82
2012	184	3.11	5.27	-47.55	15.22

We exploit this break in the following way. We compute each country's average GDP growth rate for the 1995-2008 period, a value that we term the "GDP trend". We then calculate "virtual" GDP levels for the years 2009-2012 or, in other words, the GDP levels that would have been recorded had the 1995 to 2008 trend continued. This gives us what we call the "GDP no crisis, value", from which we subtract the GDP levels that were actually recorded. This gives us a figure representing the gap in economic growth for the years following the 2009 breakpoint and we call the corresponding variable "GDP gap".

We base our crisis resilience analysis on a simple model expressing the relationship between a set of economic variables and the gap in economic growth. The determinants of growth gaps are in part the same as those used in our models of revenue and growth: the initial level of GDP, consumption, population growth, unemployment, investment, and tax revenue. Since the 2008 crisis - which was financial before becoming economic - was mainly 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 take into account the fact that one of the effects of the financial crisis - although time-lagged - was a fall in export volumes, which particularly impacted those countries whose economies were largely based on good

exports (UNCTAD 2009). 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:

$$GDPgap_{ij} = \alpha_{ij} + \beta_2 Consumption_{ij} + \beta_3 PopulationGrowth_{ij} + \beta_1 GDPpc_{ij} + \beta_4 Unemployment_{ij} + \beta_5 Investment_{ij} + \beta_6 TaxRevenue_{ij} + \beta_7 Exports_{ij} + \beta_9 Financialization + \beta_8 TotalReserves_{ij} + \beta_9 Financialization + u_i + \epsilon_{ij} \qquad (4)$$

Where index i=1...N denotes the country and j=1...T the year. Since we base our estimates on the 2009-2012 period only, the associated dataset differs from the one we used in our previous regressions, which requires that we test the specifications of our model again. We return to the same test procedure as before, i.e. the Breusch-Pagan Lagrangian multiplier test for random effects, the Hausman test for comparing fixed and random effects, the Heteroskedasticity test, and the Wooldridge test for serial correlation. The conclusion of this testing sequence is that we should use an estimator similar to the first one, that is to say, a model corrected for serial autocorrelation including fixed effects for each country.

Table 11 presents the results of the regressions supporting our analysis of GDP growth gaps, together with those that incorporate variables of social protection policies so as to examine their possible effect on economic resilience. For each of the three regressions, the positive or negative signs associated with coefficients are quite difficult to interpret, as the magnitude of the gap in GDP growth does not indicate whether it reflects a plus or minus deviation from the trend. However, it appears from column 1 that a higher level of investment is associated with a lower gap, while unemployment and the share of exports in GDP are positively correlated with the magnitude of the income growth gap. The negative correlation between market capitalization and the GDP growth gap is quite puzzling, as we would expect 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 is quite weak. The only significant positive correlation is shown for health expenditures.

Table 11: Regression table: Income Growth GAP

	(1) GDPgap	(2) GDPgap	(3) GDPgap
GDPpc	-0.000755	-0.000408	-0.000103
	(-1.26)	(-1.45)	(-0.10)
Consumption_PPP	3.49e-12	3.37e-12	-1.03e-12
	(1.50)	(1.43)	(-0.37)
Unemployment	0.819**	1.040**	0.830*
	(2.09)	(2.49)	(1.98)
Investment	-0.415***	-0.451***	-0.497***
	(-3.24)	(-3.69)	(-5.03)
Tax_revenue	-0.00741		
	(-0.02)		
Export_pGDP	0.193*	-0.0209	-0.00284
	(1.77)	(-0.23)	(-0.03)
Total_reserves	2.67e-13	4.57e-12	1.40e-11
	(0.05)	(0.46)	(1.44)
M_capitalization_pGDP	-0.0455*	0.0182	-0.0000522
	(-1.73)	(1.34)	(-0.00)
Health_exp_pc		0.00934**	0.00392
		(2.10)	(0.54)
Publ_sp_Education_pc		0.0000308	0.0000295
		(0.83)	(0.64)
min_wageILO			0.00000920
			(1.54)
_cons	20.52	-3.364	3.578
	(1.31)	(-0.41)	(0.23)
Number of obs	316	211	156
Number of groups	88	82	68
R² within	0.309	0.299	0.362
R² between	0.162	0.0317	0.125
R² overall	0.107	0.0399	0.138

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The mixed results we obtained and problematic task of trying to interpret them highlight the difficulty of analyzing how countries were impacted by the 2008 crisis, using a unique set of causal factors. Despite the global character 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 Table 12, 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.

