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Biometric technology and beneficiary rights in social protection programmes

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Abstract Over the past decade, the use of biometric technology in the identification and authentication of beneficiaries of social protection programmes has increased. However, there has been little debate among governments, donors and civil society organizations on the potential implications of this technology in relation to the inclusion of the most vulnerable sectors of the population, as well as for the protection of privacy and personal data. This article aims to fill that gap. First, the article reviews how biometric technology is used in various social protection programmes around the world. Then, it examines the potential risks and challenges of deploying biometric technology in social protection programmes. Finally, it assesses the requirements necessary to ensure that biometric technology is implemented in compliance with international law standards. The focus is on developing countries, where the use of biometric technology in identification systems has increased considerably in recent years. Among the key conclusions of the article is that the adoption of biometric technology, often encouraged by donors, needs to be preceded by democratic debate where all alternatives are discussed. The adoption of this technology should be accompanied by a context-specific assessment of risks, and the adoption of an appropriate legal and institutional framework to protect rights and ensure that the most vulnerable and disadvantaged members of the population are not excluded.

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This article builds on previous work undertaken with the Social Protection Department of the International Labour Office published as Sepúlveda (2018).

Keywords social protection; social assistance, data protection, biometric identification, beneficiary, international

Introduction

There is a growing consensus on the need to establish a "systems approach" to social protection. There are many advantages to this, such as better coordination, efficiency, harmonization, non-discrimination and accountability (UNICEF and World Bank, 2013). Implementing a systemic vision of social protection requires innovation in terms of the operational approaches used, including the harmonization of beneficiaries' identification systems and registries.

Registration and eligibility processes require documenting a potential beneficiary's identity. Various identification and registration systems have been implemented in social protection programmes around the world: from country programmes that create their own identity card to identify beneficiaries to others that use national ID numbers as the unique identifier for social protection programmes (e.g. Chile, Costa Rica and Moldova).

Increasingly, developing countries are using biometric identification systems in social protection programmes, which provide the technology for confident identification. Identifying beneficiaries of social protection programmes through biometric systems such as fingerprints and iris and facial recognition are technological advancements that have enormous potential.

Nonetheless, depending on the specific country situation, the use of biometric identifiers in social protection programmes also poses several risks related to the exclusion of the most vulnerable sectors of the population, personal security, and the protection of privacy and personal data.

This article explores the human rights implications of the use of biometric systems in social protection programmes to draw attention to some minimum guarantees and safeguards that should be put in place to ensure that this technology improves the expansion and implementation of social protection programmes without violating rights.

The underpinning of this article is that binding human rights obligations relate not only to the final *outcome* of social protection programmes, but also to the *process* through which such programmes are designed and implemented (Sepúlveda and Nyst, 2012). Such legal obligations included in domestic laws and international treaties narrow the discretion of States and other entities to formulate and implement social protection strategies and interventions. In other words, the human rights obligations assumed by States through international treaties, national constitutions or domestic laws limit the discretion of States in

the design, implementation and monitoring of social protection guarantees. Policy-makers are compelled to prioritize mechanisms and processes that provide the higher level of protection against measures that undermine fundamental human rights. This is also the case as regards the processes that are used to identify beneficiaries of social protection programmes as well as to the collection, processing and storage of the relevant data.

Compliance with human rights obligations is also relevant as regards the implementation of the International Labour Organization (ILO) Recommendation concerning National Floors of Social Protection, 2012 (No. 202) (hereafter, ILO R202), which lays down the guiding principles that should be observed in creating national social protection floors.[1] In its Preamble, ILO R202 reaffirms that "the right to social security is a human right" and explicitly reaffirms the importance of human rights instruments. ILO R202 considers that human rights standards related to the protection of privacy and personal data are also critical principles in the implementation of national social protection floors. For example, it explicitly notes that in establishing social protection floors, States should show "respect for the rights and dignity of people covered by the social security guarantees" (para. 3(f)). Additionally, ILO R202 notes that States "should establish a legal framework to secure and protect private individual information contained in their social security data systems" (para. 23).

Identification of beneficiaries: The various contexts

Improving the identification of beneficiaries in social protection programmes is essential for ensuring coverage and the well-functioning of the programme. Deciding on the identification and registration process for a given social protection programme requires careful consideration of the various options and balancing and, sometimes, trading off of various competing objectives.

Registration and eligibility processes require documenting a potential beneficiary's identity. To this end, in most countries it would be possible to use some form of official identification (e.g. birth certificate, driver's license, electoral card, ration card, etc.). However, these are often unsatisfactory, without a unique identifier and reaching only a limited portion of the population (Gelb and Decker, 2011). Moreover, a unique ID number for beneficiaries is needed to link registry and beneficiaries with other systems and programmes.

In many countries there are also voluntary or mandatory citizen identification cards which have a unique identifier. For example, there are mandatory nationwide identification systems in Argentina, Chile, Colombia, Malaysia,

1. See full text of ILO R202.

Pakistan and Peru. Commonly, under these systems, individuals are assigned an ID number, which is used for a broad range of identification purposes.

The "accessibility", "robustness" and "integration" of national identification systems vary enormously among developing countries and so does the potential of using official identification documents or national identity cards for identifying social protection beneficiaries. In countries where there is a solid, well-set up, national identity card (with unique ID number), it is common to find that social protection programmes use the national ID as the basis for the identification of beneficiaries. In other words, individuals are required to provide their national ID ("foundational IDs") (Gelb and Clark, 2013) in order to apply to a social protection programme and become a programme recipient.[2] This is the case, for example, in Chile, Costa Rica, Moldova, Pakistan and Peru. This approach has several advantages, such as reducing the duplication of information-gathering efforts across programmes as well as facilitating data cross-checks and information accuracy.

Even in cases when there is a wide coverage of national IDs, achieving the main objectives of social protection programmes depends on the degree to which potential beneficiaries have access to national ID systems (ISPA, 2016). The most vulnerable and disadvantage individuals, a typical target group of social protection programmes, are often those without a national ID as they face several obstacles in accessing them including transaction costs, transportation and opportunity costs and lack of information. Thus, if beneficiaries of social protection programmes are required to have a national ID, comprehensive measures must be taken including working closely with national registry institutions to ensure that the most excluded populations are able to enrol.

When a social protection programme cannot rely on the existence of widely accessible national IDs, programme administrations must devise different options to ensure identification of beneficiaries or potential beneficiaries (see Table 1). In such cases, programmes' beneficiaries may be required to present any form of official ID such as a voter's card, birth certificate or baptism certificate. In this case, however, the challenge remains to ensure that the most vulnerable individuals can enrol as they are the most likely not to have such documents. In the absence of access to official documentation, members of the community (e.g. Village Councils) might be asked to verify the identity and eligibility of individual applicants based on reference to local or national historical events or

2. In some other countries where there is no national ID card, social protection beneficiaries are assigned a unique social identification number that can be used to link information systems. This is the case, for example, in Brazil where a unique data base (*Cadastro Único)* has been established to unify the registries and information systems of various pre-existing programmes.

Table 1. *Identification of beneficiaries or potential beneficiaries of social protection programmes*

For	Purpose	Method
Identification of potential beneficiaries	To be registered in the list of eligible beneficiaries	Identification by community members (e.g. Village Councils) Any other national document such as birth certificate, driver's license, etc. National IDs
Authentication or verification of identity at the point of payment or service	To verify that the person receiving the payment or the service is in fact registered in the programme	Visual authentication at point of payment, by community member or photograph Barcode cards or magnetic strips cards produced when identified PIN Password Smart card or chip-based card produced when identified Fingerprint or iris scan read by a reader (de-duplicated with data collected when identified or from a national registry)
Verification of compliance with conditionalities	To monitor compliance with conditionalities	Through a certificate provided by a third person (e.g. health care providers and teachers) Personally verify compliance by submitting fingerprints or iris scan (e.g. when attending schools or health centres)

Source: Author's elaboration, adapted from Harvey et al. (2010).

peers. This type of identification system presents several obvious disadvantages in particular when programmes have extensive coverage.

Another option is to establish an identification system to serve a particular programme ("functional IDs").[3] The sophistication of the system varies according to several factors, such as coverage, programme duration, payment frequency, and type of transfer involved. Establishing programme specific ID cards might entail high set-up costs but will provide ongoing benefits in terms of beneficiary inclusion and programme administration (World Bank, 2012). For example, in India, the health insurance programme, *Rashtriya Swasthya Bima Yojana* (RSBY), has a special biometric ID to identify beneficiaries. The specific identification cards in this programme are critical to reach the most vulnerable and disadvantaged who due to a variety of barriers are prevented from accessing other legal documents or national IDs (Fan, 2013). In Nicaragua, at the onset of the implementation of the conditional cash transfer programme, *Red de Protección Social* (RPS), beneficiaries were required to submit their national ID. Despite a promising start, when the programme looked to expand to more remote areas, it

3. This is the name given by Gelb and Clark (2013).

was quickly discovered that potential beneficiaries were unlikely to hold national IDs. To address this issue and to prevent exclusion errors, the RPS began issuing temporary programme-specific IDs containing a barcode to identify beneficiaries. Additionally, RPS officials worked with local authorities and lawyers to help beneficiaries enrol in the civil registry so they could receive permanent national ID cards at a subsidized price (World Bank, 2012).

Biometric identification in social protection programmes

In recent years, there has been a trend in developing countries to use biometric identification systems to identify the beneficiaries of the programmes (*who are you?)* as well as to authenticate their identity (*are you who you claim to be?)* at the delivery of payments and services. Even in countries where access to social protection programmes is based on a national ID, on an increasing basis national ID systems are including biometric identifiers – such as fingerprints and iris and facial recognition (e.g. Chile and Peru) – as a way of establishing a more reliable link between the holder and the ID card, and to protect against fraudulent use.

There are several advantages to using a biometric system in social protection programmes, including reducing the opportunity for fraud and error, bringing accuracy and reliability to the identification process, and creating an auditable trail of payment. Biometric identification systems have the potential to enable programme administrators and eventually civil society to better monitor and ensure oversight of programmes. Additionally, it sometimes allows for greater speed and flexibility in where and when payments can be made, which translate into greater benefits for the users. While biometric identification systems in social protection programmes are not harmful by themselves, and could bring several positive outcomes, it is important to acknowledge that the use of biometric information systems has the potential to negatively impact on people's rights and security.

Often, a large amount of personal data is linked to a biometric ID and stored in a centralized data base. This information may include name, date and place of birth, gender, eye colour, height, current address, and photograph. Moreover, by their nature, social protection programmes require processing significant data amounts, including often-sensitive information such as household assets, health status and physical or intellectual disabilities. The potential for the abuse and misuse of these data should not be underestimated.

Given the complexity of social protection reform and the need for it to be based on the best information available, the implementation of biometric systems should be examined by considering the risks and challenges in the enjoyment of rights of the population in each particular context. Economic and technical feasibility assessments must be accompanied by impact assessment in term of rights and

dignity. The latter could be critical to ensure that the system will be used by the potential beneficiaries and to minimize negative impacts.

Governments, international donors and the technical personnel that design and operate biometric systems in social protection programmes should be aware of the potential negative impact that their use may have on the rights and dignity of the beneficiaries. Acknowledging the risks would enable policy-makers to put in place mechanisms to prevent, monitor and redress negative impacts.

How biometric technology is used in social protection programmes

While there are various ways in which biometric identification systems, mainly fingerprinting and iris and facial recognition, are used in social protection programmes, in most cases they are involved in identification and payment systems (or a combination of both), and sometimes the monitoring of conditionalities (co-responsibilities).

In general, it involves all or a combination of the following steps:

Collection of biometric data. The first part is to capture the biometric data as part of the enrolment process. Individuals are required to submit to a digital recording of a biometric (e.g. fingerprint, iris or facial scan) identifier. Usually, once such information is captured, each recipient receives a smart card.

Storage. Once the biometric has been collected, it is stored in a centralized data base and/or in a smart card which contains a chip that holds the biometric information previously taken from the holder. In some cases, such as in South Africa, in addition to the biometric information, the smart card holds information on the individual's social grant, including the payment schedule, amount, and date of last payment received. Having this information on the smart card allows the system to operate offline (Gelb and Decker, 2011).

De-duplication and authentication. When the information has been collected and stored, it could be compared with other templates to ensure it is unique (de-duplication), and it can also be used for authentication (verification). The biometric information establishes the uniqueness of every individual. For example, a beneficiary of a social protection programme may authenticate his or her fingerprint against a template stored on a smart card, on a data base or in a point-of-service (POS). Both de-duplication and authentication require comparisons between an enrolled biometric and a stored template.

To verify identity for payment or service. Individuals registered in the programme identify themselves with their fingerprints or iris to receive the payment or service.

Often, at the time when beneficiaries go to a pay-point, they are required to present a card as well as fingerprint for biometric identification in order to receive the cash.

To record and verify compliance with conditionalities. Biometric technology has also been used to verify compliance with the conditionalities associated with some cash transfers programmes. In such cases, a stand-alone fingerprint biometric machine is installed in schools and/or medical centres for recording children's school attendance and mothers' visits to health clinics.

Examples of biometric systems used in social protection programmes

The South African Social Security Agency (SASSA) has a large biometric data base of social grant recipients who each receive a biometric smart card – *SASSA Debit* MasterCards for which beneficiaries' fingerprints, photographs and even voices are captured (Sepúlveda, 2018). In March 2018, there were more than 17.5 million grant beneficiaries (SASSA, 2018). In Kenya, beneficiaries of the *Hunger Safety Net Programme* (HSNP) receive a smart card with fingerprint information and an identifying photograph. In Botswana, food-grant recipients receive a smart card called *SmartSwitch* that contains beneficiaries' personal details and fingerprints. In Namibia, social protection beneficiaries receive a smart card called the *Epupa* card. Beneficiaries insert the *Epupa* card and present fingerprints for biometric identification to receive their cash (Sepúlveda, 2018).

In Mexico, the healthcare initiative to reach the population's poorest segments, *Seguro Popular*, issues a biometric card to each beneficiary family. The system captures all fingerprints of each member of the family older than age 10. In 2016, 55.6 million people benefited from *Seguro Popular* (CONEVAL, 2018). Similarly, in Gabon, a health insurance for those living in poverty – the *Gabonais Economiquement Faibles* – also uses biometric ID cards and served 417,118 people as of 2011 (WHO, 2013). In both cases, fingerprints confirm the identity of the biometric ID card's bearer before he or she can access governmental services or healthcare.

Biometric technology has also been used to monitor compliance with conditionalities (co-responsibilities) by beneficiaries in some conditional cash transfer programme (CCTs). For example, the CCT programme *Juntos* in Peru has used a fingerprint biometric system to check children's school attendance. To this end, schools have a digital fingerprint reader, and children are required to submit their fingerprint as proof of attendance (Government of Peru, 2011).

Risks and challenges in the use of biometric technology in social protection

There should be no question about the merits of improving identification in social protection programmes. However, the use of biometric technology in social protection programmes presents some risks that need to be addressed.

This section classifies the risks to human rights norms and standards in four broad categories:[4] (i) inaccuracy of data; (ii) identity theft; (iii) exclusion of the most vulnerable people; (iv) security risks and the misuse of data.

Policy-makers, donors and the general public should be aware of the risks to be able to better assess and evaluate the various options for identification in a social protection programme.

Inaccuracy of data

Despite the rapid advancement in biometric technology, its use is not exempt from failures. First, the biometric data contained on a smart card and on a national data base is only as reliable as the original scanning – whether manual or automated – and only as secure as the trustworthiness of the officials or private contractors charged with this task (Breckenridge, 2005).

Second, there are several failures that may occur when individuals enrol their biometric data and during the process of matching an individual's biometric against a template stores in a data base (ISPA, 2016):

- ***Fail to enrol:*** The hardware cannot capture an imagine of high quality;
- ***False positive:*** The system erroneously finds a match between the captured biometric and the stored template; and
- ***False negative:*** The system erroneously finds no match between the captured biometric and the stored template.

In Kenya, for example, difficulties with reading around 5 per cent of all fingerprints have been reported in relation to the HSNP programme smart card payment system, due to technical difficulties sometimes related to very old or worn-down finger pads (Harvey et al., 2010). Older people's fingerprints were often illegible in Namibia and led to proxies receiving the cash on their behalf, with the consequent risks this entailed (ILO and Oxford Policy Management, 2014). Since its establishment, the Aadhaar programme in India has been criticized for not adequately reaching the nation's most vulnerable groups (Ramanathan, 2014) and violating the right to privacy.[5]

4. Some of these risks are not specific to the use of biometric technology as they could arise with low-tech identity solutions. Still, the use of biometric technology might exacerbate them.

5. See Supreme Court of India, *Justice K. S. Puttaswamy (Retd.) and Anr.* v. *Union of India and Ors*, Judgement of 24 August 2017.

Third, there may be technical problems with the specific card, such as microchips in smart cards not working, or fingerprint scanners not being able to verify for a number of possible reasons. While the precise consequences of these errors are not the same, from a rights perspective, emphasis should be placed on ensuring that people are not prevented from accessing social protection programmes or receiving the benefits that they are entitled to. In this sense, if a trade-off between the false acceptance rate and the false rejection rate needs to be made, from a rights perspective the latter should be minimized. The enrolment errors, or false negative errors, should never lead to the automatic exclusion of a person from benefiting from the programme; instead, errors should be properly addressed by programme staff without placing a major burden on the beneficiary. For example, a mismatch between the fingerprints of the holder of a card and the biometric in that document should draw the competent authorities' attention to the person concerned and an alternative check of that person's identity should be sought without preventing the person from receiving the payment of benefits.[6]

Identity theft

Considering that biometrics can link an individual to an identifier in a way that other methods cannot do, the use of biometrics will make some forms of identity theft harder. Nonetheless, it would be a mistake to assume that they provide full guarantee against or prevent identity theft.

A major disadvantage of biometric technology is that once the identifier indicators are compromised, they cannot be reissued like signatures or passwords. Fingerprints or irises cannot be reissued when imposters gain access to this data. Ultimately, real beneficiaries are hard pressed to re-claim their identities and access the money or essential services upon which subsistence depends. While incentives for identity theft to defraud social protection programmes may be limited, acquiring new identities can be of vast interest to those who would pose as others when arrested or when they seek to obtain medical care, medicines, credit, goods and services.

When chip-based cards with biometric information are stolen, the failure to present the card should not lead to the denial of the payment or service. To prevent excluding those most in need, a system should be in place to ensure that people whose cards have been stolen (or lost) can still receive services while waiting for a replacement. Moreover, the costs for the replacement of cards

6. This is in fact the standard established by the European Court of Justice regarding biometric passports. See: *Michael Schwarz* v. *Stadt Bochum*, Case C-291/12, Judgement of the European Court of Justice, 17 October 2013.

should not be punitive. A card replacement should be accessible for the most vulnerable, even in the event of negligence. If such systems are not in place, there would be additional exclusionary factors.

Exclusion of the most vulnerable people

If the objective of a social protection programme is to reach the most disadvantaged and vulnerable, any administrative requirements for identification, registration and payment methods should take into account their special needs. Lack of adaptation to their needs could represent the difference between inclusion in and exclusion from social protection programmes.

There are several factors that might prevent individuals, in particular the most vulnerable and marginalized, from benefitting from a social protection programme when biometric identification systems have been requested (see Box 1).

Security risks

The misuse of data. Any identity registry might attract abuses, in particular when it contains highly sensitive information. History reveals several examples of abuses of registries such as the use of the Dutch population registers by the Nazi regime to persecute Jewish families (Moore, 1997) and, more recently, the role of identity cards in the Rwanda genocide (Longman, 2001). Even during peacetime, identity registration has been used by governing authorities to control

Box 1. Potential exclusionary factors

- Lack awareness of the enrolment process or information about the importance of enrolment;
- Limited infrastructure or presence of the enrolment office or station;
- Not being reached by the system: limited physical mobility, safety concerns and inadequate transport and infrastructure facilities that prevent the person from reaching the place where she or he has to provide biometric information;
- Inability to pay for the identification card or any other administrative requirement;
- Physical inability to provide reliable biometric information;
- Cultural barriers, mistrust and stigma that prevent enrolment;
- Gender social norms and patriarchal attitudes that exclude women.

Source: Author's elaboration.

the movement and liberty of sections of their populations, for example in South African during apartheid and in Tsarist Russia and the former Soviet Union (Setel et al., 2007). When personal information is collected and storage involves electronic tools (i.e. a data base and not just a written record), these risks are increased.

The collection, storage and processing of personal data raise innumerable risks of violations of rights. On the one hand, there are risks related to the protection of personal data, such as loss or unauthorized access, destruction, modification or disclosure of data. On the other hand, there is the potential of misuse of the information by governments or the private sector for systemic surveillance of individuals, interception, data collection and commercial purposes. Moreover, any information resource maintained in computers connected to the Internet may be targeted by Internet espionage, including by private companies.

Currently, States have a greater capability to conduct simultaneous, invasive, targeted and broad-scale surveillance than even before, and biometric technology greatly facilitates this type of intrusion (OHCHR, 2014). Biometric information can provide identifiers across systems and even across borders, tracking individuals in all contexts, allowing for the reuse of information and making the sharing, linking and cross-checking of information faster (Hosein and Nyst, 2013).

The rapid manner in which technology develops also raises concerns about the particular risks of some biometric technologies, and the retention of biometric data. For example, the use of digital photography in some programmes poses high risks as facial recognition technology is developing rapidly allowing for remote surveillance even without the consent of the subject. Rapid technological developments are often not matched by legal regulations and ethical frameworks, which might come too late. For example, advancement in facial-recognition technology may allow identifying protesters through the digital photographs they have provided to a social protection programme. Malta, for example, is considering using closed-circuit television (CCTV) cameras with facial recognition software to curb anti-social behaviour (Mayhew, 2018). The use of this technology is particularly worrisome in the context of the ability of governments to curtail rights such as freedom of assembly and expression through the identification of protesters.

Due to the development of new technologies, collected biometric information can be re-used for a variety of purposes unforeseeable at the time of their collection. Thus, the development of strict retention policies (i.e. for how long biometric information should be retained) are critically important and should be precisely defined in advance.

In addition, an important dimension of biometric IDs is that the information can be linked to different data bases, so many programmes and actors may have access to the information. This characteristic could be an advantage. For

example, the linkages between a data base regarding social assistance benefits with a data base on tax payment could assist in preventing fraud. However, there would be human rights concerns depending on which data bases are linked and whether appropriate mechanisms and protocols to protect privacy and personal data are in place.

By their nature, data bases that hold information regarding beneficiaries of social protection programmes contain highly sensitive personal information, and thus should follow strict confidentiality standards. Disclosure of the information held in this type of data base can prompt stigmatization and other forms of discrimination as well as expose beneficiaries to personal security risks.

A critical issue in the design of an information system to be used in social protection programmes is the type of data which would be included. Some risks to personal data could be avoided by not including certain information in the system or by establishing strict rules to limit data retention and to set clearly defined accountability lines. The risks increase if certain types of information such as religious affiliations and racial, ethnic or linguistic origin is also collected. The data associated with each of these characteristics may be used for political purposes or to limit or remove rights. For example, political manipulation can occur by targeting disproportionately for receipt of transfers a specific influential ethnic group, while systematically excluding ethnic groups that oppose the government (Devereux and Vincent, 2010).