This suggests that the repercussions of the financial and economic crisis on countries' economic performance are not over, and that we would need to expand our analysis to the years after 2012 in order to have a firmer idea of the crisis dynamics.

Table 12: 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	4.50	-3.30	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	13.10	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	17.10	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	80.50
2011	East Asia & Pacific	28	4.83	7.81	-17.17	17.69
2011	South Asia	8	4.21	9.95	-4.58	25.70
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

3.5 Extending the analysis to household consumption

In the last phase of our study, we leave aside income and growth to explore the relationship between social protection policies and household consumption. We use consumption - its level, growth rate, and fluctuation - as an alternative marker of resilience at the aggregate level. Some recent studies have investigated the capacity of countries to smooth consumption over the business cycle as a way of enhancing resilience (Ernst et al. (2007)), and we believe this question will gain momentum in the context of policies aimed at averting future crises.

Our empirical approach is similar to that presented in the first part of this section. We first establish a simple consumption equation on which to base our analysis. The two main determinants of consumption found in the Keynesian and the neoclassical literature are income, which households allocate between immediate consumption and postponed consumption (i.e. saving), and price levels (i.e. inflation rate) which play an important role in this tradeoff. Rising incomes ease budget constraints and enable rational households to increase their level of consumption - although the change in demand differs from one good to another. As for price levels, demand generally varies in the opposite direction: when prices fall, the goods concerned become cheaper (substitution effect) and household purchasing power grows (income effect). In a number of cases, demand is price-inelastic, meaning that price changes have a limited effect on demand. We also include unemployment and taxation as consumption factors, as these elements may affect households' morale, purchasing power concerns, and consumption choices. Hence, the basis for our analysis of the effect of social protection on consumption is the following set of equations.

$$Consumption_{ij} = \alpha_{ij} + \beta_1 GDPpc_{ij} + \beta_2 Inflation_{ij} + \beta_3 Unemployment_{ij} + \beta_4 TaxRevenue_{ij} + u_i + \epsilon_{ij} \qquad (5)$$

$$ConsumptionGrowth_{ij} = \alpha_{ij} + \beta_1 LagConsumption_{ij} + \beta_2 GDPGrowth_{ij} + \beta_3 Inflation_{ij} + \beta_4 Unemployment_{ij} + \beta_5 TaxRevenue_{ij} + u_i + \epsilon_{ij} \qquad (6)$$

where index $i=1\ldots N$ refers to the country and $j=1\ldots T$ to the year.

As we use the same test procedure for the model as in the previous phases of this study, we find that a similar estimation procedure as before (i.e. using a fixed effect model corrected for serial auto-correlation) would provide consistent estimators.

The regression results corresponding to equation (5) in Table 13, as well as the results for estimates integrating social policies, show that most variables have significant coefficients, and their effect follows our intuition. Income and taxation (which may account for redistribution) are positively correlated with consumption, while inflation and unemployment show a negative relationship. As for social protection policies, we find that increased health expenditure per capita and a higher minimum wage are associated with higher household final consumption. The estimated coefficient associated with the education spending variable is negative, which supports the hypothesis of a negative relationship with consumption. One possible interpretation is that increased public spending on education relieves households from the corresponding short-term outlays. On the other hand, the positive effect of government expenditure on health may be more of a long-term dynamic, where more public spending results in higher health standards and finally a higher consumption capacity. As for the minimum wage level, its impact on consumption through income is quite intuitive.

As in the GDP analysis, the variable of welfare coverage (which aggregates indicators of benefit coverage for unemployment insurance, sickness insurance and old age pensions through a normalization procedure using PCA) is positively correlated with consumption, meaning that the deployment of welfare insurance is associated with greater consumption. Here again, the limited number of observations calls for caution when considering the conclusions.

Table 13: Regression table: Consumption

	(1) Consumption	(2) Consumption	(3) Consumption	(4) Consumption	(5) Consumption
GDPpc	0.314***	0.210***	0.303***	0.181***	0.0207
	(56.49)	(21.22)	(38.08)	(5.95)	(1.09)
Inflation	-0.0183	-1.467**	-0.944**	44.30*	51.05***
	(-0.79)	(-2.44)	(-2.38)	(1.77)	(2.74)
Unemployment	-11.41**	-7.107	-7.041**	-110.4***	-186.7***
	(-2.32)	(-1.23)	(-2.22)	(-4.94)	(-9.91)
Tax_revenue	10.22***	7.033**			
	(3.39)	(2.18)			
Health_exp_pc		2.988***	2.371***	2.972***	3.457***
		(38.36)	(40.60)	(18.25)	(31.01)
Publ_sp_Education_pc		-0.00877***	-0.00710***	-0.00352	-0.0148***
		(-6.33)	(-4.95)	(-1.04)	(-7.65)
min_wageILO			0.000717***	0.00154***	
			(9.97)	(2.97)	
PCA_welfare_coverage				115.5	392.1***
				(1.28)	(4.37)
_cons	812.1***	1122.1***	529.3***	3157.3***	8875.8***
	(9.57)	(11.23)	(14.57)	(3.65)	(19.79)
Number of obs	1734	1029	964	111	199
Number of groups	136	116	98	11	17
Wald χ^2	3423.66	41396.97	37778.35	2079.48	2096.99

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Finally, the results we obtain in the regression of consumption growth versus the same model are unclear and not significant. This is also the case when we place our analysis in the framework of subpanel data on Latin America. We also try to analyze consumption volatility by building an indicator for the consumption gap, reflecting the difference in consumption that occurred in 2009 in the wake of the crisis. However, this approach does not produce significant results either (see corresponding Tables 19, 22 and 23 in Appendix). This leaves us with mixed conclusions as to the links between social protection policies and households' capacity and willingness to consume goods and services. Although we can show a clear effect of social welfare policies on the level of consumption, the demonstration becomes less robust when it comes to the estimates focused on consumption gaps.

4 Conclusions

In the first part of our empirical analysis, we found considerable positive linkages between the level of government social protection expenditure and economic dynamics, both in terms of GDP level and of growth, and at both the global and South American scales. We are aware that this result would have been strengthened by a more comprehensive set of social protection variables, particularly on 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 impossible. The correlations that we were able to identify can nonetheless provide a sound basis for further research. We were also able to show that, in the context of Latin American countries, 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.

This first set of results appears to be of acceptable quality and reveals useful insights into the questions we raised. However, the second part of the analysis, in which we attempted to establish connections between social protection policies and the deviations from growth trends following the 2008 crisis, is less robust and leaves the door open to methodological 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.

Bibliography

Alesina, A. and D. Rodrik (1994). "Distributive politics and economic growth". *The Quarterly Journal of Economics 209* (2).

Alkire, S. (2002). *Valuing freedoms – Sen's capability approach and poverty reduction.* Oxford University Press.

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*, 133--150.

Arjona, R., M. Ladaique, and M. Pearson (2002). "Social protection and growth". *OECD Economic Studies* (35).

Arze del Granado, J., S. Gupta, and A. Hajdenberg (2010). "Is social spending procyclical?". *IMF working paper 42*, 16--27.

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

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--725.

Barber, S. and L. Yao (2010). "Health insurance systems in china: A briefing note". *World Health Report 2010*.

Barrientos, A. (2003). "What is the impact of non-contributory pensions on poverty? estimates from brazil and south africa". *CPRS Working Paper* (33).

Barrientos, A. and D. Hulme (2008). "Social protection for the poor and poorest in developing countries: Reflections on a quiet revolution". *Brooks World Poverty Institute Working Paper* (30).

Barrientos, A. and R. Sabates-Wheeler (2006). "Local economy effects of social transfers. final reports". *Institute of Development Studies*.

Barro, R. J. (1999). "Inequality, growth, and investment". *NBER Working Paper* (7038).

Bloom, D. and D. Canning (2003). "Health as human capital and its impact on economic performance". *The Geneva Papers on Risk and Insurance- issues and practice: an official journal of the Geneva Association 28*, 304--315.

Bontout, O. and T. Lokajickova (2013). "Protection budgets in the crisis in the eu". *Working Paper of the European Commission* (1/2013).

Booth, A. (1999). "The social impact of the asian crisis: What do we know two years on?". *Asian-Pacific Economic Literature 13*.

Briguglio, L., G. Cordina, S. Bugeja, and N. Farrugia (2007). "Conceptualizing and measuring economic resilience". Unpublished Paper. Economics Department University of Malta.

Chow, P. (1987). "Causality between export growth and industrial performance: evidence from nics". *Journal of Development Economics 26*, 55--63.

Cline, W. (2002). "Financial crises and poverty in emerging market economies". *Center for global development Working Paper* (8).

Deininger, K. and Y. Liu (2013). ''Welfare and poverty impacts of india's national rural employment guarantee scheme : evidence from andhra pradesh''. *The World Bank. Policy Research working paper* (6543).

Devereux, S. and R. Sabate-Wheeler (2004). ''Transformative social protection''. *IDS Working Paper* (232).