Potential abuses by the private sector. When biometric technology is used in social protection, several risks may stem from the involvement of the private sector. The biometric industry is booming, with annual growth rates higher in developing countries than in developed ones (Gelb and Clark, 2013). While developed countries use biometrics for forensics and security, very few use them for identity systems or public service delivery. In contrast, developing countries (low- and middle-income countries) are increasingly using the technology for civil registries, voter rolls, health records and social protection (Gelb and Clark, 2013). The differences are not only in terms of the purposes for which the technology is used. In developed countries, biometric technology is used within well-developed legal and institutional frameworks to protect rights, personal data and privacy and ensure access to information. These frameworks are often weak or non-existent in low- and middle-income countries.

The involvement of private actors might create tensions in other critical issues such as who owns the information, who is responsible for problems and who is accountable for risks and abuses. Seeking to secure profits from government contracts, private companies might have little interest or ability to provide the best possible service or to accommodate demands for privacy, security and data protection.

Data-sharing between data bases. A critical issue with using biometric technology in social protection systems is the irrevocable link between biometric traits and the creation of an individual's ongoing "dossier". Biometric data stored in information systems can be easily linked within a social protection system or across systems – even with those not related to social protection, such as law enforcement or commercial marketing systems. The aggregation of individual information records in various information systems – and the potential for linking those records through a common identifier – raises several risks associated with data abuses, especially in countries without well-developed legal and institutional frameworks to protect rights, personal data and privacy.

Recent years have seen increased interest in coordinating and harmonizing social protection programmes. Integrating social protection data leads to a more effective management of programmes. However, sharing information included in social protection data bases across various public or private data bases not strictly related to social protection is risky and should be regulated by law and subject to oversight. In principle, information collected for social protection purposes should only be used for social protection purposes. While information integration beyond the social protection sector might seem an appropriate way to increase coordination and enhance efficiency in the use of resources, it may imply data-privacy as well as data-security breaches that must be assessed from the outset.

At the European level, for example, to protect privacy and personal data, most countries do not allow for the integration of different data bases. In contrast, in some developing countries where identification efforts have been recently undertaken, donors and government authorities often encourage (or actively support) the widest possible integration of national identity data bases, not only among public organs but also with private entities.

Human rights and data protection concerns will emerge depending on which data bases are linked, who accesses data and whether appropriate mechanisms and protocols to protect privacy and personal data are in place. Linking information about social protection beneficiaries to a tax payment data base might be justified by an objective of improved targeting and fraud elimination. However, integrating social protection data bases with law enforcement registries (e.g. national and international policing agencies) – even when legally authorized and justified on national security and counter-terrorism grounds – is likely to be arbitrary (i.e. the resultant limitation of rights may be disproportionate to programme goals, unnecessary in democratic societies, or simply discriminatory).

Global terrorism threats and increased migration exert pressure on national authorities to share citizens' personal information. If such pressure leads to integrating social protection and law enforcement system data bases – as some donors propose (Honorati, Gentilini and Yemtsov, 2015) – beneficiaries' privacy

and data protection rights could be severely curtailed. Moreover, using social protection information for counter-terrorism measures or restrictions in population movements could lead to distrust of the system and deter eligible participants from applying to much-needed programmes.

How to use biometric technology in compliance with international standards?

Undoubtedly, there are considerable advantages in the use of biometric technology and in the harmonization of data bases to improve the efficient delivery of social protection programmes. While the technology in itself should not be discredited, it would be extremely concerning if the implementation of such technology is undertaken without due safeguards to prevent, protect and remedy violations of rights.

States must put in place several safeguards to ensure that the use of biometric technology in social protection schemes is in compliance with national and international standards regarding human rights and the protection of privacy and personal data.

Undertaking a comprehensive impact assessment

While the implementation or a reform of an identification system should always be carefully assessed, attention should be paid when the objective is the implementation of a biometric system. Biometric technology is only one approach to strengthening identification. Depending on context, this technology might have a particular exclusionary impact and enable the collection and use of personal information with direct consequences to individuals' rights and dignity. Thus, at the very least, such consequences should be evaluated and weighed in advance. This requires, for example, that policy-makers, donors or implementing agencies should seek an independent assessment that looks not only at the cost of implementing a biometric system but also includes a legal evaluation of privacy and data protection as well as other critical impacts, such as the potential for exclusion and stigma.

The feasibility of using biometric technology depends on the circumstances of each country. An assessment should address a variety of factors, such as the level of access to birth registration and documentation by the population, territorial coverage of national registries, and political will to enhance registration. The history of the country might also be pertinent. Any legacy of abuse of individual information can affect future uptake of registration efforts even after bureaucratic obstacles are removed (Setel et al., 2007).

Implementing a biometric system in social protection programmes without sufficient assessment of risks to rights or without adequate time and resources could defeat the purpose of the social protection system by excluding people that should benefit. Some people might be overlooked (e.g. manual workers or older persons without legible fingerprints), while others may be unable to enrol or prevented from enrolling (e.g. those living in geographically isolated places).

Ensuring that the system is inclusive

The use of biometric technology in social protection systems should be adapted to the needs of the programme's beneficiaries. Cost and other barriers should be minimized to ensure inclusion of those members who might experience greater difficulty in accessing or adapting to the use of such technologies, such as older persons and persons with disabilities. Moreover, specific safeguards should be implemented to ensure the respect of rights and fundamental freedoms and avoid stigmatization, fear or mistrust.

The assessment of the inclusiveness of a given biometric identification system implemented in a social protection programme should look beyond the specific programme. Inclusiveness in the programme requires a comprehensive set of measures aimed at ensuring access to legal documentation by the most disadvantaged and vulnerable people. National documents such as birth certificates or national IDs are often critical documents for accessing social protection programmes, therefore measures should be taken to bring national registries closer to the most excluded. This means, for example, that birth registration should be free, simple and available at the local level.

Inclusive social protection programmes are those that have enabled multiple avenues through which individuals can register, allowing prospective registrants to select the method that is easiest and cheapest for them. Some include mobile registrations units and/or door-to-door outreach as well as integrating registrations into other services such as in hospitals, reproductive health services, vaccination programmes, and local stores. The use of biometric technologies is not always available in such places.

It is also critical to provide training – for staff of national registration offices as well as for the staff who enrol beneficiaries – in all technical skills in registration matters as well as on other issues such as gender mainstreaming and cultural diversity.

Ensuring transparency and access to information

All social protection interventions should have the mechanisms in place to ensure transparency and access to information with respect to all core components of

the programme, including identification and registration processes. Considering that the use of biometric technology in social protection programmes is often the result of collaborative efforts of various stakeholders such as donors, governments, NGOs and the private sector, information about the various roles and responsibilities should be open to public scrutiny. A lack of transparency on issues related to biometric technology and the collection, storage and processing of personal information may generate mistrust and lower levels of public support for a programme.

Ensuring participation of a variety of stakeholders in the design of the systems

Critical decisions regarding the use of biometric technology in social protection systems, such as what type of biometric identifier should be used, what information should be collected and stored, and which data bases should be linked, must not be decided only on the basis of financial costs and top-down decisions from policy-makers and donors.

Assessment should also include issues of rights, information governance and privacy, with open consultations and national consultations involving not only social protection authorities but also the scientific and technical communities, the business sector, academics and human rights experts. In Brazil, for example, improvements in the social protection data base (*Cadastro Único)* were informed by debates on data protection organized by the Ministry of Social Development in association with the Brazilian Institute of Geography and Statistics and the Applied Economics Research Institute from 2005 to 2007. The results of these debates greatly assisted in addressing some flaws and inconsistencies in the system (ILO, 2014).

An open and independent debate should also help address the State's ability to implement appropriate and effective measures to protect personal data as well as address the potential risks of private sector involvement in the programme. Such debates would allow the general public to have information about the system, clarify doubts and misconceptions and, eventually, support the programme. If the system is not trusted by the population, it is not likely to succeed in the long run.

Regulating the involvement of the private sector

When the private sector is involved in the identification, registration or payment process in social protection programmes there should be transparency about the type of relationship between the national authority and the enterprise. This is particularly critical when the private sector is involved – at any level – in the implementation of biometric systems.

Specific protocols and policy guidelines should be put in place to avoid abuses, protect privacy and personal data, and to prioritize the public interest over private profits. There should be clear roles and responsibilities through legally binding agreements, strict rules for the management and security of data bases, and specific mechanisms in place to control external contractors (e.g. unexpected inspections or through specific guarantees regarding employees). Information governance issues, such as how the information will be managed between the enterprise and the government, or who is responsible for problems and who should respond in case of abuses should be clearly established in advance.

Establishing accessible and effective complaints and redress mechanisms

Individuals should always have accessible and effective mechanisms of redress in a social protection system. Still, the presumption that biometric technology is infallible makes the establishment of these mechanisms even more critical. As failures in biometric technology become more exceptional, individuals might have more difficulties to challenge failures, such as mistaken identity or failure to enrol. Therefore, clear mechanisms and standards for resolving errors and identity disputes should be in place.

Considering that a proportion of the population might not be able to enrol in a biometric system for different reasons or would have problems when requesting payment or services, the system should put in place appropriate fall-back procedures for every stage (from collecting date to accessing services). Such mechanisms should be accessible and well-resourced so that individuals who are unable to complete the enrolment process successfully, or to receive payments, should not be burdened with the imperfections of the technical system, and their rights should be respected.

Building national ownership of the system, promoting institutional coordination and continuous capacity building of programme staff

In many cases, the technology for biometric identification is procured from foreign enterprises based on generic approaches that do not take into account the specific local requirements, seriously impacting success (Hosein and Nyst, 2013). A study in Saint Kitts and Nevis, for example, revealed that when information technology is used in social protection programmes without first understanding the local context and the users' work environment, it severely undermines the programme's utility and effectiveness (Pitula, Sinnig and Radhakrishnan, n.d.). Technology and software developed in industrialized countries might not be sensitive to the needs and practical reality of the users in developing countries.

Investments in the implementation of a biometric system and a centralized information system in social protection programmes should be accompanied by similar investment in training and human resources capabilities, not only in the technical aspects but also on human rights including gender mainstreaming.

Adopting a legal framework for privacy and data protection

The use of biometric technology in social protection systems makes it essential to ensure the privacy and protection of personal data against any misuse and abuse (Sepúlveda, 2018). Authorities must take all necessary measures to secure personal data, particularly when processing highly intimate and sensitive data.

Even when countries have data protection laws, the State must adopt specific regulations on data protection applicable to social protection systems. This could be done, for example, by:

- Developing sector-specific data protection policies. Enacting data protection policy applicable to the social protection system as a whole would facilitate consistency in the implementation of the data protection legislation throughout all social protection programmes within a country.
- Developing data protection guidelines, which would complement policy and facilitate implementation. In Ireland, for example, the Department of Social Protection has developed a Data Protection Policy together with detailed guidelines, to ensure that all staff and others who process personal data on behalf of the Department do so in accordance with the principles contained in the national Data Protection Acts.

The legal framework for the protection of privacy and data protection in social protection should enforce the relevant "information protection principles"[7] examined below:[8]

Limiting the collection of personal data ("Collection limitation principle"). A practical way to reduce the abusive use of personal data by governments or third parties is to limit and reduce the information that is collected by keeping it to the minimum necessary.

7. Organisation for Economic Co-operation and Development (OECD) *Guidelines on the Protection of Privacy and Transborder Flows of Personal Data* provide the most commonly used privacy framework; they are reflected in existing and emerging privacy and data protection laws and serve as the basis for leading-practice privacy programmes and additional principles. Other instruments include the United Nations Guidelines for the Regulation of Computerized Personal Data; the Council of Europe Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data (CoE Convention No. 108); and the EU Data Protection Directive (Directive 95/46/EC).

8. These principles can be formulated in different ways, but the content of various versions remains the same.

Collecting the minimum amount of data would not only help protect beneficiaries' rights but it will also decrease the cost of the system. When developing countries are seeking to implement an identification system for beneficiaries of social protection programmes, policy-makers should assess and be able to reasonably justify each of the data elements to be included in the system. Ideally, there should be an open and public debate about the data element selected by them before the final decision is taken. All data should be obtained by lawful and fair means. The European Court of Human Rights (ECtHR), for example, has stated that the long-term retention of both fingerprints and DNA samples interfered with an individual's right to privacy (Article 8 of the European Convention on Human Rights, para. 225).[9,10]

Ensuring quality and relevance of data ("Data quality principle"). The collection and storage of data of the beneficiaries or potential beneficiaries of social protection programmes should be limited to those strictly relevant to the purposes for which they are to be used. Moreover, to the extent necessary for those purposes, it should be accurate, complete and kept up-to-date.

Specifying the purposes for the collection of data ("Purpose specification principle"). Individuals should be informed about the intended purpose and the reason why the data has been requested. The purposes for which personal data are collected should be explicit, legitimate[11] and specified at the time of data collection, and subsequent uses should be limited to the fulfilment of those purposes.

Ensuring access to and control over personal data ("Individual participation principle"). Biometric information is a type of personal information critically linked to one's identity. Therefore, human rights standards plays a critical role in guaranteeing that individuals are entitled to keep this information under their control. Accessible mechanisms should be put in place allowing individuals to know which personal data has been collected and stored, and to request corrections and deletion of data in their names at any point.

9. See Guide on Article 8 of the European Convention on Human Rights.
10. See, for example, Case of *S. and Marper* v. *The United Kingdom*, applications Nos. 30562/04 and 30566/04, ECtHR, Judgment of 4 December 2008. In this case, fingerprints and DNA samples were collected following the arrest of the complainants and retained even after their release, even though the complainants had asked for the destruction of the sample.
11. See EU Data Protection Directive (para. 28).

Limiting the use of the data ("Use limitation principle"). Personal data should not be disclosed, made available or otherwise used for purposes other than those specified at the time of data collection. The use of personal data for a purpose not originally intended should require the consent of the data subject or be authorized by law. This, for example, means that the fingerprints provided to enrol in a social protection programme should be used only for verifying the identity of its holder, and that the fingerprints data will not be read by unauthorized persons.

In social protection programmes the "use limitation principle" is also related to any other linked data bases. As discussed above, in principle, information collected for social protection purposes should be only accessed by social protection authorities, any exception should be authorized by law. In any case, sharing information of beneficiaries should be done only when it is strictly necessary, on the basis of full transparency, with the consent of the beneficiary and with well-established accountability lines.

A public debate on critical questions, such as what information should be shared and with whom, when are linkages appropriate and when do they infringe privacy and threaten personal security, might help in building support for the implementation of specific features of a social protection programme. The onus should be on the social protection authorities to demonstrate that any linkages of data bases is legal, necessary and proportional to the end goal, and fully in line with the purposes of the programme or system. Meaningful and proportional sanctions should be in place in the event of any contravention.

Safeguarding the data ("Security safeguarding principle"). Personal data should be protected by reasonable security safeguards against all type of risks including loss, unauthorized access, destruction, misuse, modification or disclosure of data. While risk assessments for government and private data bases containing personal information are often a standard procedure in some developed countries, this is not the case for the great majority of developing countries which lack laws and security of information mechanisms.

To ensure that the processing and storage of biometric data in social protection programmes will be effectively protected from misuse and abuse, policy-makers should take a comprehensive set of measures that range from developing secure physical and digital infrastructure to strictly limiting who has access to the information.

Ensuring the necessity and proportionality of the processed data. Biometric data should only be used if adequate and relevant and should not be excessive. There should be proportionality between the use of a biometric system and the

intended purpose. To ensure compliance with this requirement, a prior assessment should take into account, as a minimum, the following factors: i) whether the system is necessary to meet the identified need, i.e. it is essential for satisfying the need rather than just being the most convenient or cost effective method; ii) whether the system is likely to be effective in meeting that need; iii) whether the resulting loss of privacy is proportional to any anticipated benefit – if the benefit is relatively minor, such as an increase in convenience or a slight cost saving, then the loss of privacy is not appropriate; and iv) whether a less privacy-intrusive means could achieve the desired end (Data Protection Working Party, 2012).

Establishing accessible accountability systems ("Accountability principle"). Social protection programmes should have simple, effective and accessible mechanisms to submit and process complaints, and provide access to effective remedies in case rights are violated. Such mechanisms should also address issues of privacy and the protection of personal data.

The establishment of independent oversight and monitoring mechanisms of those collecting, processing and storing information regarding social protection beneficiaries is critical to achieving effective accountability. Any oversight mechanism should, at a minimum, provide due process guarantees and be able to offer the deletion of data or other types of reparation. Additionally, consultation with all relevant stakeholders (e.g. social protection authorities, scientific and technical communities, the private sector, academics, human rights experts) including the programme's beneficiaries should be an essential element of any oversight mechanism.

While the adoption of a legal framework securing the principles indicated above is necessary, it is not sufficient. From a human rights perspective, in the first instance, social protection implementers are obliged to adopt practical and effective measures to prevent abuses. These include establishing well-resourced data protection authorities and the existence of an independent judiciary and media. When these factors are missing, the risks of disclosure are even higher.

Conclusions

In recent years, political commitments to expand social protection programmes have been accompanied by the use of new technologies that have the potential to improve the administration of such programmes as well as the experience of beneficiaries. This is particularly the case in the use of biometric technology in the identification, registration and authentication of beneficiaries.

However, without the adoption of appropriate legislative, technical and organizational measures, the implementation of biometric technology in social

protection programmes may negatively impact the rights and dignity of beneficiaries and become a major threat to privacy and data protection. Development agencies and bilateral donors, who have played a large role in supporting biometric initiatives in developing countries, must be open about the risks and challenges that the implementation of this technology poses to the enjoyment of rights.

When biometric technology is used in programmes without a proper legal and institutional framework, there are high risks of exclusion: individuals otherwise eligible may be overlooked or unable to enrol. Moreover, there are threats to privacy and data protection as well as risks to personal security.

When governments from developing countries are interested in strengthening social protection systems or establishing national social protection floors, they should be supported in establishing systems that best fit their national contexts and protect the rights of their citizens. In this regard, pressure to use biometric systems or to integrate data and information systems should not be undertaken at the expenses of the rights and protection of privacy and personal data of the beneficiaries.

Unfortunately, the establishment of biometric identification systems in social protection programmes is often not accompanied by serious analysis about their potential negative impact, and thus are implemented without a robust regulatory framework and appropriate levels of physical, administrative and technical security measures and proper accountability mechanisms. In some countries, these obstacles are coupled with more practical challenges such as the irregularity of electricity supply, lack of hardware infrastructure adapted to the severe conditions (e.g. extreme high or low temperatures, dust and rain), lack of human resource capacities, inadequate training, and inappropriate adaptation of the tool to local circumstances.

While the feasibility and costs of implementing a biometric identification system depend on country context, the complexity of the system and the tools and infrastructure, the various building blocks of an effective system (e.g. the collection of biometric information, the maintenance of the data base, the protection of data privacy and the integrated management information system) also require highly trained, stable and qualified staff. This often implies a high salary to guarantee staff retention, a situation which is uncommon at least in the public service in many developing countries that are characterized by weak bureaucracies. While there are some promising programmes that use biometric technology in middle-income countries, such as Brazil, promising examples are the result of serious investment in technical expertise, broad coordination efforts, and the continuous building of staff capacity (De Sousa, 2005). These investments might not be feasible in less developed countries.

Undoubtedly, the rapid pace of technological progress might imply that existing technological restrictions and failures could disappear relatively soon. A new generation of biometric identifiers may be able to capture information under difficult conditions and with improved precision. Such advances might therefore solve some of the inaccuracies and exclusions described above. Still, due to financial costs and other restrictions, it would not be appropriate to assume that the latest technology could be implemented in developing countries in the short or medium term. More importantly, with more sophisticated technology the potential risks for security, privacy and personal data would certainly increase. The rapidly expanding use of technology also enables a range of new threats to social protection beneficiaries, including unauthorized data sharing, covert surveillance, social control and privacy abuses. Mass information collection also encourages cybercriminals and hackers to undertake sophisticated scams. Emerging trends in counter-terrorism are putting pressure on government authorities to share the information they collect through social protection programmes with national and international law enforcement agencies.

While the potential negative impacts of the use of biometric systems in social protection have not been at the core of concerns to extend social protection in developing countries, the lack of legal and institutional safeguards may create conditions for future abuses which will be extremely difficult to prevent. The fact that those included in the identification data base are the poorest segments of the population should not justify any lowering of security and privacy standards.

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The old-age pension law in Mexico: The promise of poverty in old age?

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Abstract In 1997, Mexico replaced its main old-age pension system with an individual capitalization system. In 2021, the first people subject to the new system will retire. Using a model that projects demographic and labour variables and using Monte Carlo simulations, the findings of this study show that in 2051 the percentage of men not having a pension will increase from 38 per cent to 59 per cent, and that of women from 44 per cent to 66 per cent. The replacement rate for the average Mexican worker will fall from 70 per cent to 30 per cent. The numbers of people in extreme poverty will increase by almost 2.8 million, representing 9.44 per cent of the population. Alternative scenarios are proposed that involve increasing the contribution rate and raising the retirement age.

Keywords pension scheme, defined contribution plan, social security reform, social security legislation, poverty, Mexico

Introduction

Over the past three decades there have been important changes in pension systems worldwide (Ambachtsheer, 2011; Arza, 2008; Holzmann, 2013b; Marier, 2008; Mesa-Lago, 2008; Scherman, 2003; Verbic and Spruk, 2014; Whitehouse et al., 2009). In Mexico and other countries, the main motivation for these changes

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(Lagoutte and Reimat, 2013; Ziegelmeyer and Nick, 2013) has been to prevent the state incurring fiscal deficits, but these changes have put at risk the welfare of people of retirement age (Calvo, Bertranou and Bertranou, 2010). The well-being of people of retirement age is often precarious, and this situation may worsen in the future (UNDP, 2015).

Various studies in different parts of the world have investigated this reduction in well-being. The broadest studies in the literature concern European countries (Breyer and Hupfeld, 2009; Chłoń-Domińczak and Strzelecki, 2013; Foster, 2011; Hick, 2013; Holzmann, 2013a, 2013b; Krenz and Nagl, 2010; Olivera, 2015; Ors Montenegro and Maciá Soler, 2013; Peinado and Serrano, 2011; Sarasa, 2008; van Vliet et al., 2012). There are a number of Latin American studies (Altamirano Montoya et al., 2018; Arza, 2008; Barrientos, 2006; Breyer and Hupfeld, 2009; ECLAC, 2018; Dethier, Pestieau and Ali, 2011; Melguizo, Bosch and Pages, 2017; Mesa-Lago, 2008; Olivera, 2016; Olivera and Tournier, 2016), and some of these cover Mexico. However, there is no specific study that presents future projections about what may be expected in Mexico in terms of the alleviation or resurgence of poverty during retirement. There is one study of future pensions that is relevant to Mexico (Alonso, Hoyo and Tuesta, 2015), but its findings are more optimistic than those of this research, since the contribution densities[1] that it uses are not the real data, as was subsequently disclosed (Castañon Ibarra and Ferreira Blando, 2017). This article examines the impact of the change in the pension system on Mexico's poverty scenario between 2018 and 2051 (Colín, 2018). The term "poverty scenario" is understood to mean the number of people living in poverty and extreme poverty, according to the definitions of the National Council for the Evaluation of Social Development Policy (*Consejo Nacional de Evaluación de la Política de Desarrollo Social* – CONEVAL), the official body that measures poverty in Mexico.