DFID (2011). *DFID Cash Transfer Evidence Paper.* DFID.

Eggleston, K. (2012). ''Health care for 1.3 billion: An overview of china's health system''. *Asia Health Policy Program Working Paper, Stanford University* (28).

Ernst, E., G. Gong, and W. Semmler (2007). ''Resilience, consumption smoothing and structural policies''. *Paper prepared for the OECD Workshop "Structural reforms and economic resilience: evidence and policy implications.*

Fan, S. and N. Rao (2003). ''Public spending in developing countries: trends, determination, and impact''. *EPTD discussion paper, International Food Policy Research Institute* (99).

Filmer, D., J. Hammer, and L. Pritchett (1998, January). ''health policy in poor countries : weak links in the chain''. (99).

Frankel, J. A., C. A. Vegh, and V. G. (2011). ''On gradation from fiscal procyclicality''. *NBER working paper* (17619).

Fukuda-Parr, S. (2003). ''The human development paradigm: operationalizing sen's ideas on capabilities, feminist economics''. *Feminist Economics.*

Galasso, E. and M. Ravallion (2003). ''Social protection in a crisis: Argentina's plan jefes y jefas''. *The World Bank Economic Review 18*, 367--399.

Gertler, P. (2004). ''Do conditional cash transfers improve child health? evidence from progresas's randomized experiment''. *The American Economic Review 94* (2).

Gowan, P. (2009). ''Crisis in the heartland. consequences of the new wall street system''. *New Left Review 55.*

Gupta, S., M. Verhoeven, and E. Tiongson (2002). ''The effectiveness of overnment spending on education and health care in developing and transition economies''. *European Journal of Political Economy 18*, 717--737.

Habib, B., A. Narayan, S. Olivieri, and S. C. (2010). ''The impact of the financial crisis on poverty and income distribution: insight from simulations in selected countries''. *Economic Premise, The World Bank.*

Hobbes, T. (1651). *Le Léviathan.* Folio, 2000.

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--1027.

IDS (2009, March). ''The global financial crisis, developing countries and policy responses''. IDS In Focus Policy Briefing, Issue 07, Policy Responses to the global financial crisis.

Ilzetzki, E. and C. Vegh (2008). ''Procyclical fiscal policy in developing countries: Truth or fiction?''. *NBER Working Paper* (14191).

Imbert, C. (2013). *Travailler pour être aidé? L'emploi garanti en Inde.* 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*, 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*, 39--62.

Knowles, J. C., E. M. Pernia, and R. M. (1999). "Social consequences of the financial crisis in asia". *Economic Staff Paper Number 60, Asian Development Bank*.

Krueger, A. (2002). "Crisis prevention and resolution: Lessons from argentina". *International Monetary Fund*.

Kuznets, S. (1955). "Economic growth and income inequality". *American Economic Review 45*, 1--28.

Leamer, E. E. (1999). "Competition in tradables as a driving force of rising income inequality". *Siebert, editor*, 119--152.

Levine, R. (2005). "Finance and growth: Theory and evidence," handbook of economic growth". *Handbook of Economic Growth, edition 1 1*, 865--934.

Levine, R. and R. Renelt (1992). "Cross-country growth regressions". *The American Economic Review 82*(4).

Lindbeck, A. (1975). "Inequality and redistribution policy issues (principles and swedish experience)". *Education, Inequality and Life Chances, OECD, Paris 2*, 229--385.

Locke, J. (1689). *Second Treatise of Civil Government*. Prometheus Books 1982.

Lucas, R. (1988). "On the mechanics of economic development". *Journal of Monetary Economics 22*, 3--42.

Maluccio, J. A. and R. Flores (2004). "Impact evaluation of conditional cash transfer program: the nicaraguan red de proteccion social". *International Food Policy Research Institute Working Paper* (184).

Mehrotra, S. (2008). "Democracy, decentralisation and access to basic services: an elaboration on sen's capability approach". *in "The capability approach", Cambridge University Press*, 385--420.

Mendoza, R. U. (2009). "Aggregate shocks, poor households and children: transmission channels and policy responses". *Working papers, UNICEF, Division of policy and strategy* (0901).

Meng, Q. and S. Tang (2010). "Universal coverage of health care in china: Challenges and opportunities". *World Health Report (2010), WHO*.

Mingat, A. and J.-P. Tan (1992). "Education in asia: A comparative study of cost and financing". *World Bank regional and sectoral studies*.

Mingat, A. and J.-P. Tan (1998). "The mechanics of progress in education: evidence from cross-country data". *World Bank policiy research working papers*.