In Mexico, the most important institution in the field of social security is the Mexican Social Security Institute (*Instituto Mexicano del Seguro Social* – IMSS), given that over 60 per cent of the population is affiliated to it, either as workers or as dependant family members. Prior to the 1997 reform, the pension system (IMSS, 1973) was a defined benefit system and remained in force until 30 June 1997 (hereafter referred to as IMSS Law 73).[2] The new system, recommended by the World Bank, is a defined contribution system and entered into force on 1 July 1997 (hereafter referred to as IMSS Law 97).[3] The main change introduced by the new system is that a qualifying period of 1,250 weeks

1. Density of contributions: the number of weeks that the worker actually contributed to the social security system expressed as a percentage of the total number of weeks of their working life.
2. See IMSS Law 73 (in Spanish).
3. See IMSS Law 97 (in Spanish).

of contributions is required, whereas under the old system this was only 500 weeks. The level of contributions remained the same, set at 6.5 per cent of the monthly wage,[4] although under the new law those with a wage of less than 15 times the minimum wage receive an additional contribution from the federal government for each day of work. Workers who contributed at least one day under the previous system will retire under that system. Those who began paying contributions after 1 July 1997, will retire under the new law.

As a result of this change in the law, as from 2021, there will be retirees receiving pensions under different rules (CONSAR, 2004) and the pension levels under IMSS Law 97 will be lower. The purpose of this research is to determine the effect of this reform on Mexico's poverty scenario.

Method

Participants

This study covers all workers who contributed to the IMSS in April 2016. The information on these workers is in the public domain,[5] and includes the last known figures available when undertaking this study. There was no sampling: the full population of 17,564,031 workers was used.

Procedure

A model was created to simulate the ageing of the working population, the admission to the system of new workers, and their departure through death or retirement.

The pensions that would have been received in future by Mexicans affiliated to the IMSS if the system had not changed in 1997 (the control group), are compared with those that they will receive in the year 2051 under the new rules. We use this to describe the poverty scenario in Mexico resulting from this change. The affected workers number almost 18 million and represent more than half of the formal economically active population in Mexico (IMSS, 2016; IMSS, 2017), covering households totalling more than 60 million people.[6] On this basis, changes in the poverty scenario will be shown at the country level, using the CONEVAL indicators

4. The total monthly contribution of 6.5 per cent is shared as follows: employer, 5.15 per cent; employee, 1.125 per cent; government, 0.225 per cent. The contribution does not cover the disability pension, but it does cover the survivor pension.

5. Does not include personal data such as name or address. Includes data relevant to this study, such as age, wage and gender.

6. According to data from INEGI, on average each household in Mexico comprises 3.7 people (INEGI, 2017).

to calculate the future increase in the numbers of people who are in poverty or extreme poverty.

In this simulation the contribution density is based on the periods that workers actually contribute to the IMSS. The majority of workers affiliated to the IMSS undergo periods without contributions – for instance, when they work in enterprises or institutions affiliated to other social security institutions, contributions which are not transferrable[7] to the IMSS, or during periods of self-employment or unemployment.

Variables used in the model

For IMSS Law 73, the following variables are used in the model: age of commencement of contributions to the IMSS, current ages of workers, age at retirement, wage, contribution density; for IMSS Law 97 the variables used are: life expectancy of Mexicans by gender at age 60, return on investments in Retirement Funds Administrators (*Administradora de Fondos para el Retiro* – AFOREs), age of commencement of contributions, current ages of workers, age at retirement, age of the spouse at retirement, wage, gender, contribution density.

Projection model for the ageing of persons covered by the IMSS

The data base of workers used for this research was that for April 2016.[8] This data base contains 17,564,031 records of those affiliated to the IMSS at the end of that month. Since the age information is grouped into five-year periods, the IMSS data bases for the previous five-year periods were used; that is, those for April 2001, April 2006 and April 2011. These four data bases were used to project future behaviour.

A summary of this information is given in Table 1, which shows the number of people in each age group.[9]

In Table 1, the shading indicates the advance of each group of people through the five-year periods. For example, the E6 group of 2001 becomes the E7 group of 2006. The variations in the numbers of people advancing in time is due to the admission of new insured persons to the IMSS, and to unemployment, retirement and death.

7. Transferrable means that the periods of contributions can be transferred from one social security institute to another.
8. See IMSS website for data (in Spanish).
9. The age groups are labelled from E1 to E14.

Table 1. *IMSS data bases of workers, by age group*

		2001	2006	2011	2016
Younger than age 15	**E1**	3,518	1,252	693	333
Aged 15–19	**E2**	830,118	473,769	347,468	541,552
Aged 20–24	**E3**	2,076,374	1,930,500	1,945,605	2,477,694
Aged 25–29	**E4**	2,382,428	2,410,517	2,582,105	3,065,023
Aged 30–34	**E5**	1,991,588	2,353,640	2,455,772	2,820,673
Aged 35–39	**E6**	1,584,341	1,941,333	2,290,240	1,826,572
Aged 40–44	**E7**	1,201,382	1,524,231	1,861,325	2,308,648
Aged 45–49	**E8**	864,144	1,130,018	1,420,229	1,800,276
Aged 50–54	**E9**	568,289	775,399	998,378	1,308,030
Aged 55–59	**E10**	379,389	496,176	666,497	882,293
Aged 60–64	**E11**	130,541	228,880	298,972	358,343
Aged 65–69	**E12**	67,220	79,160	96,405	109,904
Aged 70–74	**E13**	30,386	32,846	35,014	39,977
Aged 75 or older	**E14**	25,955	24,787	23,886	24,713
	TOTAL	12,135,673	13,402,508	15,022,589	17,564,031

Source: Author's own figures, based on data for 2001–2016, available at www.imss.gob.mx.

The four five-year periods available in the IMSS statistics can, in turn, be broken down into 25 wage ranges. Each wage range is identified by variable Wi, where i ranges from 1 to 25. Thus, W1 represents people whose income is between 0 and 1 minimum wage, and W25 indicates those whose income ranges from 24 to 25 times the minimum wage. This last range also includes all those who earn more than 25 times the minimum wage, since contributions to the IMSS have a ceiling of 25 times the minimum wage. Such workers are a minority among IMSS members, and represent less than 2 per cent of the population (Valdelamar, 2016).

Some 0.78 per cent of the figures had to be deleted, since they included incomplete data, leaving a total of 17,427,872 records.

Using figures for the four known five-year periods, two tables were constructed: the first showing the numbers of people for each age-wage combination, and the second with the same data, but expressed as the percentage that each group represents as a proportion of the total numbers of workers in each five-year period.

Finally, to obtain the table showing the ratios used to construct the tables for future five-year periods (2021, 2026, 2031, 2036, 2041, 2046 and 2051), a Monte Carlo simulation was used to determine the percentage that each group of people represents in terms of their age and wage. Monte Carlo simulations are currently used in scientific fields where it is important to handle uncertain variables

correctly. In relation to pensions, they have been used to forecast the performance of pension fund investments: in Peru (Ames Santillán, 2014), in emerging markets (Kumara and Pfau, 2013), and in the United States (Johnston, Forbes and Hatem, 2001). They have also been used to forecast future inequalities and poverty caused by pensions in Italy (Bianchi, Romanelli and Vagliasindi, 2003). In Spain they have been used to evaluate the sustainability of the pension system given the decrease in fertility and the increase in longevity (Rostan, Belhachemi and Rostan, 2015). Table 2 shows the ratios obtained.[10]

Figures for future years were projected using growth factors based on each EiWi group. These factors were calculated on the basis of observations of growth over the four base years. The growth factors obtained form the basis of Table 3 (Colín, 2018).

The model gives a total number of workers covered by the IMSS in 2051 that is very close to that predicted by the institution (IMSS, 2016) (see Table 4).

Table 4 uses data from the National Population Council (*Consejo Nacional de Población* – CONAPO) to calculate the number of IMSS members given by the model and express it as a proportion of the total population of Mexico (CONAPO, 2014). The last column in the table shows the ratio of IMSS members to the total population of Mexico growing by almost one percentage point every five years. This is true for the period 2001 to 2016, for which real data were used, and for the period 2016 to 2051, which used projected data.

Finally, using the table of total numbers per five-year period (Table 3), which gives a breakdown by age (Ei), and the table of ratios (Table 2) that indicates the percentage of workers for each wage range (Wi) in each age range, we can obtain a breakdown of the numbers of workers in each five-year period for each age and wage range.

Projection model for pensions under IMSS Law 73

IMSS Law 73 granted pensions using a defined benefit model and established how to calculate the amount of the pension, which is covered by articles 164 to 171 of the law (IMSS, 1973). The variables necessary for the calculation have already been mentioned and their values are in the data base, with the exception of the following:

Age of commencement of contributions to the IMSS. Based on Table 1, we can infer the distribution of age groups providing income to the IMSS[11] to produce Table 5.

10. For details of how the ratio tables were calculated, see Colín, 2018. This information may also be obtained from the author.

11. IMSS receives income from people younger than age 15 or older than age 35, but these are few in number. For this reason they are not included in the model.

Table 2. *Ratio of workers by age and wage (percentages)*

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14
W1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.6
W2	63.3	62.3	43.2	31.9	29.1	28.5	29.7	30.9	33.2	35.9	39.1	43.3	45.7	44.2
W3	26.6	29.5	29.5	22.3	19.1	18.5	18.5	18.3	17.9	17.7	17.8	17.8	17.5	16.1
W4	2.6	5.7	13.0	13.7	12.4	11.6	11.5	10.9	10.4	10.0	9.5	8.7	8.0	7.5
W5	2.6	1.5	6.1	8.9	8.6	8.2	7.7	7.2	6.8	6.6	6.4	5.6	5.2	4.4
W6	0.9	0.5	3.2	6.0	6.2	5.9	5.7	5.4	5.0	4.8	4.3	3.7	3.2	2.8
W7	0.0	0.2	1.9	4.6	5.0	4.8	4.8	4.7	4.6	4.3	4.0	4.0	4.3	5.7
W8	1.3	0.1	1.1	3.3	4.0	3.9	3.7	3.7	3.5	3.3	3.3	4.0	5.4	10.1
W9	0.4	0.0	0.6	2.1	2.8	2.8	2.8	2.7	2.5	2.3	1.8	1.5	1.2	1.0
W10	0.0	0.0	0.4	1.5	2.0	2.1	2.1	2.2	2.1	1.8	1.5	1.3	1.1	0.9
W11	0.0	0.0	0.3	1.1	1.6	1.7	1.6	1.6	1.5	1.4	1.2	0.9	0.8	0.6
W12	0.4	0.0	0.2	0.9	1.3	1.5	1.4	1.4	1.3	1.1	1.0	0.8	0.7	0.6
W13	0.4	0.0	0.1	0.7	1.0	1.2	1.2	1.2	1.1	1.0	0.8	0.6	0.6	0.5
W14	0.0	0.0	0.1	0.5	1.0	1.0	0.9	1.0	0.9	0.8	0.7	0.6	0.4	0.4
W15	0.0	0.0	0.1	0.4	0.8	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.4	0.3
W16	0.0	0.0	0.0	0.4	0.8	1.0	0.9	0.8	0.8	0.7	0.6	0.5	0.3	0.2
W17	0.4	0.0	0.0	0.3	0.6	0.7	0.7	0.8	0.7	0.6	0.5	0.4	0.3	0.3
W18	0.0	0.0	0.0	0.2	0.5	0.6	0.6	0.7	0.8	0.8	0.6	0.4	0.2	0.2
W19	0.0	0.0	0.0	0.2	0.4	0.5	0.5	0.5	0.6	0.6	0.5	0.4	0.3	0.2
W20	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.5	0.5	0.5	0.4	0.3	0.3	0.2
W21	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2
W22	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.2
W23	0.4	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1
W24	0.0	0.0	0.0	0.4	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.6	0.4	0.3
W25	0.4	0.0	0.0	0.4	1.5	2.8	3.1	3.4	3.5	3.4	3.6	3.2	2.6	2.2
	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Author's own figures, based on data for 2001–2016, available at www.imss.gob.mx.

Table 3. *Projections of total annual numbers of workers, by age*

	2016	2021	2026	2031	2036	2041	2046	2051
E1	317	317	317	317	317	317	317	317
E2	541,552	735,522	929,630	1,123,738	1,317,846	1,511,954	1,706,062	1,900,170
E3	2,477,694	1,624,656	2,206,566	2,788,890	3,371,214	2,635,692	3,023,908	3,412,124
E4	3,065,023	3,387,490	2,221,221	3,016,805	3,812,955	4,609,106	3,603,504	4,134,271
E5	2,820,673	3,184,403	3,519,430	2,307,736	3,134,307	3,961,467	4,788,627	3,743,858
E6	1,826,572	2,421,413	2,733,659	3,021,263	1,981,081	2,690,654	3,400,731	4,110,808
E7	2,308,648	1,793,409	2,377,451	2,684,027	2,966,409	1,945,113	2,641,803	3,338,988
E8	1,800,276	2,188,319	1,699,935	2,253,535	2,544,132	2,811,797	1,843,732	2,504,109
E9	1,308,030	1,620,167	1,969,388	1,529,864	2,028,080	2,289,604	2,530,490	1,659,275
E10	882,293	1,135,707	1,406,722	1,709,936	1,328,316	1,760,896	1,987,966	2,197,117
E11	358,343	501,994	646,178	800,376	972,894	755,766	1,001,889	1,131,084
E12	109,904	177,317	248,399	319,745	396,046	481,412	373,971	495,759
E13	39,977	49,096	79,210	110,964	142,835	176,920	215,054	167,059
E14	24,713	29,725	36,505	58,896	82,506	106,204	131,547	159,902
TOTAL	17,564,015	18,849,535	20,074,610	21,726,092	24,078,940	25,736,901	27,249,601	28,954,840

Source: Author's own figures, based on data for 2001–2016, available at www.imss.gob.mx.

Table 4. *Projected numbers of workers based on the model and by the IMSS*

Year	IMSS members projected by the model	IMSS members projected by the IMSS	Model vs. IMSS	Population of Mexico	IMSS members projected by the model as a percentage of the population
2001	11,959,625	11,959,625	0.0%	103,300,000	11.6%
2006	13,242,897	13,242,897	0.0%	104,874,282	12.6%
2011	14,882,981	14,882,981	0.0%	114,890,670	13.0%
2016	17,564,015	17,564,015	0.0%	122,273,473	14.4%
2021	18,849,535	19,469,641	-3.2%	128,230,519	14.7%
2026	20,074,610	21,671,497	-7.4%	133,614,190	15.0%
2031	21,726,092	23,376,092	-7.1%	138,383,142	15.7%
2036	24,078,940	24,827,420	-3.0%	142,538,744	16.9%
2041	25,736,901	26,145,563	-1.6%	146,072,453	17.6%
2046	27,249,601	27,310,964	-0.2%	148,984,509	18.3%
2051	28,954,840	28,322,469	2.2%	150,916,407	19.2%

Note: Figures for 2001 to 2016 are based on actual data.
Source: Author's own figures using data from CONAPO (2014).

Table 5. *Age of initial registration with the IMSS*

Age	Registration with the IMSS (%)
15–19	24.6
20–24	52.8
25–29	19.9
30–34	2.7

Source: Author's own figures based on the data from 2001 to 2016 in Table 1.

Based on the distribution found, the Monte Carlo simulation assigns the entry age of each subject participating in the model.

Retirement age. This variable is obtained by analysing the evolution in the number of people affiliated to the IMSS over time. When a decrease is observed, the extent of such decrease due to the death of affiliates is calculated. The difference here has two causes; namely, unemployment when they have not reached retirement age, or retirement[12] when they are older than age 60. The mortality table used to calculate deaths is that authorized by the National Commission on Insurance and Securities

12. The model calculates whether or not the retiring person is entitled to a pension depending on whether they have paid the minimum number of weeks of contributions and attained the required age.

(*Comisión Nacional de Seguros y Fianzas* – CNSF) for the calculation of pensions (CNSF, 2015b).

Salaries of IMSS members. This variable is provided by the IMSS in its open data base. The calculations in this research are based on constant Mexican pesos (MXN) with a value date of April 2016. It is very important to avoid forward projections of inflation, since this is a variable that only adds uncertainty without providing greater precision. The projections up to 2051 are based on a flat wage career. While there may be some small real wage growth, the results are valid for the following reasons. In nominal and real terms there may be increases in wages, but in terms of the number of minimum wages that they represent there is no change, since the value of the minimum wage changes to absorb real growth and wage inflation. In other words, the figures underlying this study remain valid even when the figures are translated into multiples of the minimum wage.

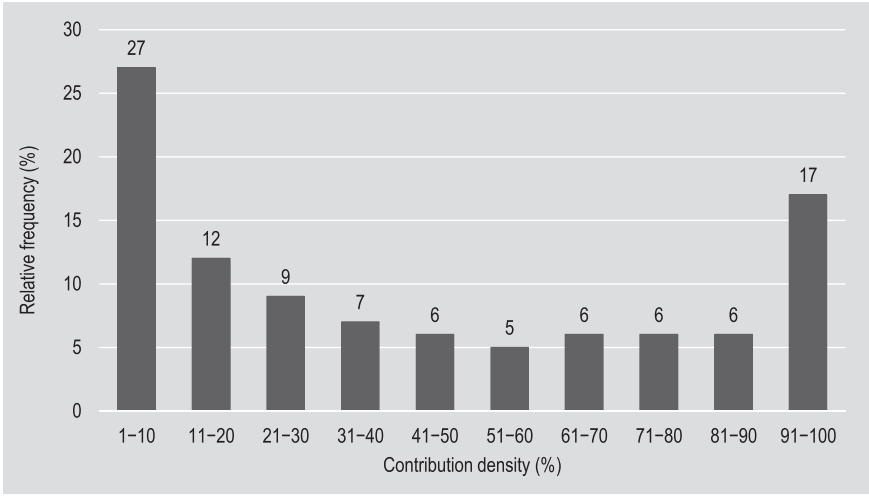
Contribution density by gender. IMSS Law 73 requires the worker to have contributed for a minimum of 500 weeks. In Mexico, the density of contributions has become the main obstacle to pension entitlement, since people experience periods in which they are unemployed or self-employed and do not contribute to the IMSS, or are affiliated with institutions that do not have agreements with the IMSS to permit the totalization of all weeks of contributions. This problem is known as the lack of transferability between pension systems. This lack of transferability, together with low contribution densities, is a challenge cited in Mexico by various authors and institutions (Aguirre Farías, 2012; CONSAR, 2015, 2016a, 2016b, 2017; OECD, 2015; Solís Soberón, 2012). The National Commission for the Retirement Savings System (*Comisión Nacional del Sistema de Ahorro para el Retiro* – CONSAR) has published the most comprehensive study so far on contribution density in Mexico (Castañon Ibarra and Ferreira Blando, 2017), which shows an alarming reduction in the value of this variable for people who have contributed to the IMSS for many years. This study shows that the average contribution density is 42.9 per cent, reflecting a very broad distribution of values, as shown in Figure 1.

As can be seen, the distribution is bimodal and asymmetric. This result, as the authors of the study point out, is consistent with that found in other countries such as Argentina, Chile, Uruguay and El Salvador. Figure 2 shows the results by gender.[13]

In Figure 2, the column labelled "Undefined" refers to workers for whom the data are incomplete, and their personal details, such as their gender and wage, remain unknown.

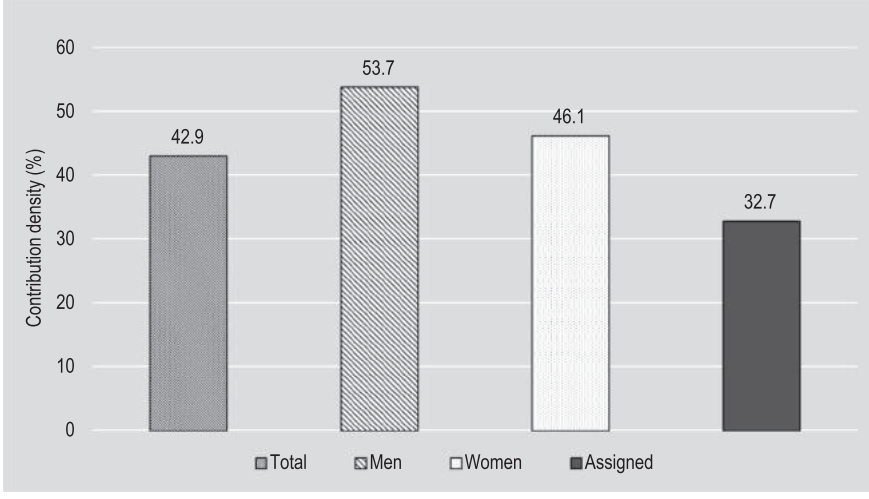
13. In Figure 2, the total is given in the column showing the "AFORE generation" (Retirement Funds Administrator – *Administradora de Fondos para el Retiro*), which is how workers contributing under the new IMSS Law 97 are known.

Figure 1. *Density of contributions of Mexican workers (by decile)*



Source: Castañon Ibarra and Ferreira Blando (2017).

Figure 2. *Density of contributions by gender*



Source: Castañon Ibarra and Ferreira Blando (2017).

It is important to estimate what the contribution density for men and women would be if we had the gender data on the undefined group. We may assume that, in that group, the distribution of men and women is equal to that in the

group where gender is known. On this assumption the density for men is 45.73 per cent, and for women 39.26 per cent.

Having now established a better estimate of the contribution density for men and women, the next step is to estimate the distribution of that density by deciles. To do so, the general distribution is taken as the base, and the extreme distribution figures are modified to satisfy the required values: 45.73 per cent for men and 39.26 per cent for women. The deciles for men and women are shown in Table 6. With this distribution of densities, the Monte Carlo simulation provides the contribution density for each person participating in the model.

Gender. IMSS Law 73 does not distinguish gender in the pension calculation. However, in this study such a distinction is made, since the contribution density changes significantly with this variable. Using data obtained directly from the IMSS (Colín, 2018), we know that the distribution by gender of people claiming a pension is: men 74.19 per cent, and women 25.81 per cent.

IMSS Law 73 grants a pension based on the number of weeks of contributions made to the IMSS and the average wage over the claimant's last five years as an active worker. The law awards 100 per cent of the pension calculated as from age 65, and allows early withdrawals from age 60 with a partial pension ranging from 75 per cent to 95 per cent.[14]

Table 6. *Contribution density by decile and sex*

Contribution decile	% Men	% Women
1–10	24.73	29.00
11–20	10.88	13.00
21–30	8.41	9.25
31–40	6.69	7.00
41–50	5.94	6.00
51–60	4.95	5.00
61–70	5.94	6.00
71–80	5.94	6.00
81–90	6.94	5.00
91–100	19.57	13.75
	100	100

Source: Author's own figures using data from Colín (2018).

14. See article 171 of IMSS Law 73 (in Spanish). In IMSS Law 97, early retirement is possible if the insured's account can provide a pension at least 30 per cent in excess of the minimum pension.

Projection model for pensions under IMSS Law 97

The new pension law (IMSS Law 97) introduced a defined contribution system. This means that workers are certain of how much they contribute, but have no clear idea of the amount of their pension until the end of their working life, since this will depend on what they have managed to save (plus net interest) in their AFORE account.

IMSS Law 97 offers the worker a choice between two retirement pension alternatives: a programmed retirement or a life annuity. The difference between the two is that, for long-lived individuals, the programmed withdrawal might exhaust the resources of the AFORE savings account and the retired worker would be left without a pension prior to his or her death. However, the rules for calculating programmed withdrawal take into account the worker's life expectancy in such a way that this risk is minimized. At present, there is no life annuities market in Mexico, so the calculations in this research are based exclusively on the programmed withdrawal.

The variables necessary to calculate the pension under IMSS Law 97 are given below.

Life expectancy of Mexicans by gender at age 60. The mortality table provided by the National Insurance and Securities Commission (CNSF, 2015b) is used.

Return on investments. 3.5 per cent real return is taken as the performance of AFOREs over the past five years.

Age of commencement of contributions to the IMSS, current age of the members, age at retirement, wage, gender and density of contribution. The same values are used as in the IMSS Law 73 model.

Age of spouse at the time of retirement. In this study, it is assumed that the husband is two years older than the wife (Delgado, 1993; SyM, 2017).

The basic formula for obtaining the monthly amount of the pension under the programmed withdrawal is as follows (CONSAR, 2012):

$$\text{Monthly pension} = (\text{Balance in the AFORE account–MCSS})/(12*\text{URV})$$

where URV is the life annuity unit, a parameter published by CONSAR.[15]

15. See CONSAR website (in Spanish).

This parameter is calculated by CONSAR on the basis of life expectancy at the time of retirement, and the estimated long-term return on investments. MCSS is the constituent amount of survivors' insurance. This insurance is intended to award a life annuity to the dependants of the pensioner in the event that he or she dies. The calculation is an actuarial procedure established by the National Insurance and Securities Commission (*Comisión Nacional de Seguros y Fianzas* – CNSF) (CNSF, 2015a; CNSF, 2014).

The amount of the pension is lower for many workers due to low contribution densities. In addition, the MCSS is a factor that has not been taken into account by many researchers: they have considered that the pensioner is single, whereas it is more common for there to be a spouse. The MCSS factor greatly reduces the value of the pension.

Results

The average Mexican worker receives a wage that is equivalent to four times the minimum wage.[16] For such workers, the replacement rate[17] under IMSS Law 73 was 71.1 per cent for men and 67.1 per cent for women. Under IMSS Law 97, the replacement rate falls to 29.4 per cent and 29.9 per cent, respectively. The new pensions will hence equate to less than half of what would have been received under the previous law. Moreover, these replacement rates apply only to those who actually receive a pension. IMSS Law 97 creates a major obstacle to pension entitlement, as the worker must have at least 1,250 weeks of contributions to the IMSS. In comparison, under IMSS Law 73 the required number of weeks of contributions was 500 weeks. This change means that many workers will not be eligible to receive a pension. Table 7 shows the extent of this problem.[18]

Figures 3 and 4 show the evolution of the average pension under the two laws, including those with no pension (zero pension). Figures 5 and 6 show the average pension in the year 2051 based on the wage that the person earned as an active worker. Clearly, we see that the differences between the results under the two laws are greater where the wage is higher.

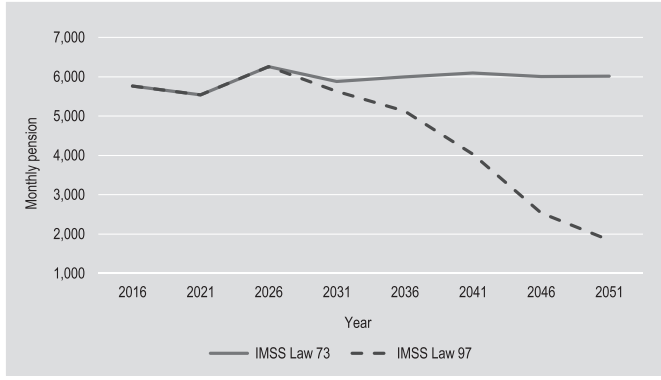
16. The minimum monthly wage in 2019 is 3,121 Mexican pesos (MXN), or 164 US dollars (USD) (exchange rate approx.: MXN 19 = USD 1).
17. The replacement rate is the ratio of the pension amount to the last wage as an active worker, expressed as a percentage.
18. In Table 7, the numbers of people without a pension increases with the passage of time under IMSS Law 97, since this law allows workers who contributed before 1 July 1997 to withdraw from the IMSS Law 73 system.

Table 7. *Workers without a pension by age of retirement*

	% Men		% Women	
Year	IMSS 73	IMSS 97	IMSS 73	IMSS 97
2031	38	39	44	45
2036	38	41	44	48
2041	38	47	44	54
2046	38	55	44	62
2051	38	59	44	66

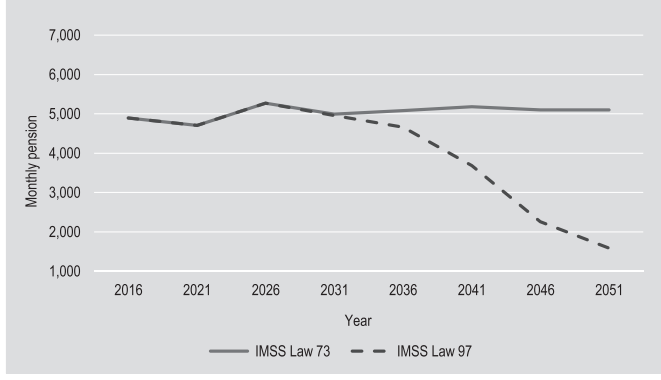
Source: Author's own figures using data from Colín (2018).

Figure 3. *Average pension for men*



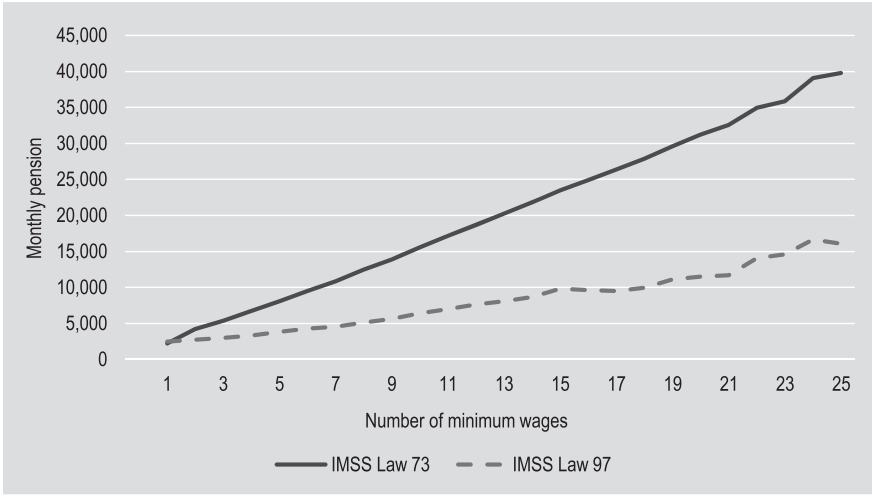
Source: Author's own figures using data from Colín (2018).

Figure 4. *Average pension for women*



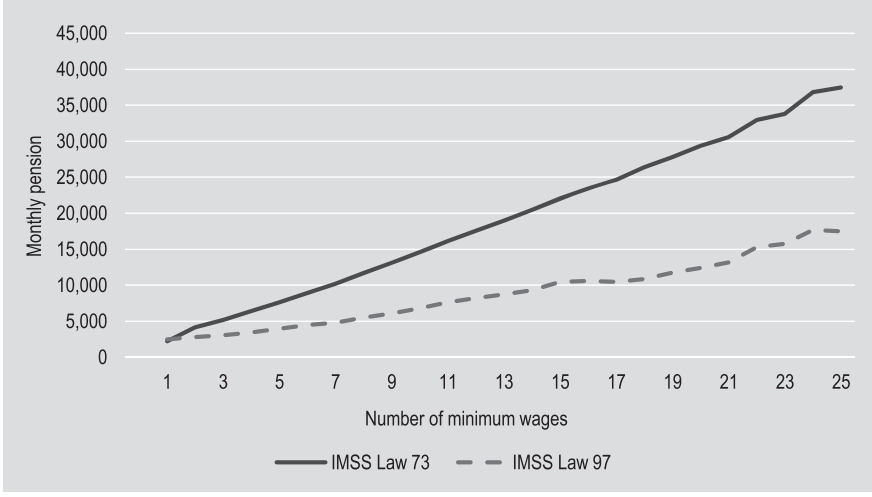
Source: Author's own figures using data from Colín (2018).

Figure 5. *Pensions for men by wage*



Source: Author's own figures using data from Colín (2018).

Figure 6. *Pensions for women by wage*



Source: Author's own figures using data from Colín (2018).

In summary, Table 8 shows the situation that will apply to retired workers who are alive in the year 2051 under IMSS Law 97, and also what the situation would have been under IMSS Law 73 if it had been retained.

The predicted poverty scenario resulting from the change in the IMSS law

The new pension law (IMSS Law 97) will result in more people living in poverty or extreme poverty. In Mexico, CONEVAL, the official body that measures poverty and its evolution, establishes the poverty lines under which a person is considered to be in a situation of poverty or extreme poverty.

The extreme poverty line represents the cost of a basic food basket for one person, and the poverty line also includes other expenses such as transport, clothing, education, etc. These lines, as they stood in April 2016, are given in Table 9.

The model developed here projected how many retired people will be alive in the year 2051 and what their pension would be under each of the two laws. Comparing such incomes with the poverty lines, we obtain the number of additional people who will be in poverty or extreme poverty due to the change in the IMSS law. Table 10 shows this result based on the assumption that each retired person has a spouse.

CONEVAL published its poverty measurements for 2016 (CONEVAL, 2017) and reported that 43.6 per cent of people in the country live in poverty, and 7.6 per cent in extreme poverty. Taking account also of the projections by CONAPO indicating that, by the year 2051, the total population of Mexico will be 150,916,407 (CONAPO, 2014), it is possible to produce Table 11, which does not take into account any other economic, political or social factors except the change in the IMSS law.

Table 8. *Average pensions and workers without pensions in 2051*

	Average monthly pension (including those with no pension)		% without a pension	
	Men	Women	Men	Women
IMSS Law 73	5,970	5,320	38%	44%
IMSS Law 97	3,844	3,583	48%	55%

Source: Author's own figures using data from Colín (2018).

Table 9. *Poverty lines for monthly income in Mexico*

	For a single person	For a couple
Poverty line	MXN 2,690.65	MXN 5,381.30
Extreme poverty line	MXN 1,335.18	MXN 2,670.36

Note: MXN = Mexican pesos.
Source: CONEVAL (2017).

Table 10. *People below the poverty line*

	Number of retired persons with a pension below –	
	Poverty line for a couple (MXN 5,831.30)	Poverty line for a couple (MXN 5,831.30)
IMSS Law 73	4,562,942	2,745,191
IMSS Law 97	5,460,003	4,135,143
Number of additional couples under IMSS Law 73	897,061	1,389,952
Number of additional couples under IMSS Law 97	1,794,122	2,779,904

Note: MXN = Mexican pesos.
Source: Author's own figures using data from Colín (2018).

Table 11. *Impact on Mexico's poverty scenario*

	Projection for 2051			
	IMSS Law 73		IMSS Law 73	
	Number of people	Number of people	Number of people	Number of people
Population in poverty	65,799,553	43.60%	67,593,675	44.80%
Population in extreme poverty	11,469,647	7.60%	14,249,551	9.44%

Source: Author's own figures using data from Colín (2018).

This study hence shows that the effect of the change in the IMSS law will be 1,794,122 additional people living in poverty, and 2,779,904 additional people living in extreme poverty in 2051 (Table 11).

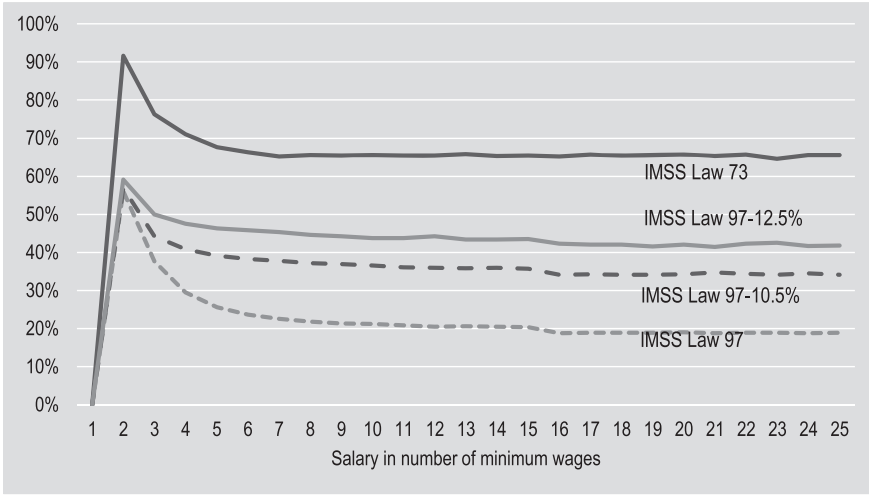
Simulated alternative scenarios based on changes in independent variables

There are two independent variables that Mexican authorities could change to improve pensions: the contribution rate and the retirement age.

The contribution rate under IMSS Law 73 and IMSS Law 97 is 6.5 per cent of the monthly wage.[19] Simulations were made increasing the contribution rate to 10.5 per cent and 12.5 per cent. The results are shown in Figures 7 and 8. While it is appreciated that there is an improvement in the replacement rate, it still falls short of that under the previous IMSS Law 73.

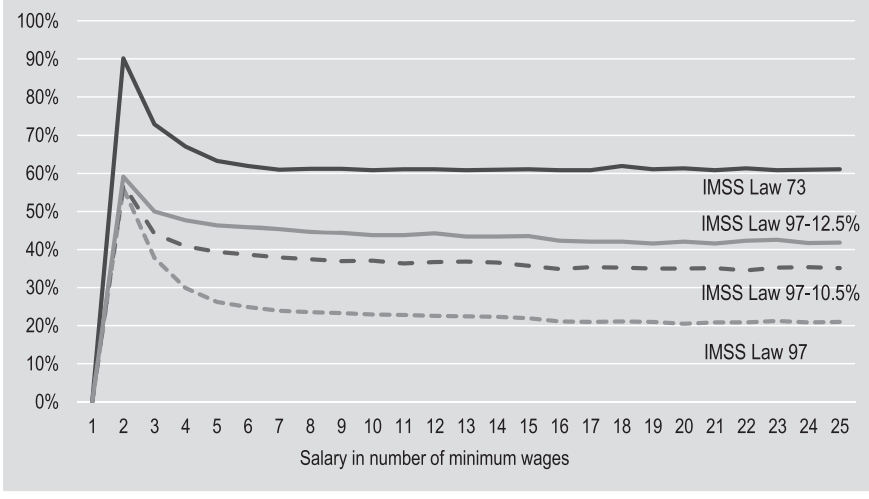
19. Under IMSS Law 97, there is an additional contribution for workers who earn up to 15 times the minimum wage. This represents 5 per cent for a worker earning the minimum wage, and 0.4 per cent for a worker earning 15 times the minimum wage.

Figure 7. *Replacement rate for men using alternative variables*



Source: Author's own figures using data from Colín (2018).

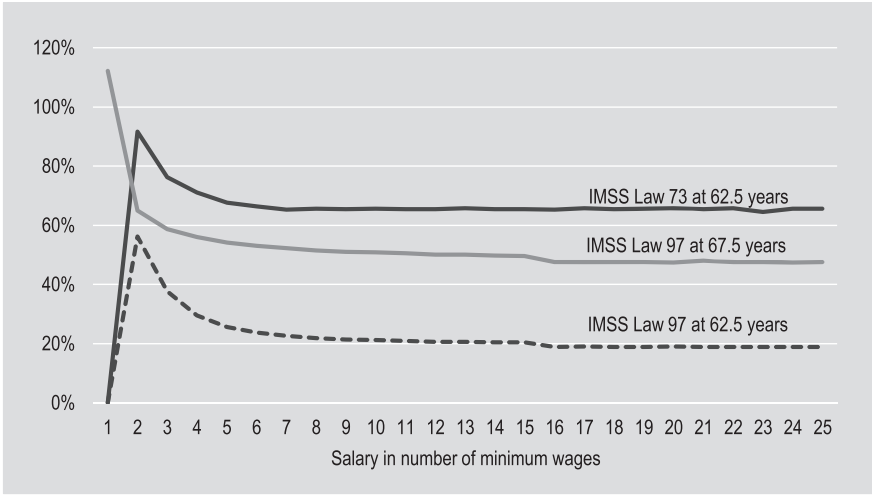
Figure 8. *Replacement rate for women using alternative variables*



Source: Author's own figures using data from Colín (2018).

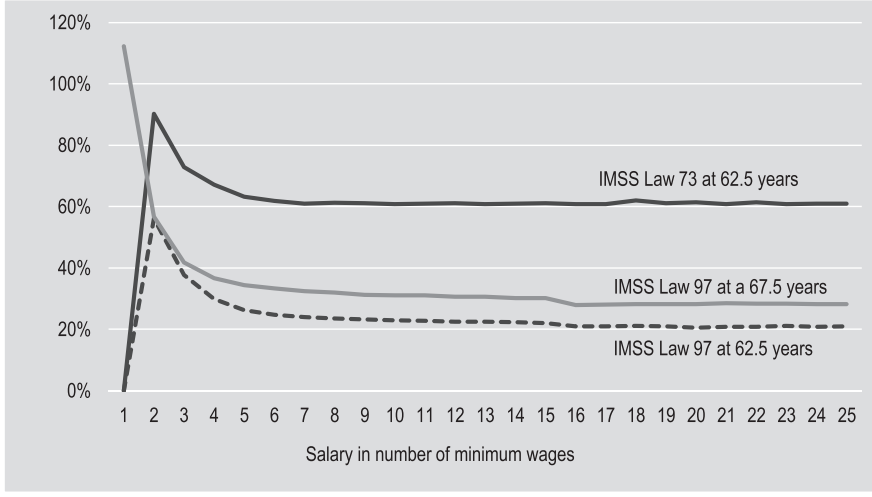
Retirement is possible from age 60. Mexican workers retire on average at 62.5 years. If the retirement age is increased by five years, better replacement rates would be achieved, but the replacement rate is still lower than that of IMSS Law 73. Figures 9 and 10 show these simulations.

Figure 9. *Replacement rate for men with different retirement ages*



Source: Author's own figures using data from Colín (2018).

Figure 10. *Replacement rate for women with different retirement ages*

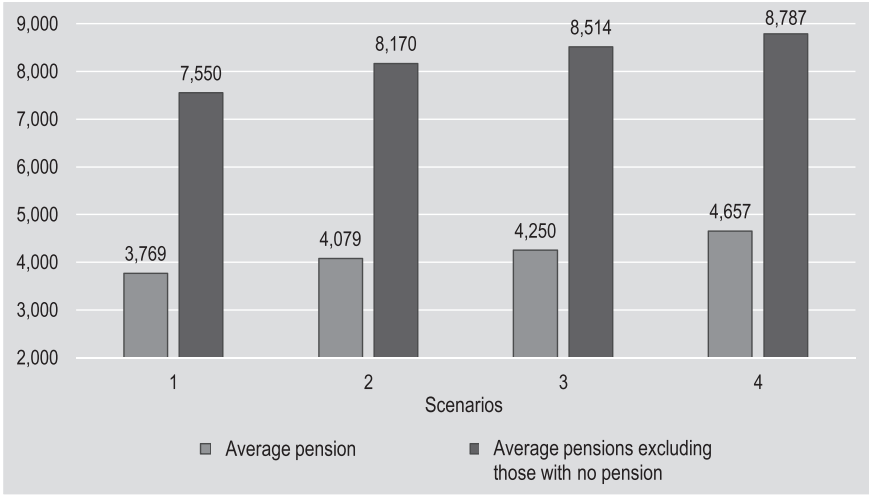


Source: Author's own figures using data from Colín (2018).

Impact on the poverty scenario of changes in variables

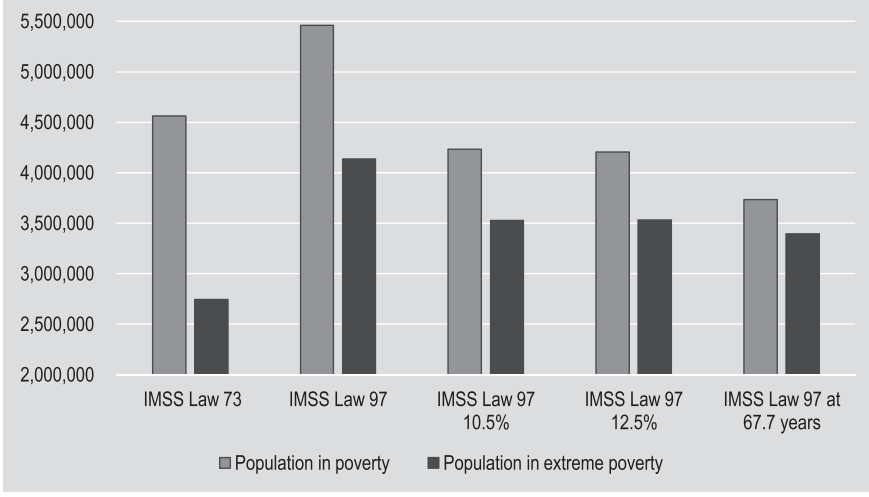
The impact of the changes in the above variables on average pensions can be seen in Figure 11, and the impact on the number of retirees living in poverty or extreme poverty is shown in Figure 12.

Figure 11. *Pensions under IMSS Law 97 and impact of changes in variables*



Source: Author's own figures using data from Colín (2018).

Figure 12. *Retirees living in poverty and extreme poverty in 2051*



Source: Author's own figures using data from Colín (2018).

Concluding comments

The average Mexican worker earns four times the minimum wage. The projected results of this study show that the future of this average citizen lies in poverty. In

the year 2051, 59 per cent of men and 66 per cent of women who retire will have no pension, and those who do have one will have a pension that is on average 57 per cent lower than it would have been under IMSS Law 97. This observation reflects that the replacement rate will drop from 70 per cent to 29.6 per cent.

The reform of the pension law in Mexico entailed a move from a defined benefit system to a defined contribution system. Workers are no longer guaranteed a defined pension amount, but rather pension income now depends on what they have managed to save while active. This uncertainty lies at the root of criticism of defined contribution systems. However, it has been argued that both systems can be adequate if they are designed correctly (Barr, 2002; Barr and Diamond, 2009). In the case of Mexico, the change of system and the creation of the AFOREs was deemed necessary. The problem, however, lies in the fact that the reform was incomplete, since the rate of contributions to the system should have been increased. Currently the contribution is set at 6.5 per cent of the monthly wage, plus a social contribution contributed by the federal government for those earning up to 15 times the minimum wage. These contributions compare unfavourably with those of other countries that levy contributions at more than 15 per cent of the wage (CONSAR, 2015). Figures 7 and 8 show the positive impact of increasing contributions to 10.5 per cent and 12.5 per cent. For an average worker earning four times the minimum wage, the replacement rate increases from 29 per cent to 47 per cent if the contributions are increased from 6.5 per cent to 12.5 per cent of the wage. However, this benefit is only obtained by workers who paid contributions at these higher rates throughout their working life.