Mirlees, J. (1971). "An exploration in the theory of optimum income taxation". *The Review of Economic Studies 38*, 175--208.

Musgrave, R. (1959). *The Theory of Public Finance*.

Noble, M., P. Ntshongwana, and R. Surender (2008). "Attitudes to work and social security in south africa". *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).

Nussbaum, M. (2003). "Capabilities as fundamental entitlements: Sen and social justice". *Feminist Economics*.

Nussbaum, M. (2006). *Frontiers of Justice: Disability, Nationality, Species Membership*. Harvard University Press.

Ostry, J. D., A. Berg, and C. G. Tsangarides (2014). "Registribution, inequality, and growth". *IMF staff discussion note*.

Pearson, T. and G. Tabellini (1994). "Is inequality harmful for growth? theory and evidence". *American Economic Review 84*, 600--621.

Piketty, T. (2013). *Le capital au 21ème siècle*. Seuil.

Psacharopoulos, G. (1994). "Returns to investment in education: A global update". *World Development, Elsevier 22*, 1325--134.

Psacharopoulos, G. and H. A. Patrinos (2002). "Returns to investment in education: A further update". *World Bank Policy Research Working Paper* (2881).

Ravallion, M. (2013). "The idea of antipoverty policy". *Handbook of Income Distribution, Amsterdam, Elsevier Science, edited by Anthony B. Atkinson and Francois Bourguignon 2*.

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*, 1002--1037.

Rosanvallon, P. (1981). *La crise de l'Etat providence*. Seuil.

Rosanvallon, P. (1985). *La nouvelle question sociale*. Seuil.

Sala-i Martin, X. (1997a). "I just ran two million regressions". *The American Economic Review 87*, 178--183.

Sala-i Martin, X. (1997b). "Transfers, social safety nets, and economic growth". *International Monetary Fund Staff papers*.

Scruggs, L., D. Jahn, and K. Kuitto (2014). "Comparative welfare entitlements dataset 2. version 2014-03". University of Connecticut University of Greifswald. http://cwed2.org/.

Sen, A. (1984). "Rights and capabilities". *Resources, Values and Development, Harvard University Press*, 307–324.

Sen, A. (1993). "Capability and well-being". *Nussbaum and Sen (eds.), The Quality of Life, Oxford: Clarendon Press*, 30--53.

Sen, A. (1999). *Development as Freedom*. Oxford University Press.

Sepulveda, M. and C. Nyst (2012). *The human rights approach to social protection*. Ministry for Foreign Affairs of Finland.

Soares, S., R. Ribas, and R. Osorio (2009). "Evaluating the impact of brazil's bolsa família: Cash transfer programmes in comparative perspective". *International Poverty Center Evaluation Note* (1).

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 Edinburg.

Stiglitz, J. E. (2002). "Argentina, short-changed: Why the nation that followed the rules fell to pieces". *The Washington Post*.

Sumner, A. and N. McCulloch (2009). "Will the global financial crisis change the development paradigm?". *International Development Studies Bulletin*.

Tanzi, V. (2002). "Globalization and the future of social protection". *Scottish Journal of Political Economy 49*, 116--127.

te Velde, T. W. (2010). "The global financial crisis and developing countries – phase 2 synthesis". *Overseas Development Institute Working Paper* (316).

Trani, J., P. Bakhshi, N. Bellanca, M. Biggeri, and F. Marchetta (2011). "Disabilities through the capability approach lens: Implications for public policies". *ALTER-European Journal of Disability Research 5*, 143--157.

Traub-Merz, R. (2012). "Income inequality and redistribution for growth". *in Redistribution for Growth? Income inequality and economic recovery, Friedrich Ebert Stifung*.

UNESCAP (2002). *Protecting Marginalized Groups During Economic Downturns*. UN-CESCAP.

Utting, P., S. Razavi, and R. Varghese Buchholz (2012). "Social and political dimensions of the global crisis: possible futures". *in "The Global Crisis and Transformative Social Change", Palgrave publishing*.

Van Ginneken, W. (2003). "Extending social security: Policies for developing countries". *ESS Paper, ILO* (13).

Velasco, A. (1997). "A model of endogenous fiscal deficits and delayed fiscal adjustment". *NBER Working Paper* (6336).

White, P. and S. Devereux (2011). "Social protection in botswana – a model for africa?". *"Frontiers of Social Protection Brief No 9", Regional Hunger and Vulnerability Programme*.

World Bank (2003). *Argentina Crisis and Poverty 2003. A Poverty Assessment*. The World Bank.