Those who started to pay contributions to the IMSS after 1 July 1997 are a generation in transition: they have already spent a large part of their working life paying low levels of contributions, and under the current law are, hence, destined to receive only a small pension, or no pension at all. This generation of workers, which continues to grow, will see an increase in the numbers of poor people by the year 2051. One solution for this generation would be to create a special pension subsidy that is gradually decreased as new workers are able to save more as a result of paying higher rates of contributions. This presupposes that contributions are actually increased in the near future.

If retirement contributions are not increased, Mexico will have to introduce a universal pension (Villagomez Amezcua and Darío Ramírez Sierra, 2014) in order to prevent a large part of the population living in extreme poverty in old age. The current government of Mexico is, in fact, already proposing a universal pension equal to 0.4 times the minimum wage, and available to all people older than age 68, regardless of whether they already receive a pension.

The most serious problem in Mexico, alongside the low levels of contributions, is low contribution density. Longer-term studies conducted in Mexico indicate that

the average density is 42.9 per cent. If a person's working life lasts 40 years and they have an average contribution density, this means that they will have contributed for 17.16 years or 892 weeks. As stated, the minimum length of contributions required to qualify for a pension is 1,250 weeks. For this reason, many workers will not be entitled to a pension.

One partial solution to the problem is to raise the retirement age, as has already been done in other countries. In Mexico, the retirement age is set at 65 years, and early retirement is allowed after 60 years. According to IMSS data (Colín, 2018), the average real retirement age is 62.5 years. If the retirement age is increased by 5 years to give an average retirement age of 67.5 years, then in the case of a male worker earning four times the minimum wage, the replacement rate would increase from 29 per cent to 56 per cent under IMSS Law 97.

Figure 12 shows that increasing the contribution rate or raising the retirement age reduces the numbers of people in poverty and extreme poverty resulting from the present IMSS Law 97. It is urgent to reform Mexico's pension law, to ensure that workers can enjoy a decent life in old age.

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Extending access to contributory pensions: The case of Uruguay

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Abstract Since the 1980s, many Latin American countries have tightened access to contributory pensions, with financial sustainability being a main concern. Studies suggest that a sizable share of contributors would not be able to comply with stricter access conditions, since observed contribution densities were low. While most Latin American countries lack complete work history records, the observed density of contributions offered strong evidence of short contribution histories, in particular for low-income workers and women. In the last decade these facts drove a new wave of reforms, in the form of less demanding eligibility requirements to access pensions and the need for a gender perspective. Uruguay took part in both processes, increasing vesting period conditions in 1996, then lowering them and granting childcare credits in 2008. In this article, we analyse the effects that less strict eligibility requirements would have on pension entitlements in Uruguay, estimating complete contribution histories using administrative records. Work history records have been kept since April 1996 only, meaning there are still no complete work histories. The

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study finds that pension rights would increase, in particular for women. The main effect would be driven by the lower contribution requirement. In addition, childcare credits would further reduce the gender gap in terms of access to benefits. The case of Uruguay is relevant in the regional context, as most Latin American countries are ageing rapidly and can learn from the Uruguayan experience, a country with vital statistics closer to those of developed countries. Also, recent reforms in the region show shared concerns on pension rights and the gender gap.

Keywords gaps in coverage, women, retirement, social security scheme, Uruguay, Latin America

Introduction

Through the 1980s to the early 2000s, several Latin American countries undertook significant reform of their social security pension systems. Previously, most schemes were defined benefit, pay-as-you-go (PAYG) and publicly administrated. In 1980, the Chilean structural reform introduced the region's first defined contribution (DC), individual capitalized and privately administrated scheme. Argentina, Bolivia, Colombia, Peru and Uruguay, among others, followed, at least partially modifying their social security systems in that direction. Yet, other countries maintained their traditional system and made parametric adjustments. The main motivation for reform was to address growing deficits, amplified by combinations of increased longevity and lax regulatory enforcement. The link between contributions and benefits was strengthened and some parameters were adjusted to influence later retirement. Enforcement was also intensified, mainly by the implementation of work history records. As a result, labour market income and gender inequalities were reproduced by social security programmes. A sizeable number of contributors were at risk of being left unprotected (Arza, 2012; Arza, 2017).

Since these reforms, several studies have found low contribution densities in Argentina, Chile, Peru and Uruguay (Alonso, Sánchez and Tuesta, 2014; Arenas de Mesa, Behrman and Bravo, 2004; Berstein, Larraín and Pino, 2005; Bertranou and Sánchez, 2003; Farall et al., 2003; Forteza et al., 2011). Facing a high risk of low rates of future coverage, many Latin American countries are now reforming

their social security systems. Common features are less strict eligibility conditions for pensions, measures to mitigate gender inequality and State participation. Some countries have even dismantled their private DC pillar, such as Argentina. Others have included a non-contributory pension; Chile has created an Old-age Solidarity Pension (*Pensión Básica Solidaria de Vejez*) payable to the poorest 60 per cent of the elderly population (aged 65 or older) (ECLAC, 2018). Uruguay introduced parametric changes to extend access to pensions. This new wave of reforms is mainly motivated by poor performance (or the risk of poor performance) in terms of the coverage and adequacy of pension systems (Alonso, Sánchez and Tuesta, 2014; Cetrángolo and Grushka, 2004; Escóbar and Gamboa, 2014; Gill, Packard and Yermo, 2004; Mesa-Lago, 2016; Shelton, 2012; Wong Torres, 2013).

There is ample evidence regarding women's vulnerability in the labour market and weaker access to pensions (Amarante, Colacce and Manzi, 2017; Foster and Smetherham, 2013; Gardiner, Robinson and Fakhfakh, 2016). Women have more frequent interruptions to their working careers, make greater use of part-time work and receive lower wages in full-time jobs than men. These issues affect women's earnings and contributions to social security. In short, there is a double problem: fewer and lower levels of contributions throughout the working life. Gender inequality has thus risen on the pension policy agenda and specific measures are being adopted (Marco Navarro, 2016; Arza, 2017). Some Latin American countries have introduced gender-friendly elements in their social security systems to improve women's access. Bolivia, Chile and Uruguay have introduced childcare credits for women with children, while Brazil and Costa Rica have introduced care credits for all women regardless of whether they are mothers.

In this article, we analyse the case of Uruguay and focus on the issue of coverage. We explore whether the 2008 reform can successfully increase coverage and contribute to reducing the gender gap by extending access to contributory pensions. Using a sample of work history records from the Social Insurance Bank (*Banco de Previsión Social* – BPS) of workers who were aged 40 or older in 2015, we estimate who and how many would be entitled to contributory pensions at the usual retirement ages under the current rules. These analyses are relevant in the regional context, since many Latin American countries have been reviewing their social security schemes to pursue similar objectives. The remainder of the article is organized as follows. In the next section we detail the reform process in Uruguay. Thereafter we present the methodology and describe the data, before analysing the results of the projections and comparing these with what would have happened if no changes had been introduced in 2008. We then discuss some policy implications and offer conclusions.

The case of Uruguay

The social security system in Uruguay was reformed in 1995, when Law 16713 was adopted.[1] As in other countries in the region, the stated objectives were to link benefits more tightly with contributions and to delay retirement.[2] The financing mechanism was modified, moving from a full PAYG system to a mixed one, combining PAYG with individual accounts. The first pillar is public and mandatory for all workers. The capitalization pillar is private, and mandatory for most contributors; low-income individuals can choose to participate or not, and individuals who exceed the contribution ceiling can increase their contributions voluntarily.

Under the new system, two contributory pensions are provided: a basic pension from the PAYG pillar and an annuity derived from the accumulated fund in the individual account. Both pillars provide an "ordinary" pension at the normal retirement age and an "advanced-age" pension at age 70. Contributors must satisfy the requirement of a minimum number of contributions as well as reach the minimum retirement age to claim both benefits.

Access to benefits was tightened in a number of ways. Required years of contributions were increased to 35 years (ordinary) and 15 years (advanced-age), denoting a 5-year rise for both benefits. Also, since April 1996, the years of contributions are assessed using work history records. Informal mechanisms used to certify contributions, such as testimonial evidence, will gradually be phased out. In addition, the minimum retirement ages by gender were unified at age 60 (ordinary) and age 70 (advanced-age), entailing a 5-year rise for women. Replacement rates in the PAYG pillar were also unified by gender and made more sensitive to retirement age and years of contributions. Further, the period used to calculate the reference salary was extended.

By the early 2000s, Uruguayan social security norms were already deemed too demanding, particularly for women and low-income workers. For instance, Lagomarsino and Lanzilotta (2004) use a sample of administrative records to compute density of contributions between 1997 and 2003, finding workers contribute on average 75 per cent of the time. They also find substantial differences by sector, age and income level. For instance, middle-aged individuals (aged 30–59), working in the public sector and earning high wages, contribute for the whole period. In contrast, low-income employees in the private sector contribute less than 40 per cent of the time. The raising of the minimum contribution requirement in 1995 aimed to delay retirement, but it risked

1. See the NATLEX database.
2. The minimum legal retirement age for women was raised, but for whom delaying retirement is not an option. For men, delayed retirement was promoted by changes in the legal replacement rate.

discouraging formal employment, especially for workers in precarious jobs. For these workers, the likely inability to be able to contribute sufficiently to qualify for contributory benefits was a disincentive to social security coverage.

Bucheli et al. (2005) made a first effort to estimate the proportion of workers who would have at least a certain number of years of contribution at different ages, using contribution densities observed between 1996 and 2004. Their method applied two stages. First, they identified 20 representative individuals, combining gender, sector (public or private) and income quintiles. Using observed frequencies of contribution, they estimated the monthly probabilities of contributing by age. Then, they ran Monte Carlo simulations of complete work histories using the probabilities estimated in the first stage. The most important methodological drawback was that the probability of contributing in a given month was assumed to be independent from the previous history of paying contributions.

They found that only 13 per cent of workers would accumulate the required 35 years of contributions at the minimum retirement age. They also found differences by gender. While 14.5 per cent of men would meet the requirements, the figure for women is 12 per cent. Dissimilarities are even greater when considering whether the individual works in the public or private sector. Whereas 60 per cent of civil servants aged 60 would contribute for at least 35 years, only 3 per cent of private-sector workers would do so. They found that many workers would make contributions over a considerable period, but this would still be insufficient to access an ordinary pension at the normal retirement age. If workers' contribution histories are insufficient at the normal retirement ages, they could not claim contributory benefits until age 70 – provided that they met other eligibility requirements.

In other research, Bucheli, Forteza and Rossi (2006) used the same data and a similar methodology, but they estimated monthly contribution probabilities by age, conditional on the previous month's contributory status. The results were not qualitatively different from the previous study. The most vulnerable groups were found to be women, private-sector workers and low-income individuals.

Bucheli, Forteza and Rossi (2010) used the same sample of work history records and pursued similar objectives, but they conditioned the probabilities of contributing on all preceding information. In the first stage, they estimated transition probabilities between contributing and not contributing using survival analysis. In the second stage, they performed Monte Carlo simulations of complete work histories using the previously estimated probabilities of transition. The results confirmed the prior findings: a significant share of formal workers would not be able to claim contributory pensions at the normal retirement ages. Only 21 per cent of workers would meet the vesting period condition at age 60 and 29 per cent would do so at age 65. Around 30 per cent of individuals would

not qualify for any contributory benefits and women, private-sector workers and low-income individuals were the most vulnerable groups. While 93 per cent of the highest-earning men and 79 per cent of the highest-earning women working in the public sector would access an ordinary pension at age 60, very few private-sector low-income workers would do so.

Several studies thus projected that a low proportion of workers would be entitled to pensions. In this context, conditions to access annuities were made less demanding by 2001. Consequently, at age 65, workers could stop contributing to their individual accounts and claim their annuities, regardless of their number of years of contributions and of their contribution record to the PAYG pillar. The government then organized a National Social Security Dialogue (*Diálogo Nacional de Seguridad Social*), in which representatives of workers, employers, retirees, civil society and experts participated. In this inter-institutional framework, the demographic and social challenges confronting social security were discussed. As a result, several proposals emerged, which were the genesis of a new reform in 2008 (Law 18395).[3]

The main objective of this reform was to relax the conditions to access contributory pensions, and to include a gender perspective. The system's structure and financing were not modified, but some parameters were changed, and some specific situations were considered, such as workers who become unemployed near the usual retirement ages, and the needs of women with children.

The minimum number of years of contributions to access ordinary pensions was reduced back to 30 years, while the minimum retirement age of 60 was maintained. The replacement rate in the PAYG ordinary pension was adjusted downwards, to 45 per cent for workers who meet only the minimum requirements.

To claim an advanced-age pension (age 70), workers are still required to accumulate at least 15 years of contributions. However, early access to benefits may be phased as follows: for every two years of contributions exceeding 15, the minimum retirement age is reduced by 1 year. For the contributory pensions, workers who have not contributed for 30 years no longer have to wait until age 70 to claim benefits; a contributory pension is payable at age 65 if they have contributed for at least 25 years. The replacement rate in the PAYG advanced-age pension was also adjusted and set at 50 per cent for workers who meet the minimum requirements.

There were two important qualitative changes: a special subsidy for unemployed mature workers, and childcare credits for mothers. The former is granted to workers aged 58 or older who have contributed for at least 28 years and lose their job involuntarily during the previous year. Subsidized periods count for

3. See the NATLEX database.

contributory purposes. The subsidy lasts a maximum of two years or until the beneficiary qualifies for an ordinary pension. Childcare credits seek to compensate for inequalities in the labour market and the burden of providing family care. An additional year of contributions is granted to women for each child born alive or adopted as a minor or disabled, up to a maximum of five years. Women can use childcare credit years to become eligible for contributory pensions or to improve the amount of their benefit if they are already eligible.

Lavalleja and Tenenbaum (2017) analyse the first effects of the 2008 Uruguayan reform, using a sample of new retirees. Their analysis is descriptive of who and how many contributors become pensioners. They show that the number of beneficiaries of all contributory pensions has increased and that their distribution by gender has changed. While in 2009, 60 per cent of new pensioners were men, in 2014 and 2015 there were as many women as men. In addition, they show that if social security had not been reformed a high proportion of men would have retired regardless; this would not have been the case for a significant proportion of women. For the latter, the drop in the minimum required years of contributions (from 35 to 30) and the provision of childcare credits are especially relevant.

We further analyse access to pensions in Uruguay, exploring what we can expect to see happen in the near future. As stated, in Uruguay, like in most Latin American countries, complete work history records are not yet available, and workers have frequent interruptions in their contribution histories. We thus estimate who would comply with pension requirements under different rules, using the available contribution information.

Methodology

Our goal is to assess the proportion of workers who would be able to access pensions at the usual retirement ages under the latest pension rules. In particular, we estimate the proportion of individuals who would accumulate at least 30, 25 and 15 years of contributions at age 60, age 65 and age 70. The methodology is based on Bucheli et al. (2005) and Bucheli, Forteza and Rossi (2006). Using work history records, we estimate monthly probabilities of contributing by age and cumulative distribution functions of periods of contribution, which we evaluate at different ages.

The method has two stages. In the first stage, using the observed density of contributions, we estimate the monthly average probability of contributing by age, conditional on the contributory status of the previous month, for several groups of individuals. The probability of contributing is strongly dependent on prior contributory history, so it is relevant to consider such dependence. Although conditioning only on the immediate previous month may seem insufficient, Bucheli, Forteza and Rossi (2010), who conditioned on the entire

observed history, found qualitative results that were no different to those of Bucheli et al. (2005) and Bucheli, Forteza and Rossi (2006). In the second stage, we use the probabilities estimated in the first stage to simulate complete work histories. Performing a thousand Monte Carlo simulations for each group, we compute the proportion of simulated workers who accumulate a certain number of years of contributions at specific ages.

In the first stage, we divide the population into 16 relatively homogeneous groups, according to observable attributes: gender, income level (quartiles) and sector (public or private). Income quartiles are constructed by computing average wages over the whole observation window as a measure of socio-economic level. A worker is classified as a public-sector employee if he or she has contributed to that sector at least half of the time, and as a private worker otherwise.[4]

The unconditional initial probability of contributing for each category is estimated for the first month at age 20. The following probabilities are estimated conditioned by the contribution status in the previous month, by category. Then we simulate contributory status for every month of every age and complete contribution histories for each group, using Markov chains. Finally, we compute the total months of contributions at different ages and the proportion of simulated individuals who accumulate 30, 25 or 15 years of contributions at age 60, age 65 and age 70 in each category.

The methodological improvement is that we correct years of contributions for special bonus activities, childcare credits and testimonial evidence. Some work activities that are considered hazardous, unhealthy or mentally or physically more demanding, have a special bonus with respect to the number of years of contributions. Each month of contributions counts for more than a month in those cases, which means that workers performing such activities are not actually required to comply with 30 years of contributions. Regarding childcare credits, we acknowledge in our computations that women are granted an additional year of contributions per child born or adopted, up to a maximum of five years.

As stated, administrative records are only available from April 1996, thus workers who are currently of retirement age do not have their entire work history registered, and this will remain the case for the next decade. Recognition of the years of contributions prior to the existence of the administrative records includes several mechanisms. The most common are: documentary evidence, which includes work history records, pay checks, and other written documents; the testimony of qualified witnesses; fictional recognition, which establishes that by offering documentary proof for at least half of their declared contributions, workers can have the entire period recognized; and presumptive recognition,

4. Results are sensitive to the "public worker" definition.

which establishes that workers were contributing while receiving maternity, illness or unemployment benefits. According to Colombo (2013), more than 90 per cent of new pensions in recent years include documentary recognition for at least some years of contributions: some 22–30 per cent include testimonial evidence, 13–22 per cent include fictional recognition and around 15 per cent are partially presumptively recognized. All these mechanisms will progressively lose relevance as registered work histories become more complete. It is only possible to correct registered years of contributions using testimonial evidence when there is a lack of information available through the other recognition mechanisms.

We perform a matching procedure to compute corrections to the accumulated years of contributions by special bonus activities, testimonies of witnesses and childcare credits. In the first stage, using the information of new pensioners, we compute the observed years of contributions recognized by these concepts in our 16 categories of workers. In the second stage, we impute the average years added in each category.

Data and descriptive analysis: Evolution of contributors by age, gender and contribution sector

We use a sample of work history records from the Social Insurance Bank containing information about workers aged 40 or older by December 2015, who contributed at least one month between 1996 and 2015. The database provides information on individuals' characteristics: date of birth and gender; characteristics of the enterprises in which these individuals work; contribution sector and activity code (ISIC classification); and characteristics of the job, including start date, wage, end date and its reason (retirement, death, dismissal, etc.), and special bonus if applicable. Employees working in industry, commerce, domestic service and the public sector were analysed.[5] We have information on 134,839 individuals, of which 55 per cent are men and 45 per cent are women; 14 per cent work in the public sector and 86 per cent are private-sector workers; 80 per cent were between ages 40 and 62 by December 2015, the other 20 per cent were older than age 62 (Table 1).

A relevant indicator is the density of contributions, computed as the number of months of contribution divided by the potential months of contribution. The potential months of contribution are months in the observation window until its end, death or retirement, whatever is first.

There are significant differences in this indicator by gender, age, income level and sector. Around 46 per cent of women contributed less than half of the time;

5. We do not consider self-employed workers and employees working in construction or rural activities, because their contributions and wages are registered differently.

Table 1. *Number of individuals in the database by generation*

	Public sector				Private sector				Total			
	Men	Women	Total	%	Men	Women	Total	%	Men	Women	Total	%
1935-1940	1,093	526	1,619	7	2,365	1,776	4,141	4	3,458	2,302	5,760	4
1941-1946	1,302	1,026	2,328	10	3,640	3,749	7,389	7	4,942	4,775	9,717	7
1947-1952	1,316	1,412	2,728	11	4,391	4,836	9,227	8	5,707	6,248	11,955	9
1953-1958	2,019	2,219	4,238	17	6,546	7,915	14,461	13	8,565	10,134	18,699	14
1959-1964	2,663	3,040	5,703	23	9,692	12,278	21,970	20	12,355	15,318	27,673	21
1965-1970	1,612	2,473	4,085	17	10,670	13,647	24,317	22	12,282	16,120	28,402	21
1971-1976	1,302	2,491	3,793	15	12,225	16,615	28,840	26	13,527	19,106	32,633	24
Total	**11,307**	**13,187**	**24,494**	**100**	**49,529**	**60,816**	**110,345**	**100**	**60,836**	**74,003**	**134,839**	**100**

Source: Derived by authors from work history records from the Social Insurance Bank.

this figure is 10 percentage points higher than that of men (Table 2). Also, while 32 per cent of men contributed throughout the period, only 23 per cent of women did so.

There are remarkable differences between public-sector and private-sector workers. While 63 per cent of public-sector workers contributed during the entire period, for the private sector this figure is just 19 per cent. Put

Table 2. *Distribution of the population in the database according to the proportion of time in which the individuals contribute by category*

	Less than 50%	From 50% to 74%	From 75% to 99%	100%	Total
Men	36.5	11.4	19.6	32.5	100
Women	46.1	13.7	17.1	23.2	100
Private	48.0	13.8	18.8	19.4	100
Public	13.5	7.4	15.6	63.5	100
Quartile 1	75.1	10.7	7.2	7.0	100
Quartile 2	51.1	17.9	18.4	12.7	100
Quartile 3	27.5	15.1	27.7	29.7	100
Quartile 4	13.3	7.0	19.6	60.2	100
Total	41.8	12.7	18.2	27.4	100

Source: Derived by authors from work history records from the Social Insurance Bank.

alternatively, while almost half of private-sector employees contributed less than half of the time, the figure for public-sector workers is just over 10 per cent.

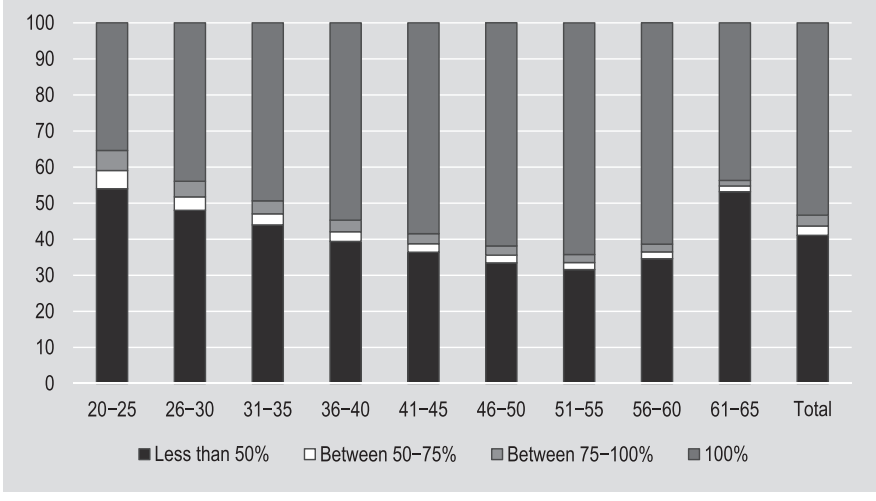
Pronounced dissimilarities are also seen according to income level. In total, 75 per cent of the poorest contributed less than half of the time, while this is true only for 13 per cent of the richest. At the same time, 60 per cent of high-income workers contributed throughout the whole period, while less than 10 per cent of the poorest did so.

Density of contributions has an inverted U-shape relationship with age. As shown in Figure 1, roughly half of workers aged 20–25 contributed less than half of the time. In contrast, more than 60 per cent of workers aged 51–55 contributed for the entire period. The density of contributions decreases near the minimum retirement age. Possibly, workers with greater stability in the formal labour market are more likely to retire, leaving more precarious workers at advanced ages overrepresented.

It is worth noting there are also differences between men and women by age. While 59 per cent of women aged 20–25 contribute less than half of the time, this figure falls to 47 per cent for men. Whereas 67 per cent of men aged 51–55 contributed over the entire period, 61 per cent of women did so.

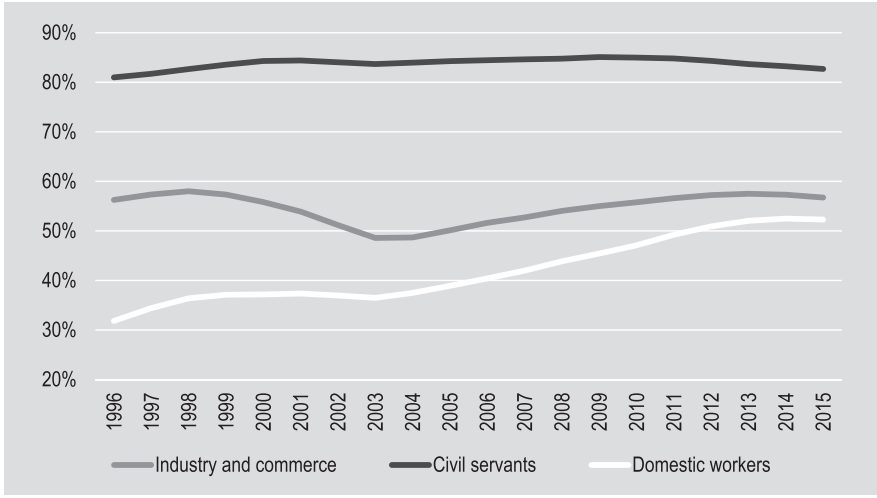
Figure 2 shows the evolution of the density of contributions by sectors. Jobs are very stable in the public sector. So, the density of contributions for public-sector workers does not vary over time. However, density of contributions for private-sector workers is much more linked to economic fluctuations. For example, the

Figure 1. *Average density of contributions, by age*



Source: Derived by authors from work history records from the Social Insurance Bank.

Figure 2. *Average density of contributions, by sector (1996–2015)*



Source: Derived by authors from work history records from the Social Insurance Bank.

density of contributions for industry and commerce workers shows a sharp drop during the economic crisis of 2002, and a subsequent recovery. In the case of domestic workers, the notable increase in density of contributions is the result of specific policies implemented during the period (ILO, 2015).

The probability of contributing in a given month has the expected inverted U-shape relationship with age, for all income levels and sectors. It is always higher for better-paid workers, both in the public and private sectors, and always higher in the public sector. For example, a private-sector worker who is aged 35 and has earnings below the median has a probability of contributing in a given month equal to 0.47. Meanwhile, a worker with the same characteristics but with an upper quartile wage has a probability of contributing equal to 0.82. If we compare private-sector and public-sector workers, the differences would be even greater: 0.51 for the former versus 0.94 for the latter.

Results: Pension entitlements at ages 60, 65 and 70, according to Law 18395

We estimate the proportion of workers that would accumulate, at least, the 30 years of contributions required by Law 18395 of 2008 to access an ordinary pension at age 60, age 65 and age 70, for each of the 16 categories. In addition, we also compute the proportion of workers who would accumulate at least 25 years of

contributions at age 65 and at least 15 years of contributions at age 70, the requirements for the advanced-age pension.

We analyse three scenarios: i) simulations of complete work histories based only on work history records including correction for special bonus activities; ii) estimation adding the imputation of testimonial evidence to the previous result; and iii) estimation adding the imputation of childcare credits to the previous result. It is to be borne in mind that by not including other mechanisms to recognize years of contributions, owing to a lack of information, estimations may be biased downwards.

Testimonial evidence, as a mechanism to recognize years of contributions prior to the existence of work history records, is more intensively used by more precarious workers. Large enterprises or public-sector employees are more likely to have documentary evidence for the recognition of years of contributions. As a mechanism benefiting workers more in precarious labour situations, it should also benefit women more. Obviously, childcare credits in the event of maternity, would also improve women's access to contributory pensions. Both corrections would contribute to reduce the gender gap in coverage.

Table 3 shows results for the all scenarios. They are consistent with previous findings. Just over 30 per cent of workers would accumulate at least 30 years of contributions at the minimum retirement age. Corrections using testimonial evidence and for childcare credits increase this to close to 40 per cent. These results are not homogeneous by category. At any age, men would accumulate a greater number of years of contributions than women. In scenario i), at age 60, 38 per cent of men could claim an ordinary pension, while only 26 per cent of women could do so. Women benefit more from both types of correction, so that the gender coverage gap is only 4 per cent in scenario iii).

The analysis also reveals significant differences between workers who work in the public and private sectors. In the public sector, the proportion of workers who would meet the contribution requirement at age 60 is over 80 per cent, with no corrections applied. Meanwhile, only 20 per cent of workers in the private sector would access a contributory pension at the minimum retirement age. Among workers in more precarious employment, corrections by testimonial evidence and childcare credits have a greater impact. These corrections increase the proportion of private-sector workers with access to a contributory pension at age 60 to almost 30 per cent.

Finally, results by income level also show large differences. Among workers whose income is below the median, the proportion that would be entitled to a pension at age 60 is practically zero. Among those with income just above the median, 39 per cent would accumulate the years of contributions required to retire at age 60; while the same would be true for 85 per cent of those in the top

Table 3. *Percentage of workers who contribute for at least 15, 25 or 30 years at the ages 60, 65 and 70*

Category	Scenario 1: Labour histories + correction by bonus activities					Scenario 2: Scenario 1 + correction by testimonial evidence					Scenario 3: Scenario 2 + correction by childcare credits				
	At age 60, accumulates at least X years of contribution		At age 65, accumulates at least X years of contribution	At age 70, accumulates at least X years of contribution		At age 60, accumulates at least X years of contribution		At age 65, accumulates at least X years of contribution	At age 70, accumulates at least X years of contribution		At age 60, accumulates at least X years of contribution		At age 65, accumulates at least X years of contribution	At age 70, accumulates at least X years of contribution	
	X=30	X=25	X=30	X=15	X=30	X=30	X=25	X=30	X=15	X=30	X=30	X=25	X=30	X=15	X=30
Total	31	53	36	79	39	34	57	39	82	42	38	62	44	86	46
Men	38	66	45	84	49	40	68	47	85	51	40	68	47	85	51
Women	26	42	29	76	30	29	48	33	80	35	36	57	40	88	43
Public	81	92	87	96	88	82	92	87	96	88	85	93	89	96	90
Private	20	44	25	76	28	23	50	29	79	32	27	55	34	84	37
Quartile 1	0	0	0	21	0	0	0	0	30	0	0	1	0	46	0
Quartile 2	0	24	3	97	6	3	39	9	98	13	8	52	16	99	22
Quartile 3	39	88	53	100	59	48	91	61	100	66	56	94	68	100	72
Quartile 4	85	99	89	100	90	85	99	89	100	90	87	99	90	100	91

Source: Authors' work.

quartile. Imputation of testimonial evidence and childcare credits would increase the proportion of middle-income workers with pension rights. It would not significantly affect high-income individuals, since they would already meet the contribution requirements. Nor would it improve access for the poorest workers, for whom the density of contributions is typically very low.

There would be significant improvements in pension access if workers were to postpone retirement. At age 65, more than half of the workers would be entitled to some contributory benefits in all scenarios. Also, 80 per cent of workers aged 70 would be entitled to pensions. There are still differences between categories of workers and corrections always improve pension coverage. The most important result is the significant reduction in the gender gap in access to pensions. At age 60 (with all corrections), 40 per cent of men and 36 per cent of women would accumulate the required 30 years of contributions. At age 65 (with all corrections), the proportion of women that could claim an advanced-age pension increases by 9 percentage points. At age 70 (with all corrections), the gender gap in access to pensions was closed. The issue of concern is that more than half of the poorest workers would experience net losses in their contributory relationship with the social security system, given that they would have contributed at least for some years, but would not qualify for any contributory benefits.

In order to assess the impact of the changes introduced by Law 18395 of 2008, we estimate and compare the proportion of individuals that would acquire pension rights under the previous regulation (Law 16713 of 1995) and the current one (Law 18395 of 2008) at selected ages: age 60, age 65 and age 70. In all cases, we estimate the proportion of workers who could claim both types of contributory pensions: ordinary and advanced-age. All estimations include corrections for special bonus activities and testimonial evidence, but only the current regulation includes childcare credits.

At the minimum retirement age, workers can claim only the ordinary pensions under both schemes. Prior to 2009, the contribution requirement was 35 years but it is now 30 years. At age 65, workers could not claim an advanced-age pension under the previous rules. There were no differences in contributory requirements at age 60 or age 65;[6] in both cases workers had to accumulate at least 35 years of contributions to access the ordinary pension. Since 2009, two types of benefits can be claimed at age 65: an ordinary pension, with least 30 years of contributions, or an advanced-age pension, with at least 25 years of contributions. Finally, individuals aged 70 are entitled to an advanced-age

6. At least in the PAYG pillar. A previous change in 2001 established that workers can stop contributing to the individual account at age 65 and claim their annuity, regardless of the total number of years of contributions.

pension with at least 15 years of contributions under both regimes, as well as the ordinary pension when having the required years of contributions.[7]

Table 4 shows the proportion of workers that would be entitled to pensions before and after the 2008 reform. At the minimum retirement age, the proportion of workers that could claim an ordinary pension triples, reaching 38 per cent. In this case, men and women benefit equally from the reduction of the minimum contribution requirement. The proportion of workers that would accumulate at least the years of contributions required to access full benefits increases in both the public and private sectors. It more than doubles in the public sector and it is five times higher in the private sector. Finally, the proportion of workers who would acquire pension rights rises substantially among higher-earning individuals. There is a 50-percentage point increase for workers belonging to each income quartile above the median. However, the poorest workers continue to be excluded from contributory pensions at the minimum retirement age. Only 3 per cent of the poorest half would be able to access a pension at age 60.

Law 16713 of 1995 did not provide advanced-age pensions at age 65. Thus, if a worker did not accumulate 35 years of contributions, they could not access a contributory pension until age 70. Therefore, only 18 per cent of workers acquired pension rights at age 65. Under the latest rules, 44 per cent of individuals will be able to claim an ordinary pension and 18 per cent an advanced-age pension, tripling the number of pensioners. The proportion accessing ordinary pensions is projected to increase from 20 per cent to 47 per cent and from 17 per cent to 40 per cent for men and women, respectively.

From the results, private-sector workers would significantly benefit from the change in pension rules in both types of contributory pensions. At age 65, access to ordinary pensions would rise from 8 per cent to 34 per cent for these workers. If we also consider advanced-age pensions, 55 per cent of private-sector employees would acquire pension rights. Almost all public-sector employees could claim contributory pensions at age 65 under the latest rules. Given their high density of contributions, the vast majority would access ordinary pensions.

Most workers whose income is above the median would acquire pension rights at age 65 under the new regulations. However, the poorest workers would continue to be excluded from access to pensions. Access to contributory pensions for middle-low-income employees would rise from virtually zero to more than

7. Under Law 18395, the advanced-age pension can be claimed at age 66 having accumulated at least 23 years of contribution; age 67 with 21, age 68 with 19, or age 69 with 17. The only case where workers must wait until age 70 is when they have not accumulated at least 17 years of contributions before this age. Under the previous rules, workers had to wait until age 70 if they fell short of 35 years of contributions, even by one year.

Table 4. *Percentage of workers that acquire pension rights under the previous and current regulations at selected ages, by category*

Category	Age 60		Age 65						Age 70					
	Law 16.713	Law 18.395	Law 16.713			Law 18.395			Law 16.713			Law 18.395		
	Ordinary	Ordinary	Ordinary	Advanced	Total	Ordinary	Advanced	Total	Ordinary	Advanced	Total	Ordinary	Advanced	Total
Total	11	38	18	0	18	44	18	62	21	64	85	46	40	86
Men	12	40	20	0	20	47	21	68	23	62	85	51	34	85
Women	11	36	17	0	17	40	15	57	19	65	84	43	45	88
Public	39	85	64	0	64	89	5	93	70	26	96	90	8	96
Private	5	27	8	0	8	34	21	55	10	72	82	37	47	84
Quartile 1	0	0	0	0	0	0	0	1	0	41	41	0	30	46
Quartile 2	0	8	0	0	0	16	30	52	1	97	98	22	85	99
Quartile 3	8	56	20	0	20	68	30	94	26	74	100	72	34	100
Quartile 4	37	87	52	0	52	90	9	99	57	43	100	91	10	100

Source: Authors' work.

International Social Security Review, Vol. 72, 4/2019

50 per cent. As expected, the number of workers claiming an advanced-age pension would decrease as income increases.

In 2001, contribution conditions changed for workers contributing to both pillars. Before that date, PAYG benefits and annuities were claimed together, provided that all eligibility requirements were met. Since 2001, individuals aged 65 can stop contributing to individual accounts and claim an annuity based on their accumulated fund, regardless of their number of years of contributions and their situation in the PAYG pillar.[8] So, those who contribute to both pillars would have access to some contributory benefits at age 65. Low-income workers are not required to contribute to individual accounts, which could reinforce their exclusion from contributory pensions.

Pension rights do not significantly vary under both regimes at age 70. In both cases, around 85 per cent of workers would be able to access a pension. Although there are no significant differences in the total number of retirees, there is a great difference in composition. Under Law 16713 of 1995, 21 per cent and 64 per cent of workers could access ordinary and advanced-age pensions, respectively. On the contrary, under Law 18395 of 2008, 46 per cent could access full benefits, while 40 per cent would access advanced-age pensions.

Most middle-income and high-income workers would be able to claim pensions at age 70 under any regulation. The important difference is the proportion of individuals who could claim full benefits, which would rise from 1 per cent to 22 per cent for middle-low-income workers, from 26 per cent to 72 per cent for middle-high-income workers, and from 57 per cent to 91 per cent for high-income workers. Both before and after the parametric reform, the only option for accessing contributory pensions for the poorest workers would be an advanced-age pension at age 70.

Policy implications

Uruguay is among the Latin American countries with the highest proportion of population aged 60 or older. Its demographic statistics are more aligned to European than Latin American countries. Many Latin American countries, such as Chile and Colombia, are ageing rapidly and will soon face similar concerns to those of Uruguay. Uruguay has a long tradition of social security arrangements, and coverage rates for the economically active population and the elderly are very high; more than 60 per cent of the former and around 90 per cent of the latter are covered (Rofman, Lucchetti and Ourens, 2008). While there are no big differences in coverage by gender or income level among beneficiaries,[9] they are

8. Logically, if workers accumulate few years of contributions, their annuities will be low in value.
9. Probably, survivors' pensions play a key role in this fact.

huge differences across individual contributors. Concerns remain about future coverage, with vulnerable groups of workers and gender inequality placed firmly in the policy spotlight.

In 1995, Uruguay tightened access to contributory pensions, with the issue of financial sustainability being the main driver. As in many other countries in the region, the reform included the institution of work history records, to help enhance capabilities to enforce pension rules. Prior to work history records, the totalization of years of contributions was based on informal mechanisms. It may have been possible to award contributory pensions to workers who did not meet the contributory requirements. There was no mechanism to develop an accurate estimation of the density of contributions. Thus, the 1995 reform led to a tightening of the access requirements, seeing not only a rise in the minimum years of contributions required but a stricter enforcement of the regulation.

In the early 2000s, when the first samples of work history records were released, the density of contributions in Uruguay could finally be computed and the numbers they revealed were not encouraging. Large sectors of the population frequently interrupted their social security contributions, having highly fragmented work histories. In the light of concerns that high rates of coverage for the elderly would fall dramatically for the next generation of pensioners, in 2008 the conditions for access to pensions were made more flexible.

As work history records become more complete, compliance with the contribution period will be more effectively controlled. If governments focus on keeping old-age coverage high, contribution requirements must be consistent with the contribution density of the working population. Also, recognition of the needs of vulnerable groups has been a first step to taking policy actions to correct for them. In the case of women, childcare credits could be an efficient tool in compensating for the childcare burden. It is open to discussion whether there are other non-maternity related gender inequalities in the labour market and family-care burdens that social security should address.

In the case of low-income workers, it has been shown that high minimum contribution requirements are more prejudicial to workers with more fragmented work histories. It has also been shown that low-income workers are those with the lowest density of contributions. Systems that avoid "full benefit/no benefit" formulas are deemed more suitable for vulnerable workers. The discussion about contribution incentives and pension benefit adequacy remains an open one.

Finally, concerns about fiscal sustainability remain an important issue for Uruguayan social security. The alleviation of the burden on social security financing that was expected to be addressed by the DC pillar has not materialized. Contributors to the two-pillar pension regime are now reaching the minimum retirement age. The 2008 reform has had a negative fiscal effect, as it

expanded coverage and allowed many contributors to claim contributory pensions at ages younger than under the previous rules.

A notional defined contribution system, with low or inexistent contribution requirements, could contribute to expand coverage to all contributors and, by design, it aims to be sustainable. Of course, it would not be sufficient to address issues of pension adequacy. Precarious workers would most probably require assistance.

Concluding remarks

In the last decade, many Latin American countries have reformed their social security systems. Common objectives are to expand access to pensions and adopt measures to mitigate gender inequality, often through State participation. In a context where the projected proportion of workers, in particular women, who would be able to receive a retirement pension was very low, the reform implemented in Uruguay in 2008 has sought to expand coverage. Using administrative data from the Social Insurance Bank in Uruguay, we show that the reform would have a positive effect on increasing access to pension access for low-income workers and help to reduce gender inequality. The main effect on general access is given by the lower contribution requirements to claim an ordinary pension and the phased access to the advanced-age pension. In turn, childcare credits appear to fulfil the objective of further reducing the gender gap in accessing self-financed contributory benefits. Overall, about 40 per cent of men and women accumulate the required 30 years of contributions at the minimum retirement age. This result is relevant for other Latin American countries that are including gender policies in their social security systems.

Most public-sector workers could claim an ordinary pension at the usual retirement ages, while receipt of the advanced-age pension remains limited for these workers. The new regulations have a strong impact on pension access for private-sector workers, contributing to reducing the sharp differences that persist between them and public-sector workers, particularly in the overall number of pensioners. Still, the proportion of public-sector employees that would accumulate, at least, the required years of contributions is almost triple that of private-sector workers at any age. If we consider both types of pensions, this difference is systematically reduced with age, to only 12 percentage points at age 70 (84 per cent versus 96 per cent).

The proportion of workers that would be entitled to an ordinary pension increases with income level. The vast majority of the highest-earning individuals could access a pension at any of the ages considered. The same is true for individuals with an income above the median of the distribution, more than half could access a pension at age 60 and almost 70 per cent at age 65. However, only

half of the poorest individuals would be able to access some contributory benefit at age 70, and it would be an advanced-age pension. Therefore, less strict eligibility rules do not change the situation of the poorest workers. The paradox is that if these individuals opt to divide their contributions between the PAYG pillar and individual accounts, they would receive some (probably rather low) benefit at age 65, given that the vesting period requirement to access annuities in Uruguay was dropped in 2001.

Enabled by work history records, there is a greater capacity to enforce social security regulations in Latin America in general and in Uruguay in particular. This puts pressure on social security systems to establish rules that are consistent with their labour market realities as well as their objectives in terms of coverage, adequacy of pension amounts, and incentives to contribute. Accordingly, faced with the reality of low contribution densities, rules that define high contribution requirements and strict controls may leave large segments of the population unprotected.

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Youth-oriented active labour market policies and economic crisis: Explaining policy effort in Greece and Portugal

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Abstract The starting point of this study is the implementation of seemingly similar youth-oriented labour market policies in Greece and Portugal. Both countries have suffered high youth unemployment rates and have been pressured to restructure their labour market as part of the rescue programmes adopted during the European sovereign debt crisis. Despite convergence in terms of policy trajectories, there is a significant divergence in employment outcomes. In Portugal, youth-oriented policies were better-targeted and structured. Their implementation has been more effective and has involved the social partners from the outset of the crisis. In Greece, policy design failures, administrative weaknesses and unfavourable macroeconomic conditions have limited the dynamics of youth-oriented policies thus increasing youth insecurity. The analysis suggests that convergence in policy content can be compatible with divergence in terms of outcomes.

Keywords youth unemployment, employment policy, economic recession, Greece, Portugal

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Introduction

Since the 2008 financial and economic crisis, young generations have paid the highest price. Over the last decade, the youth unemployment rate in the European Union (EU) has been more than double the overall unemployment rate, and young Europeans have faced widespread insecurity and social exclusion. More than 3.4 million young people were unemployed in 2019, and 5.5 million were neither in employment nor in education and training (NEET) in 2018. Although youth unemployment decreased from 24 per cent in 2013 to less than 15 per cent in 2019, it is still high and masks big differences between EU countries.

Against this background, it comes as no surprise that the EU Member States have adopted a greater number of youth-oriented active labour market policies (ALMPs) covering education and training, subsidized employment and labour market services (Bonoli, 2010; Card, Kluve and Weber, 2015; Caliendo and Schmidl, 2016). At the same time, the EU has launched initiatives to tackle youth unemployment within the framework of the European Employment Strategy (EES), the Open Method of Coordination (OMC) and the European Social Fund (ESF) (De la Porte and Pochet, 2012), among which the European Youth Guarantee (YG), adopted in 2013 is the most prominent measure. In the approach pursued so far, most of the weight of interventions is placed on young people's educational, technical and personal skills. This orientation is defined by the concept of "employability" and is expressed by the implementation of three types of policies: training, career guidance and activation (Martín, 2012).

Empirical work on the influence of the OMC and the EES has found evidence of significant domestic policy shifts and creative usage of these by domestic policy networks to further the interests of governments (Heidenreich and Zeitlin, 2009; Stiller and van Gerven, 2012). Examining the adoption of youth-oriented ALMPs in the Nordic and Baltic EU Member States across 2007–2015, Tosun, Unt and Wadensjö (2017) find that with the relatively similar "problem pressure" stemming from youth unemployment, EU-guided learning and the provision of EU funding could lead to similar policy responses. However, is this always the case?

This article examines Greece and Portugal, both of which experienced very high youth unemployment rates during the Great Recession and adopted a comprehensive set of similar labour policy reforms in line with the core recommendations of the EES and the flexicurity rationale as part and parcel of their respective rescue programmes. Despite initial similarities, the two countries' paths soon diverged. Portugal is presented as an example of success in which reforms and adjustment are bearing fruits (EFSF, 2014). Youth employment has recovered nearly to 2010 levels, while youth unemployment has dropped below the level recorded just

before the onset of the financial and economic crisis. In contrast, after eight years of bailouts, the Greek labour market situation is improving but continues to be very challenging (Wyplosz and Sgherri, 2016). Greece is the worst performer among the EU28 in terms of youth employment and unemployment.

To this end, two research questions that guide this study are posed. First, what was the impact of the "youth-oriented reforms" for youth in Greece and Portugal during the eurozone debt crisis? Second, how can similarities and differences in policy effort be explained between the two cases?