World Bank (2014). *World Development report 2014: Risk and opportunity*. The World Bank.

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

5 Appendix

Table 14: Pairwise correlation matrix: Insurance coverage

Variables	Pensions	Unemployment	Sickness
Pensions	1.0000		
	368		
Unemployment	0.5080***	1.0000	
	(0.0000)		
	347	526	
Sickness	0.6045***	0.7313***	1.0000
	(0.0000)	(0.0000)	
	334	483	542

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 15: Pairwise correlation matrix: checking multicolinearity

Variables	Welfare Coverage (PCA)	Minimum Wage
Welfare Coverage (PCA)	1.0000	
	325	
Minimum Wage	-0.7952***	1.0000
	(0.0000)	
	133	1660

t statistics in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 16: Regression table: Income

	(1) GDPpc	(2) GDPpc	(3) GDPpc	(4) GDPpc	(5) GDPpc
Consumption_PPP	2.57e-09***	-6.69e-10	-2.58e-10	8.07e-10	-3.89e-09**
	(4.19)	(-0.96)	(-0.45)	(0.45)	(-2.32)
Inflation	-0.0661	-10.16***	-7.722***	114.0*	146.3
	(-0.57)	(-6.22)	(-4.13)	(1.94)	(1.63)
Domestic_Credit_Private	42.99***	8.667	6.673	10.43*	-4.929
	(3.18)	(1.04)	(0.76)	(1.87)	(-0.68)
Investment	-50.72	-6.194	22.77	282.2***	247.4***
	(-1.37)	(-0.21)	(0.75)	(3.60)	(3.75)
Labor_participation	451.4*	25.95	22.23	-50.36	-117.4
	(1.83)	(0.61)	(0.43)	(-0.29)	(-1.12)
Unemployment	-425.3***	-275.0***	-266.9***	-138.4	-404.7**
	(-5.31)	(-4.89)	(-3.95)	(-1.16)	(-2.23)
Tax_revenue	247.5				
	(0.97)				
Health_exp_pc		3.376***	1.680**	2.516***	3.372***
		(5.02)	(2.27)	(4.72)	(7.69)
Publ_sp_Education_pc		0.0256*	0.0768***	0.00294	0.0317***
		(1.75)	(4.22)	(0.26)	(3.10)
min_wageILO			0.000926**	0.00517***	
			(2.20)	(3.80)	
PCA_welfare_coverage				1390.8	2790.9***
				(1.65)	(3.78)
_cons	-15634.4	11381.4***	6989.8**	22213.3*	28273.7***
	(-0.81)	(3.91)	(2.22)	(1.98)	(3.56)
Number of obs	1690	1457	961	108	191
Number of groups	137	144	111	11	19
R^2 within	0.230	0.616	0.698	0.926	0.927
R^2 between	0.178	0.672	0.883	0.904	0.738
R^2 overall	0.218	0.754	0.904	0.800	0.775

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 17: Regression table: Income Growth

	(1) GDPgrowth	(2) GDPgrowth	(3) GDPgrowth	(4) GDPgrowth	(5) GDPgrowth
GDPpcLag	-0.0000358	-0.000385***	-0.000297***	-0.000655***	-0.000405***
	(-0.42)	(-4.62)	(-2.78)	(-5.44)	(-7.65)
Consumption_pc_growth	0.191***	0.260***	0.355***	0.447***	0.527***
	(3.31)	(6.51)	(5.42)	(9.58)	(9.27)
PopulatioNumber of groupsrowth	0.577***	0.413	0.420	0.639	0.107
	(3.18)	(1.47)	(1.32)	(1.65)	(0.37)
Inflation	-0.000768**	-0.0299***	-0.0265***	0.132	0.196*
	(-2.60)	(-2.79)	(-2.80)	(1.36)	(2.09)
Domestic_Credit_Private	-0.0190**	-0.0194**	-0.0413***	-0.000348	-0.00742**
	(-2.01)	(-2.36)	(-4.60)	(-0.07)	(-2.72)
Investment_growth	0.0101***	0.0527***	0.0440*	0.128***	0.111***
	(3.72)	(3.38)	(1.81)	(6.38)	(5.74)
Labor_participation	-0.0635	0.00825	0.115	0.0608	0.0617
	(-1.03)	(0.13)	(1.36)	(0.39)	(0.90)
Unemployment	-0.163**	-0.226**	-0.161	-0.230***	-0.212***
	(-2.09)	(-2.24)	(-1.30)	(-3.62)	(-4.69)
Health_exp_pc		0.000648**	0.000880**	0.000944	0.000799**
		(2.19)	(2.53)	(1.74)	(2.71)
Publ_sp_Education_pc		0.0000245***	0.0000199*	0.0000166	0.0000126
		(3.36)	(1.82)	(1.45)	(1.51)
min_wageILO			0.00000189**	0.00000335	
			(2.37)	(1.79)	
PCA_welfare_coverage				0.734***	0.588**
				(3.78)	(2.57)
_cons	10.15**	8.911*	0.333	14.33	8.554
	(2.51)	(1.80)	(0.05)	(1.40)	(1.70)
Number of obs	2442	1281	892	108	191
Number of groups	132	126	103	11	19
R² within	0.216	0.382	0.467	0.904	0.845
R² between	0.317	0.298	0.196	0.0496	0.0729
R² overall	0.225	0.251	0.288	0.408	0.509