The first question focuses on the policy mix that has been adopted in response to the crisis and tries to empirically measure its impact on key indicators of the youth labour market. Prior to the crisis, "Europe" was used by domestic actors for upgrading national welfare states; however, this process remained incomplete and somewhat uneven (Zartaloudis, 2014, p. 432). In Greece, policy-makers were pushed to promote the activation of the unemployed in order to conform to the ESF regulations, which were linked with the EES guidelines. By contrast, in Portugal a group of policy entrepreneurs utilized the soft stimuli of the EES to promote their reform agenda by linking it with the EES guidelines (Zartaloudis, 2013, p. 1189).

The second question correlates the findings of the first question with the existing institutional settings and legacies, shedding light on how the same neoliberal policy trajectories in youth-oriented policies could deliver divergent outcomes. To this end, the content of the policies and their outcomes are distinguished. In the literature on the welfare state responses to the crisis, many scholars argue that path dependencies prevail in the course of structural reforms (Chung and Thewissen, 2011; Lallement, 2011), while others emphasize convergence (Pontusson and Raess, 2012; Shahidi, 2015) pointing at the strengthening of neoliberal policy agendas.

In contrast to prior studies, this analysis stands in the middle arguing that convergence and divergence can be observed simultaneously (Papadopoulos, 2016; Kiess et al., 2017). High levels of problem pressure are expected to induce governments to adopt policy measures irrespective of existing policy arrangements (Tosun, Unt and Wadensjö, 2017). In the two cases examined, the rising youth unemployment rates and policy conditionalities required by macroeconomic adjustment programmes can be considered as problem pressure that induces policy-makers to act. Policy agenda is specified with reference to the policy goals and measures of the reform programmes. However, while neoliberal ideas exercise substantial influence over labour market reforms, policy changes seem to be path dependent. As will be shown, while common stimulus is necessary for change, reform trajectory depends on internal incentives and institutional structures. This reasoning leads to the formulation of the following theoretical proposition (TP):

> TP: External commitment acted to strengthen convergence in terms of the policy trajectory, however existing institutional settings contributed to diversity in the design and implementation of ALMPs during the crisis.

It is argued that the divergence in policy outcomes observed in the two cases seems to revolve around the alchemy of a number of ingredients: effectiveness of policy-making machinery; types of youth-oriented ALMPs adopted; programme design faults; macroeconomic context within which reforms are implemented; degree of programme ownership; and level of social dialogue. While the eurozone crisis seemingly changed the policy agenda for youth employment policies, policy outcomes can be largely explained by the influence of institutional structures which serve as intervening variables.

The rest of the article proceeds as follows. The next section provides details on ALMPs. We then outline the research methodology. Thereafter we present the empirical description of the implemented responses of Greece and Portugal before focusing on the outcomes of the adopted reforms. To conclude, the empirical findings are discussed and the contribution to the current debate is outlined.

Active labour market policies

Originating in Northern Europe and based on new social democratic ideas (Kuitto, 2016), ALMPs have been a core pillar of many governments' efforts to support the labour market integration of young people, especially during economic downturns (Eichhorst and Rinne, 2014, p. 8). Although there is no agreed definition of the concept, the OECD (OECD, 2013, p. 132) currently defines activation strategies as aiming:

> to bring more people into the effective labour force, to counteract the potentially negative effects of unemployment and related benefits on work incentives by enforcing their conditionality on active job search and participation in measures to improve employability, and to manage employment services and other labour market measures so that they effectively promote and assist the return to work.

ALMPs make unemployment support conditional on active labour search and participation in active labour measures, employment services and other labour market measures that promote the return to work (Corbanese and Rosas, 2017, p.1).

Bassanini and Duval (2009) stress the complementarity or trade-off between ALMPs and unemployment insurance and related benefit systems. ALMPs appeal to policy-makers in both liberal and conservative welfare regimes as they tend to be less expensive compared to compensating programmes, while their implementation creates less path-dependent implications (Kuitto, 2016, p. 445). They offer social security "without necessarily resorting

to redistributive measures and without changing established social hierarchies" (Armingeon, 2007, p. 907).

Overviewing youth activation strategies in the Member countries of the Organisation for Economic Co-operation and Development (OECD) and the EU Member States, Eichhorst and Rinne (2014) identify five types of ALMPs. The first is job-search assistance, which refers to counselling activities provided by caseworkers of the public employment services (PES). The second type relates to training programmes, which are used to integrate unemployed individuals into employment. The third type is subsidized employment with private enterprises (based on temporary contracts), which primarily aims at providing a financial incentive for employers to hire unemployed youth. The fourth type consists of direct job creation measures and public employment programmes, which are state-funded temporary employment opportunities in the public sector or in non-profit organizations, and that usually involve production of socially valuable goods or services. The fifth type refers to start-up subsidies, self-employment assistance and support for the promotion of entrepreneurship among the unemployed. The ideal types are unlikely to exist in pure form in the real world (Bonoli, 2010, p. 10). For example, in countries where social benefits are less generous and the labour market policy administration is more limited in its capacity, activation policies are typically implemented as a sort of income transfer via direct job creation (Eichhorst and Rinne, 2014, p. 9).

The Great Recession, and the subsequent hikes in youth unemployment in many countries, led the European Commission (EC) to adopt the Youth Employment Package (YEP) in 2012. The YEP proposed a youth guarantee (YG), which the Council recommended to the Member States in 2013. Specifically, the Council called on the Member States to adopt measures to give every young person younger than age 25 a good-quality offer of employment, continued education, apprenticeship or traineeship within a period of four months of becoming unemployed or leaving formal education. The majority of continued education offers (two-thirds) are currently provided in the form of ALMPs interventions (EC, 2018a, p. 5). The EC is closely following development and policy initiatives in the Member States (EC, 2016a), while substantial EU financial support for the YG implementation (EUR 8.8 billion for the period 2014–2020) is provided through the ESF and the Youth Employment Initiative (YEI). The assistance will be made available to regions with a youth unemployment rate above 25 per cent. The success of the YG is closely linked to the capacity of PES. In contrast to the Nordic countries, which provide the model on which the YG is based, in Southern European countries both private and public employment services are very weak, and this jeopardizes the YG's chances of success (Pastore, 2013). This appears to be confirmed by the findings of this study. As will be shown, organizational

shortcomings in the functioning of the PES have impacted on YG potential in delivering activation.

Case selection and data

Greece and Portugal provide a good basis for comparison for several reasons. Both countries are classified as representative examples of the Southern European welfare state, and they share a number of common characteristics. First, they have an insider-oriented segmented labour market, marked by high levels of employment protection for labour market insiders and a large number of atypical workers with very low levels of security (Moreira et al., 2015, p. 204). Second, both cases share features identified in the literature that constrain "Europeanization" – including weak administrations, fragmented social partnership, lack of co-operation between different actors, and a culture showing neglect of EU policies (Zartaloudis and Kornelakis, 2017, p. 1148), thus more impervious to external pressures. Third, they experienced comparatively high youth unemployment rates even before the crisis. This implies structural problems with respect to the training of youth and other institutional aspects of the labour market, and the marginal role played by vocational training (Eichhorst and Neder, 2014). Fourth, they both received bailout funds and came under strong pressure to make major changes in their industrial relations in exchange for the receipt of this financial support. Fifth, as EU Member States, they participate in the YG scheme and receive significant EU financial support to address youth unemployment through the ESF and the YEI.

Apart from such similarities, the two cases differ in a number of important aspects. First, in Portugal the period of crisis was shorter, the Portuguese GDP registered a 6.7 per cent cumulative decline during the implementation of the adjustment programme, and the country adopted only one three-year adjustment programme (2011–2014). Greece needed three rescue packages to prevent bankruptcy, and the recession resulted in a cumulative negative growth of GDP over 26 per cent across 2008–2016. Second, Portugal has traditionally had high rates of female activity and employment (higher than among Mediterranean countries), while considerable differences are observed in terms of early school leaving and the educational profile of the NEETs. Third, the two countries have exhibited different records of social consent regarding reforms before and during the crisis. These issues are substantiated in the discussion below.

Regarding the period under investigation, the study reviews and compares ALMP measures for youth adopted by Greece and Portugal in response to bailout agreements. The analysis also considers youth employment reforms before the crisis, as one cannot give a clear notion of divergence or convergence without knowing the point of departure, so our attention is devoted to the period 2008–2017.

Concerning the choice of data, the study relies on comparable data from the memoranda of understanding (MoUs) signed by both countries and the respective evaluation reports supplemented by secondary sources. The analysis reviewed national laws to identify changes to employment security and unemployment insurance. The data for the types of youth-oriented ALMPs adopted in the period 2008–2014 is extracted from the LABREF database,[1] while for the period 2015–2017 the data is taken from the respective country reports prepared by the EC. Employment, unemployment and income and living conditions data in the fifth section are taken from the Labour Force Survey 2019 (Eurostat database). Following the definition proposed by the International Labour Office, the study refers to youth in labour market terms as those individuals above the compulsory school-leaving age (usually between ages 15 and 18) and younger than age 25. After this age most young people have completed education and entered the labour force.

Reform trajectories

Greece

In 2010, the Greek government, the European Financial Stability Facility (EFSF) and the International Monetary Fund (IMF) signed the first MoU for a loan agreement of 110 billion euros (EUR) (EC, 2010). Greece had proven unable to manage its soaring public debt (129 per cent of GDP in 2009) and its almost chronic budget deficit (14.9 per cent of GDP in 2008). Two other bailout programmes were signed in 2012 and 2015, amounting to EUR 130 billion and EUR 86 billion, respectively. The third adjustment programme was completed in August 2018.

The Greek crisis in 2010 was not entirely unexpected. The country's system of socio-economic integration was rooted in clientelism, statism and corporatism that created vertical networks in which the political parties had the leading role. On the eve of the crisis, the Greek labour market was characterized by a high degree of segmentation due to highly restrictive employment protection legislation (EPL), low mobility, low employment protection for young workers, constraints in the introduction of flexible forms of employment and high non-wage labour costs (social contributions, taxes), which encouraged informal and, in some cases, even illegal employment especially in the youth labour market (Seferiades, 2003). Unemployment benefits were very limited and offered income protection mainly to seasonal workers (Dimoulas, 2014, p. 52). The number of beneficiaries was less

1. See the EC LABREF (LABour market REForm) database.

than a fifth of the registered unemployed population (Dimoulas, 2014), and there was little social assistance, especially for young workers without contribution records (Matsaganis et al., 2003, pp. 643–645).

Employment policy costs were minor, absorbing less 1 per cent of annual GDP (0.7 per cent of GDP was spent on benefits and less than 0.25 per cent of GDP was spent on ALMP measures). The fragmentation in social provision hindered the realization of "universalistic social citizenship" (Karamessini, 2015, p. 240), by favouring the construction of a system oriented to protect jobs (chiefly of insiders), but not citizens (Tinios, 2015, p. 18). These features were combined with high levels of industrial conflict (Kornelakis and Voskeritsian, 2014, p. 347) resulting from the social partners' inability over time to conclude social pacts.

Even before the crisis, youth unemployment was higher compared to European standards (21.9 per cent in Greece versus 16.1 per cent in the eurozone in 2008). This resulted from the combined effects of de-industrialization, the continued shrinking of the agricultural sector, women's increasing engagement in the labour market, labour market rigidities, and low competitiveness in markets for goods and services (Petmesidou and Polyzoidis, 2015, p. 8). Even when labour demand was dynamic, unemployment among young people, particularly with upper secondary and tertiary education, was comparatively high (23.7 per cent in 2008; more than double the rate of the EU–28), mostly affecting young men with tertiary education. Female youth unemployment rates were significantly higher than their male equivalents, with Greece being the most extreme case in the EU. The transition from education to employment has always been slower and more incomplete in Greece than in most other European countries, underlying the poor design of the skills mix produced by the education system at all levels for the needs of a dynamic economy (Matsaganis, 2015, p. 83). In summary, the crisis found Greece with an unreformed social protection system, and an employment infrastructure unprepared for what would follow (Tinios, 2015, p. 14). Youth unemployment has been a structural problem for a long time due to macro-economic trends, institutional rigidities, and weaknesses in school-to-work-transitions as well as education/labour market mismatches.

Across 2008–10, youth-oriented programmes were directed mainly at training schemes and hiring subsidies, and were part of the European Economic Recovery Plan. The programme "A start, an Opportunity" provided people aged 16–25 who were not in higher or vocational education with counselling, ICT training and a 5-month period of work experience in firms. Concurrently, the programme "Youth and Business" subsidizing new professionals aged 22–32 was adopted. In 2009, the programme "A start, an Opportunity" was extended, while companies were subsidized for hiring young unemployed persons. Provisions were made to support young scientists (aged 34 or younger) to set up their own enterprises.

The first MoU (EC, 2010) was based on the idea of internal devaluation. To increase competitiveness, the Greek government moved towards the adoption of measures inspired by the spirit of lower labour cost, a key concept in the EES as well as in the OECD guidelines (OECD, 2012; Clauwaert and Schömann, 2012). Policy reforms have focused primarily on promoting a "unilateral" version of flexicurity by dismantling centralized collective bargaining and weakening EPL for permanent employment (Kougias, 2017).

Changes affecting young people in particular included the reduction in 2012 of the minimum wage by 32 per cent (to EUR 511 per month for full-time employees younger than age 25); the extension of probationary periods; the recalibration of rules governing individual and collective dismissals (reduction of notification periods for dismissals and subsequent reductions in compensation); and the promotion of part-time and fixed-term work. In 2010, "stage agreements" were introduced for hiring unemployed persons up to age 24 and for whom social contributions were paid by the Greek Manpower Employment Organization, the OAED.

The second MoU, in 2012, required unemployment benefits to be reduced by 22 per cent, while eligibility criteria were tightened and the duration of benefits reduced (EC, 2012). Most young people remained excluded from social protection, whereas the role of the family in protecting its young members was undermined (Papadopoulos, 2016, p. 416). Two direct job creation schemes were adopted for the "Creation of a National Network of Direct Social Intervention for the Unemployed up to age 30", which aimed at recruiting unemployed young people to staff social and cultural structures. Furthermore, a programme of employment subsidies was introduced for the recruitment of unemployed graduates up to age 35.

The growth of youth unemployment in 2013 to over 60 per cent led the government to adopt seven youth-oriented programmes. Two of these aimed at assisting young entrepreneurs to establish their own enterprises in almost all sectors of economic activity, while the others concerned a wage subsidy scheme; a one-off payment for the entrance of unemployed young people into the labour market according to their formal skills; a "labour ticket" in the form of an employment coupon for young people aimed at reducing undeclared work; as well as a scholarship and an internship scheme in the context of the Youth Action Plan.

The national YG scheme was submitted at the end of 2013 and updated in 2014. Within the framework of the YG, steps have been taken to strengthen the capacity of PES, build partnerships, and modernize and expand the Vocational Education Training system. In the meantime, a reform of the apprenticeship system and the adoption of a voucher scheme for improving access to the labour market took place (EC, 2017).

In January 2019, a few months after the country's exit from the third international bailout, the government announced the first increase of the minimum wage since 2009. The gross monthly minimum wage rose to EUR 650, and the lower minimum wage category for workers younger than age 25 has been abolished.

Portugal

By 2010, Portugal's fiscal and external current account deficits were 10 per cent of GDP, general government debt reached 96 per cent of GDP, and private sector debt climbed to 247 per cent of GDP, implying heavy reliance on external funding (Eichenbaum, Rebelo and de Resende, 2016). With yields continuing to increase sharply, the authorities asked for financial assistance from the EFSF and the IMF. An MoU was negotiated, and the financial assistance amounted to EUR 78 billion for a period of three years. The programme was made conditional on a set of fiscal consolidation measures and structural reforms (OECD, 2017).

Prior to the crisis, the Portuguese labour market was marked by high employment, and a relatively low unemployment rate (Banco de Portugal, 2015), which reached a low of 3.9 per cent in 2000. Thereafter, overall unemployment increased, reaching 8 per cent in 2007. This trend reversal was driven by underlying factors that went beyond cyclical explanations (Centeno, Maria and Novo, 2009). Similarly to other southern European countries, segmentation was a trait of the Portuguese labour market. Fixed-term contracts were used to circumvent the more stringent EPL of open-ended contracts (Novo, 2015; Banco de Portugal, 2015). In an attempt to counter segmentation, Portugal weakened legal employment protection with the approval of the first Labour Code (LC) in 2003 and the individualization of work relations in the second LC in 2009 (Venn, 2009; Ramalho, 2013). Despite reforms, legal provisions remained very strict and protective with regard to remuneration and other work-related costs, objective grounds for dismissal, severance pay on termination of employment contracts, and some special labour contracts, such as fixed-term and temporary agency work contracts (Ramalho, 2013, p. 5; Dickens et al., 2007).

This situation had a profound impact on youth labour market trends (Martins, 2014, p. 5). Until the start of the crisis, youth unemployment had followed an upward path, increasing from a low of 8.6 per cent in 2000 to 16.5 per cent in 2008. The increasing use of temporary contracts (Banco de Portugal, 2015, p. 81; Portugal and Varejão, 2010) resulted in a considerable problem of precariousness. In times of recession, it is such workers, those on temporary contracts, who are most likely to lose their job (Casado, Fernandez

and Jimeno, 2015). These developments were coupled by the emergence of "bogus" self-employment in which workers ostensibly perform autonomous work, but do so under conditions that are characteristic of a work contract (illegal precariousness).

At the same time, education policies paid little attention to forecasting future skill needs and workers' employability resulting from education and training courses (EEO, 2010). This fact is evidenced by the low levels of formal education in the labour force (68 per cent of the workforce in 2009 had completed only basic education), and the high rate of early school leaving (34.9 per cent in 2008), which was almost 2.5 times higher than the EU average. In summary, Portugal entered the crisis with signs of an economic slowdown, reflected in an increasing unemployment rate, a predominantly low-skilled labour force, and a segmented labour market.

The advent of the crisis strongly affected younger age groups (Banco de Portugal, 2015; ILO, 2014; Valente and Marques, 2014). Between 2008 and 2010, employment rates decreased in all age groups younger than age 30 while unemployment rose, mainly affecting low- and medium-skilled workers (EEO, 2010).

Attempting to reverse the upward trend in unemployment, the government moved to adjust apprenticeship training courses, the status of working students, and the professional traineeship programme. It adopted the recovery plan "Initiative for Investment and Employment" that entailed: a combination of training placements and employment subsidizes; the INOV Programmes (professional training placements for young higher-education graduates); open-ended employment contracts for hiring workers younger than age 35 through employer's exemption from the payment of social contributions up to 36 months; professional traineeships for young people in central and local public administration; and a professional internship programme for those attending courses with a professional or technological leaning.

The MoU proposals as regards the labour market relied significantly on the tripartite Employment Agreement signed in 2011 between the social partners and government (Távora and González, 2014, p. 11; OECD, 2017). Three main labour market objectives of the MoU were the reduction of labour market segmentation; the decentralization of collective bargaining; and the implementation of ALMPs, with special attention given to specific groups such as youth and the long-term unemployed (EC, 2014; Martins, 2014; Ramalho, 2013). Among the key challenges to be addressed was the alarming labour market outlook for the 15–24 age group.

Changes affecting young people in particular included the reduction of the value and the maximum period for receiving unemployment benefit by capping unemployment benefits at 2.5 times the Social Support Index (*Indexante dos*

Apoios Sociais – IAS), amounting to EUR 421.32;[2] a further 10 per cent reduction in the unemployment benefit after six months' unemployment; the reduction of the costs associated with employment contracts; and the strengthening of flexibility. The minimum wage was EUR 485 during the entire programme period. In 2014 in Portugal, 19.6 per cent of employees were paid the minimum wage, compared to 11.3 per cent in 2011 (Escaria, 2015, p. 9). The exit from the programme signed a policy "reversal" with respect to the minimum wage, as the gross minimum wage increased to EUR 600.

In 2011, the government adopted the subsidized internship programme (*Estágios Profissionais*). However, in 2012 as youth unemployment rose to a high 38 per cent, the government launched its strategic plan "*Impulso Jovem*", which was built on four pillars: internships; hiring incentives; vocational training; and entrepreneurship support (OECD, 2017). One year later, the government announced the YG scheme, which encompassed *Impulso Jovem*. In 2014, two more programmes were introduced, the "Youth invest" for the creation of start-ups by young unemployed workers, and the *Emprego Jovem Ativo*, a six-months-long work experience/group apprenticeship programme. During the first 3-year period of the YG, the Portuguese government focused its attention mainly on supporting outreach to non-registered NEET, and those students at risk of becoming so upon the completion of compulsory education. To that end, the government set up measures including a broad network of partners engaged in the implementing of the YG and a nationwide outreach campaign in early 2015. Progress has also been made in increasing young people's enrolment rates in the Vocational Education Training system (EC, 2016b, p. 6).

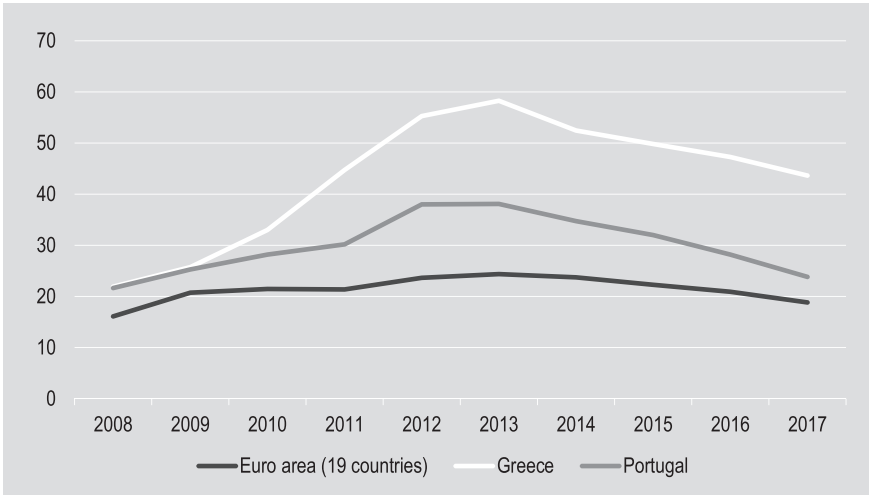
Same treatment, different responses since 2013

Since the implementation of the "cash-for-reforms" programme in Greece, employment prospects for young Greeks have become worse. As Figure 1 illustrates, the youth unemployment rate (age cohort 15–24) in 2017 stood at 43.6 per cent, twice that of 2008; the highest rate was recorded in 2013 at around 63.8 per cent. The young Portuguese population were also strongly affected, but to a lesser extent. The unemployment rate climbed from 16.7 per cent in 2008 to 38.1 per cent in 2013, then dropped to 23.9 per cent in 2017. Long-term youth unemployment in Greece reached 23.5 per cent in 2017 from 7.8 per cent in 2008, while in Portugal it increased slightly from 4.2 per cent to 6.3 per cent.

Youth employment in both countries fell heavily over the period 2008–2013. In Greece, the employment rate dropped from 23.5 per cent to 11.8 per cent, before

2. For an unemployed person younger than age 30 with less than 15 months' work experience, this implied a 44.4 per cent reduction in the maximum unemployment benefit that could be received.