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 18: Regression table: Consumption

	(1) Consumption	(2) Consumption	(3) Consumption	(4) Consumption	(5) Consumption
GDPpc	0.314***	0.210***	0.303***	0.181***	0.0207
	(56.49)	(21.22)	(38.08)	(5.95)	(1.09)
Inflation	-0.0183	-1.467**	-0.944**	44.30*	51.05***
	(-0.79)	(-2.44)	(-2.38)	(1.77)	(2.74)
Unemployment	-11.41**	-7.107	-7.041**	-110.4***	-186.7***
	(-2.32)	(-1.23)	(-2.22)	(-4.94)	(-9.91)
Tax_revenue	10.22***	7.033**			
	(3.39)	(2.18)			
Health_exp_pc		2.988***	2.371***	2.972***	3.457***
		(38.36)	(40.60)	(18.25)	(31.01)
Publ_sp_Education_pc		-0.00877***	-0.00710***	-0.00352	-0.0148***
		(-6.33)	(-4.95)	(-1.04)	(-7.65)
min_wageILO			0.000717***	0.00154***	
			(9.97)	(2.97)	
PCA_welfare_coverage				115.5	392.1***
				(1.28)	(4.37)
_cons	812.1***	1122.1***	529.3***	3157.3***	8875.8***
	(9.57)	(11.23)	(14.57)	(3.65)	(19.79)
Number of obs	1734	1029	964	111	199
Number of groups	136	116	98	11	17
Wald χ^2	3423.66	41396.97	37778.35	2079.48	2096.99

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 19: Regression table: Consumption growth

	(1) Consumption G	(2) Consumption G	(3) Consumption G	(4) Consumption G	(5) Consumption G
lag_Consumption_pc	-0.0000238***	-0.0000630*	0.0000364	-0.0000231	-0.000106
	(-2.62)	(-1.74)	(0.69)	(-0.23)	(-1.17)
GDPgrowth	0.706***	0.802***	0.822***	0.879***	0.692***
	(42.15)	(42.02)	(41.35)	(16.98)	(17.24)
Inflation	0.000106	-0.00220	-0.00472	-0.134*	-0.154**
	(0.45)	(-0.44)	(-1.07)	(-1.73)	(-2.53)
Unemployment	-0.0236*	0.0285*	0.0244	-0.0189	-0.000143
	(-1.87)	(1.94)	(1.64)	(-0.39)	(-0.00)
Tax_revenue	0.0249***				
	(2.95)				
Health_exp_pc		0.000156	-0.000179	0.0000211	0.000276
		(0.97)	(-0.84)	(0.05)	(0.75)
Publ_sp_Education_pc		0.00000324***	0.00000329	-0.00000399	0.00000359*
		(2.90)	(1.18)	(-0.64)	(1.69)
min_wageILO			0.000000448	-0.00000228	
			(1.10)	(-1.34)	
PCA_welfare_coverage				-0.109	-0.0656
				(-0.54)	(-0.58)
_cons	-0.0886	-0.445*	-0.997***	1.090	0.518
	(-0.40)	(-1.93)	(-4.06)	(1.01)	(0.59)
Number of obs	1524	1300	891	111	199
Number of groups	118	121	91	11	17
Wald χ^2	2276.63	2099.47	1901.97	388.43	381.84

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 20: Regression table: Income CEPAL

	(1) GDPpc	(2) GDPpc	(3) GDPpc	(4) 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)
Labor_participation	250.7**	131.4**	132.2**	243.2***
	(2.91)	(2.71)	(2.82)	(3.04)
Unemployment	-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

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 21: Regression table: Incoome Growth CEPAL

	(1) GDPgrowth	(2) GDPgrowth	(3) GDPgrowth	(4) GDPgrowth
GDPpcLag	-0.000420***	-0.00113***	-0.00111***	-0.000407***
	(-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)
PopulatioNumber of groupsrowth	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)
Unemployment	-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	0.440	0.408
R^2 between	0.273	0.261	0.282	0.296
R^2 overall	0.0306	0.0170	0.0165	0.0304

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 22: Regression table: Consumption CEPAL

	(1) Consumption_pc	(2) Consumption_pc	(3) Consumption_pc	(4) Consumption_pc
GDPpc	0.400***	0.426***	0.415***	0.473***
	(14.86)	(13.74)	(13.32)	(20.76)
Inflation	-0.514***	-0.377**	-0.361**	-0.428***
	(-2.86)	(-2.52)	(-2.36)	(-2.63)
Unemployment	-44.59***	-30.89***	-29.04***	-29.77***
	(-3.05)	(-2.89)	(-2.70)	(-2.95)
Tax_revenue	25.10			
	(1.47)			
education_CEPAL		1.800*	1.667	
		(1.76)	(1.59)	
health_CEPAL		-0.283	0.817	
		(-0.19)	(0.57)	
pensions_CEPAL		0.0738	0.188	
		(0.13)	(0.32)	
dispersion_at_geo			-159.0	-96.09
			(-0.55)	(-0.37)
_cons	589.3*	255.6	304.9	22.71
	(1.85)	(1.23)	(1.37)	(0.10)
Number of obs	154	284	284	288
Number of groups	15	16	16	16
Wald χ^2	266.09	478.82	501.35	471.08

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 23: Regression table: Consumption Growth CEPAL

	(1) Consumption G	(2) Consumption G	(3) Consumption G	(4) Consumption G
lag_Consumption_pc	0.000263**	-0.000116	-0.0000290	0.000285***
	(2.33)	(-0.66)	(-0.16)	(2.98)
GDPgrowth	0.933***	0.808***	0.811***	0.833***
	(17.58)	(17.53)	(17.60)	(20.66)
Inflation	0.00109	-0.000376	-0.000272	0.000795
	(1.55)	(-0.37)	(-0.27)	(1.10)
Unemployment	-0.0792*	-0.0102	0.00135	0.0456
	(-1.70)	(-0.19)	(0.02)	(1.26)
Tax_revenue	0.0889			
	(1.10)			
education_CEPAL		0.00697	0.00590	
		(1.03)	(0.87)	
health_CEPAL		-0.00263	-0.00222	
		(-0.32)	(-0.27)	
pensions_CEPAL		0.00236	0.00197	
		(1.20)	(0.99)	
dispersion_at_geo			3.031*	2.124*
			(1.79)	(1.88)
_cons	-3.028***	-1.368**	-1.999***	-2.752***
	(-2.64)	(-2.05)	(-2.63)	(-5.51)
Number of obs	150	269	269	273
Number of groups	14	15	15	15
Wald χ^2	344.68	315.36	318.91	436.64

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 24: Regression table: Consumption growth GAP

	(1) ConsoGap	(2) ConsoGap	(3) ConsoGap
Consumption_pc	-0.00596***	-0.00795***	-0.00825***
	(-7.06)	(-7.32)	(-7.84)
GDPpc	0.000568*	0.000698**	0.00170*
	(1.79)	(2.59)	(1.80)
Inflation	0.158	0.0651	0.132
	(1.12)	(0.24)	(0.41)
Unemployment	0.202	0.690*	0.720*
	(0.76)	(1.78)	(1.86)
Tax_revenue	-0.230		
	(-0.83)		
Export_pGDP	0.311***	0.295**	0.261*
	(3.15)	(2.31)	(1.89)
Total_reserves	-3.46e-12	1.46e-12	1.29e-13
	(-0.44)	(0.16)	(0.01)
M_capitalization_pGDP	0.00721	0.00677	0.0105
	(0.42)	(0.33)	(0.44)
Health_exp_pc		0.0115**	0.0107
		(2.22)	(1.49)
Publ_sp_Education_pc		-0.00000192	-0.00000863
		(-0.07)	(-0.24)
min_wageILO			-0.0000106
			(-1.18)
_cons	45.01***	33.98***	19.74
	(5.58)	(4.41)	(1.37)
Number of obs	288	195	146
Number of groups	79	76	64
R^2 within	0.534	0.607	0.571
R^2 between	0.0160	0.00126	0.0000960
R^2 overall	0.00307	0.00111	0.00810

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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