Figure 1. *Youth unemployment rates in euro area, Greece and Portugal, among those aged 15–24 (2008–2017)*



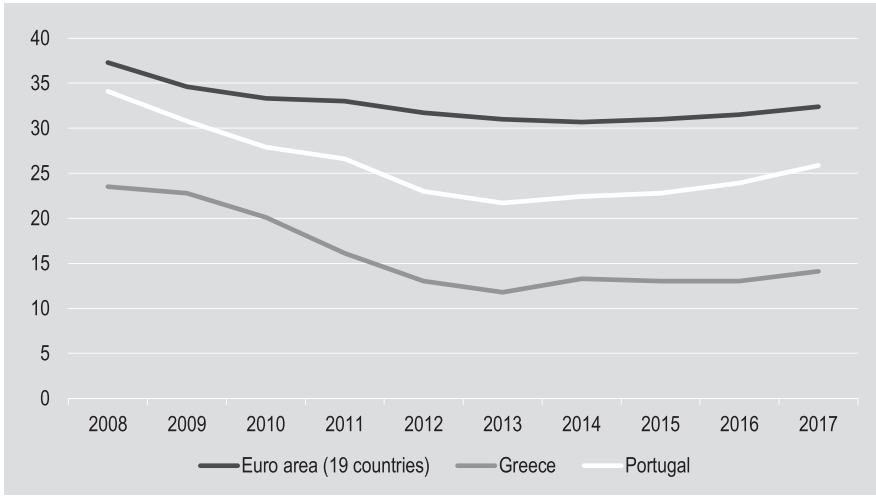
Source: Eurostat.

increasing to 14.1 per cent in 2017. Employment losses in Portugal were less pronounced as the employment rate fell from 34.1 per cent to 21.7 per cent. Since then, employment has recovered some ground and increased to 25.9 per cent in 2017 (Figure 2).

Overall, across 2008–2017, full-time youth employment fell in Greece by 53 per cent, a much greater fall than the corresponding figure for Portugal (37 per cent). Part-time employment increased its share in overall youth employment in both countries. In Greece, the share went from 14.3 per cent in 2008 to 26.8 per cent in 2017, while in Portugal it increased from 10.4 per cent to 19.2 per cent. During the same period, temporary employment in Greece decreased by 53 per cent and in Portugal by 13 per cent, indicating worsening access to employment for youth "outsiders".

Regarding female versus male activity rates, important differences are observed. In both cases, female employment-to-population ratios are consistently lower and unemployment rates are higher than those for males, although disparities are less significant in Portugal. In 2017, the unemployment rate for females aged 15–19 in Greece was 19 per cent above that for males (+1.4 per cent in Portugal), while for those aged 20–24 the equivalent margin was 7 per cent above (+3.6 per cent in Portugal). At the same time, Greece had a higher ratio of female to male youth unemployment (1.2) in comparison with that of Portugal (1.0).

Figure 2. *Employment rates in euro area, Greece and Portugal, among those aged 15–24 (2008–2017)*



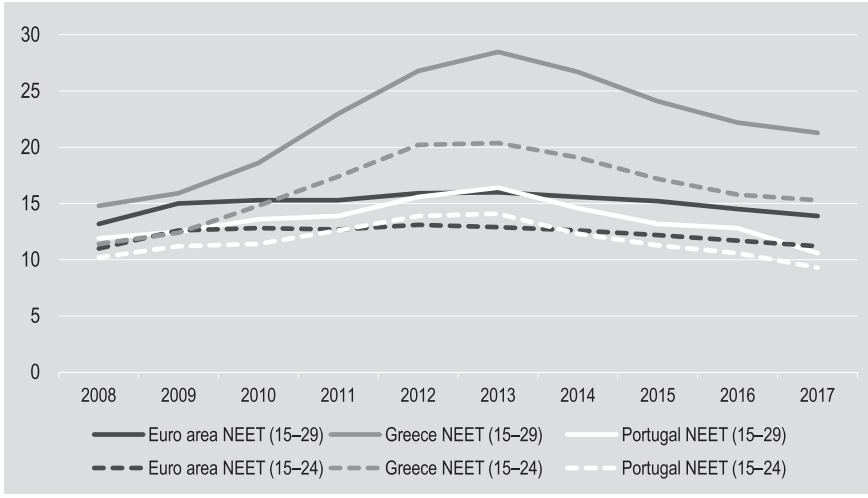
Source: Eurostat.

Taking into account the migration of highly skilled young people, the situation could be even more acute. Media reports suggest that 200,000 young and highly educated Greeks have emigrated in the last few years because of the economic crisis. In Portugal migration rates increased from around 20,000 per year at the turn of the millennium to 110,000 in 2013, with estimates pointing to 11 per cent of Portuguese emigrants aged 15–34 being highly qualified (Gallucci, 2015; Ferreira, 2018).

Looking at the NEET rates, there are significant differences (Figure 3). The NEET rate for the age group 15–24 rose to over 15 per cent in Greece by the end of 2017, while in Portugal it stood at 9.3 per cent. The difference becomes more pronounced when looking at the NEET rate for the broader age group 15–29. In 2017, Greece ranked second among EU countries. Greece experienced a sharp hike in its NEET rate during 2008–2013, reaching 28.5 per cent, while Portugal saw its rate reach 16.4 per cent. Thereafter both countries saw a reduction in the NEET rate, although the extent of this differed. In Portugal the rate fell to 10.6 per cent in 2017, while in Greece it has remained stubbornly high at 21.3 per cent.

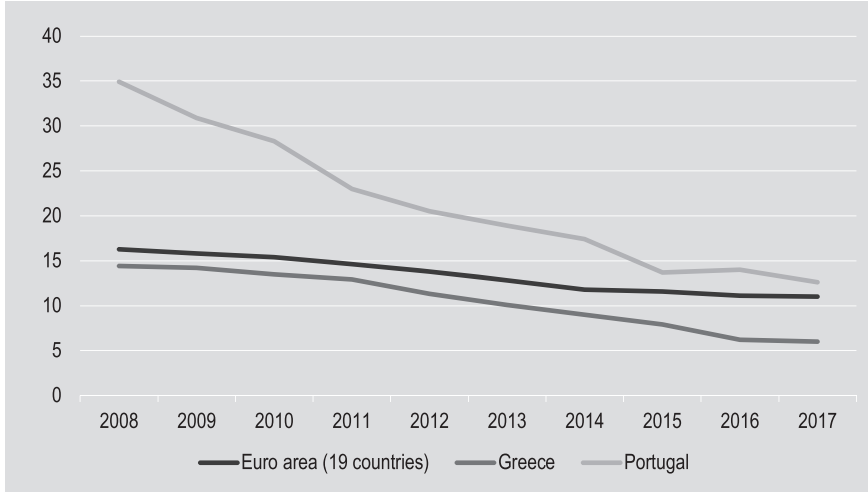
Despite noteworthy improvement, Portugal lags behind in the field of education, with record high levels of early school leaving (12.6 per cent in 2017) compared to Greece (6.0 per cent) (Figure 4). It is highly illustrative that in 2006 the percentage of young people (aged 15–24) in Portugal with lower level education only (ISCED 0-2) stood at a high 65.4 per cent. In 2017, the corresponding rate was 49.7 per cent,

Figure 3. *The NEET rates in the euro area, Greece and Portugal, among those aged 15–24 and 15–29 (2008–2017)*



Source: Eurostat.

Figure 4. *Early leavers from education and training in Greece and Portugal, among those aged 18–24 (2008–2017)*



Source: Eurostat.

approaching the eurozone average of 47.7 per cent, but still well above that of Greece (41.1 per cent).

The deterioration of the labour market situation is reflected in the increased risk of social exclusion for young people. The rates of social exclusion increased steeply in both countries and peaked in 2013, before falling in Portugal from 35.2 per cent to 30.4 per cent and in Greece from 50.7 per cent to 45.2 per cent.

Discussion

Although the IMF's engagement with the euro area and the subsequent support programmes did not leave sufficient scope for policy diversity (Thelen, 2012), we should not confuse such movement in the same direction with convergence (Papadopoulos, 2016, p. 420). While both countries followed the road of internal devaluation, the countries under investigation exhibited disparity in their youth employment reform outcomes. Explanatory factors relate to the effectiveness of the policy-making machinery, the different types of youth-oriented ALMPs adopted, the intensity of faults in the design of the "cash-for-reform" programmes, the macroeconomic environment within which youth plans have been implemented, the degree of programme ownership, and the level of social dialogue during the implementation period. The rest of this section considers each of these elements in turn.

Effectiveness of policy-making

Since the late 1990s, EU policies, programmes, and funding have significantly influenced national employment policies. Nevertheless, "reform pathologies" and "path dependencies" were highly evident (Sotiropoulos, 2004; Featherstone, 2008; Zartaloudis, 2013; Petmesidou and Polyzoidis, 2015). These affected the implementation of the EES guidelines to make EPL less restrictive and enhance the activation of PES, which are considered important for boosting youth employment (Smith and Villa, 2016).

Despite the high level of "misfit" between EU policy and domestic EPL policies, only Portugal had revised EPL in the period prior to the crisis (2006–09). The direction of the institutional change was broadly in line with the flexicurity approach (EC, 2007) and required tactical manoeuvres from the governmental policy entrepreneurs and a balancing act between the employers' associations and reform-friendly trade unions (Zartaloudis and Kornelakis, 2017, p. 1155). In contrast, in Greece the effort to reform EPL was halted. This is partly explained by the government's lack of perseverance with the reform and its non-confrontational position once it encountered the reluctance of social actors

to embrace the idea that flexibility offered the "cure" to the "diseases" of the Greek labour market (Papadopoulos, 2016, p. 414).

Financial conditionality, which was absent in the case of EPL, mobilized Greece in the activation of PES across 1998–2009. Following the launch of the EES, all Greek PES reforms were causally linked with ESF financial conditionality, while the supply of training was driven by the availability of EU funding rather than by any expressed needs voiced by enterprises (Petmesidou and Polyzoidis, 2015, p. 22). Although the EES was used as a policy window by Portuguese policy entrepreneurs to empower their own agenda, the EES had a transformative effect on the activation of PES. Reform initiatives resulted in a paradigm shift, as they replaced the pre-EES policy measures and the operations of PES moved away from reactive measures towards the prevention of unemployment (Zartaloudis, 2013).

Types of youth-oriented ALMPs

Although the crisis exerted significant convergence pressures, path dependencies continued to affect reform trajectories. The number and the composition of youth-oriented ALMP packages exhibited significant differences. Portugal saw a greater number of policy adoptions. According to the LABREF database, across 2008–2014 Portugal adopted thirteen special schemes for youth, as compared to eleven in Greece. The highest number of measures were adopted at the peak of the crisis in 2013–14, with nine in Greece and six in Portugal. Regardless of overall numbers, the ALMP measures in Portugal showed greater consistency and corresponded better to actual needs. They were concentrated heavily on human capital investment and sought to address the challenge of early school leavers and reduce further the overall NEET rate (EC, 2016c, p. 14).

Greece opted for the promotion of youth entrepreneurship. On examining policy measures in the period 2008–2014, it is found that Greece adopted five youth entrepreneurship schemes while Portugal adopted two. While there is evidence that these schemes have positive outcomes, they are predominantly successful for adult men who have medium to high levels of education and prior work experience (Corbanese and Rosas, 2015). Illustrative in this respect is the fact that subsidies for youth entrepreneurship, although budgeted in the programmes of 2012 and 2013, either have not been used, or have been only partially implemented. Without examining the reasons for this low degree of implementation, it is crucial to highlight the higher average unit costs of youth entrepreneurship subsidies compared to other forms of subsidies, as well as the fact that their unconditional provision incurs the risk of "creating business against the market" (Petmesidou and Polyzoidis, 2015, p. 31).

The degree of YG implementation is in line with previous observations. Although the introduction of the YG assisted both countries to improve their youth labour market performance (EC, 2016c, p. 33), Portugal is ranked among the countries in which the programme has acted as an accelerator for reform, while Greece belongs to the group of countries in which low prioritization and delays have limited the dynamics of the YG as a reform driver (EC, 2016b, p. 8). On examining the programme results for 2016, differences in terms of coverage and efficiency are observed. The Portuguese YG scheme reached 60 per cent of all NEETs younger than age 25, while the Greek programme reached only 46.1 per cent. Follow-up data show that 40.6 per cent of those leaving the YG in 2016 in Portugal were known to be in employment, education or training four months later (EC, 2018b), while the equivalent figure for Greece was 26.4 per cent (EC, 2018c). When the follow-up period is extended to six months, the differences are even more striking. In this scenario, in Portugal more than half of those leaving the programme (56.7 per cent) were known to be in a positive situation six months later, while in Greece the rate is 41.4 per cent.

These differences can be attributed to a great extent to the chronic absence of a systematic process of evidence-informed policy-making in Greece. Other factors have been weak institutional links between education and labour market demand, the lack of an appropriately trained workforce, and the fragmentation of interventions at local and regional levels that continued until the second bailout agreement (Petmesidou and Polyzoidis, 2015). Reforms regarding the Manpower Employment Organization and the regulatory framework of apprenticeship were only recently adopted in Greece (EC, 2018d), whereas Portugal had completed a first cycle of educational reforms by 2015 (OECD, 2015; EC, 2016d). While the YG has innovative potential to develop rigorous tools for evidence-based policy management (Petmesidou and Polyzoidis, 2015, p. 29), Greece has not yet exploited the programme to the full. The YG has availed itself of previously used measures strongly criticized as ineffective – i.e. the "voucher scheme", which has been heavily censured by policy experts and beneficiaries as a way of temporarily "soothing unemployment" (Petmesidou and Polyzoidis, 2015, p. 29).

Macroeconomic environment and programme design faults

As youth joblessness has been a structural problem in both national cases, the extent to which it can be resolved is closely dependent upon macro-economic prospects. The budgetary austerity imposed on Greece, especially by the first two MoUs, caused severe pain with very little gain. It envisaged an unusually strong and front-loaded fiscal effort, while there was a severe discrepancy between the assumptions on GDP growth and the actual performance of the economy (Wyplosz and Sgherri, 2016, p. viii). These widespread failures prolonged the crisis,

austerity and contraction. As the cost of internal devaluation was underestimated (Domnick and Schoenwald, 2016, p. 2), the strategy failed to address the actual problem of the competitiveness of the Greek economy, which is mainly structural in nature (Passas and Pierros, 2017; Theodoropoulou, 2016, p. 55). While the contribution of exports to economic growth more than doubled in Portugal, it fell slightly on average in Greece, where the positive trade balance was instead brought about by the collapse of imports (Domnick and Shoenwald, 2016, p. 3).

Economic downturn influenced the pace of labour market reforms in Greece. The types of labour market policies that increase wage flexibility come with side-effects in terms of employment, income security and greater inequality, all of which become further magnified in times of recession (Theodoropoulou, 2016, p. 26). The programme in Portugal experienced the same mistakes, especially those associated with the trade-off in setting targets, albeit in a less severe manner (Eichenbaum, Rebelo and de Resende, 2016).

Social dialogue and ownership

Social collaboration among the various stakeholders is considered key for a significant shift in policy direction (Petmesidou and Polyzoidis, 2015). Social dialogue was a primary vehicle to tailor policy changes to the needs and circumstances of Portugal (ILO, 2018). The social partners were involved from the outset (Tavora and Gonzalez, 2016, p. 255) and this facilitated a consensual pattern and influenced ownership, especially at the inception of the programme (IMF, 2016, p. 41). Although social partnership collapsed in 2012–13 and employers and trade unions experienced reduced influence vis-à-vis the government (EC, 2016e, p. 41), nonetheless, across 2008–2012, three social pacts were signed. These pacts facilitated the structural adjustment of fundamental elements of social and employment regulations (Valente and Marques, 2014, p. 12). During the negotiation of the MoU, the Troika (the EC, the European Central Bank and the IMF) consulted with trade union and employers' confederations, while employers and the UGT (*União Geral de Trabalhadores*) pressed for the integration of the measures proposed in a tripartite agreement concluded two months earlier (Campos Lima, 2011). The MoU integrated many of these proposals, while its implementation involved renewed, albeit tense, consultations between the government and social partners. Távora and González (2016, p. 263) observe that despite significant erosion, the system allowed some continuity with the previous path of reform and a more incremental change process. As many of the MoU recommendations were already on the social dialogue table, the implementation was less contested.

Contrary to the situation in Portugal, political polarization and instability prevented any consensus in Greece. Successive governments blamed foreigners for the hardships imposed under the adjustment programmes (Featherstone, 2015) and this undermined the ownership of reforms. Since the start of the crisis, Greek governments have not pursued any real social dialogue. The Greek government justified the absence of consultation on the grounds that "it was not possible to accommodate participatory methods when Greece was about to default on its loans" (ILO, 2011, p. 27). Trade unions took a militant stance, mobilizing workers and expressing public dissatisfaction (Papadopoulos, 2016, p. 416), while they have repeatedly submitted complaints to both national and international judicial authorities, questioning whether the imposed measures were compatible with the Greek constitution and international labour agreements (European Commission, 2016e). The communist-led All-Workers Militant Front (PAME) accused the General Confederation of Greek Workers of betraying young workers' rights by negotiating wage and non-wage reductions with employers and by agreeing short-term and low-paid employment programmes for young people (Papadopoulos, 2016, p. 416). Even in the middle of the crisis when the government invited the social partners to tackle the tax wedge and structural competitiveness problems with legally binding conclusions, no overall agreement was reached. As a result, the government unilaterally imposed a decrease to the minimum wage (Karantinos, 2014, p. 13). The lack of consensus was reiterated in the minimum wage increase in 2019. Employer associations warned about the consequences of a hike on the unemployment rate, the further expansion of undeclared labour and the prospects of Greece's long-term growth (Kathimerini, 2019), while the trade unions critically noted that the increase failed to offset the losses that workers had suffered during the crisis.

This study attempts to complement existing accounts that place emphasis on the causes and consequences of the crisis (Karamessini and Rubbery, 2014; Vaughan-Whitehead, 2015), and the existence of a common direction in the content of reforms during the crisis (van Vliet, 2010; Hermann, 2017) by considering that common pressures do not necessarily lead to similar outcomes. As Hay and Wincott (2012) suggest, the two opposite poles may coexist at different levels. By using a multidimensional explanatory framework, the study finds that while youth unemployment pressure and the implementation of the MoUs and the YG schemes suggest a common policy trajectory, youth employment policy outcomes are contingent upon the interplay of external pressures and of internal preferences and structures. Policy conditionality works only up to a point. The policy mix selected is linked to the existing economic, political and institutional settings that shape the path-dependent nature of implementation. To this, the confrontational employment debates should be added, since excessive politicization is more likely to undermine reform

ownership and thus contest further policy implementation, as witnessed in Greece.

Conclusions

This article has investigated youth employment policies in Portugal and Greece across the period 2008–2017. The two countries experienced a comparatively high youth unemployment rate prior to the Great Recession, faced the same external pressures stemming from bailout agreements, and received EU funding as participants in the YG scheme.

With reference to the first research question, the impact of the "cash-for reform" programmes on the youth labour market varies across the two countries. The adopted policy programmes were characterized by a similar neoliberal-inspired trajectory in the goals and the content of the reform agenda, but by notable differences in terms of intensity, duration and outcomes. Policy effort in Portugal has significantly contributed to addressing some of the limitations in the design of previous youth ALMPs. The country saw a decrease in youth inactivity and experienced a significant decline in the youth unemployment and NEET rates. Contrary to Portugal, the labour market situation in Greece is improving but has not recovered, as the youth unemployment and NEET rates are well above the EU average.

A key finding that relates to the second research question is the absence of a clear new pattern of labour market reform that would substantially differ from the existing one. The results of the reform programmes were correlated with the "filtering" effect of the existing institutional settings and legacies. Portugal implemented its reform programme in a more consistent manner. This was the result of the country being already on its own adjustment path before the crisis. Policy packages were better targeted. They were discussed and adopted at national level with the engagement of the social partners, while their implementation took place in a better macroeconomic environment. The institutional legacy of Greece strongly influenced the country's reform path. Notable barriers to policy breakthroughs relate to significant inherent deficiencies in policy-making, the type of youth-oriented ALMPs adopted, a lack of social dialogue and the slow pace of economic recovery.

The empirical evidence is consistent with the theoretical proposition. Path dependencies and convergence pressures interact with each other and influence the effectiveness of efforts to combat youth unemployment.

To conclude, this article offered an empirical assessment of the eurozone crisis' impact on youth-oriented ALMPs. Clearly, the explanatory power of institutional legacies should not be overestimated. Further research could expand upon the findings of this article exploring the post-adjustment reform paths as well as how

youth ALMPs work in recession. Effective strategies are needed to create new and better jobs and to ensure that fewer young people will be excluded from promising pathways into stable employment.

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Microinsurance: A short history

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Abstract Twenty years ago, the *International Social Security Review* published an article that introduced a new term to the vocabulary of development and social protection: *Microinsurance*. Now, twenty years later, it is suitable to take stock of the contribution of microinsurance towards promoting coverage and social security. The article reviews the main insights gained from 20 years of implementation, including a clear expression of the value proposition of health microinsurance, understanding the demand for microinsurance, the business process for successful implementation, and conditions that must be satisfied for scaling and sustainable operations. It also explains the context that led to a considerable divergence in the microinsurance space. The article offers a discussion of unresolved issues and thoughts about the future of microinsurance. The conclusion of this article is that microinsurance can flourish when the necessary four pillars for its implementation exist, namely mainstreaming through political support, enhanced insurance literacy of the customers, technical assistance to self-administer the schemes, and availability of seed capital. The sufficient additional condition is that customers perceive microinsurance as offering welfare gains that cannot be obtained by other means.

Keywords microinsurance, informal sector, community, insurance, health insurance, social protection, gaps in coverage, international

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"The best time to plant a tree was twenty years ago.
The second-best time is now"
(Chinese proverb)

Introduction

Twenty years ago, the *International Social Security Review* published an article (Dror and Jacquier, 1999) that introduced a new term to the vocabulary of development and social protection: *Microinsurance*.[1] Now, twenty years later, it is suitable to take stock of the contribution of microinsurance towards promoting coverage and social security.

That article did not present microinsurance as an alternative to the mainstream social protection strategies of mandating and large-scale subsidizations. It presented a demand-driven and needs-based grassroots movement that could provide solutions where mainstream protection is most absent, mainly for the large informal sector in many low- and middle-income countries (LMIC). The approach espoused built on two main arguments.

The analytical argument has been that in many LMIC, governments do not have the "*civic infrastructure*" (i.e. a register of all citizens, and information on assets, income, or employment status of all residents)[2] that is a precondition for the application of mandating. The task of including in the civic infrastructure the informal sector is insurmountable for many countries. As for subsidization, the gap between available resources and the cost of broad subsidization renders impractical/unaffordable such a policy in many LMIC. The implied analytical argument has been that microinsurance was necessary where governments could not mandate enrolment in insurance or could not float large-scale subsidization of social benefits (or premiums of insurance).

Nor was microinsurance presented as a solution for the protection gaps created by "*cherry-picking*" or "*cream-skimming*" (the practice of selling insurance only to "good risks" while depriving the rest, notably rural dwellers and self-employed workers outside the formal sector, of insurance) practiced by private insurance in LMIC.

The societal argument has been that microinsurance might widen the options to reach out to hitherto uninsured persons by leveraging social dynamics to develop the grassroots movement that could provide customer-centric, demand-driven solutions. *Micro* (meaning local, rather than atomistic coverage) was first and foremost *contextualized* insurance, unrelated to employment status, with an emphasis on welfare gains to the insured. And when the uninsured population

1. This article was also published in French: "Micro-assurance: élargissement de l'assurance maladie aux exclus"; in Spanish: "El micro-seguro: extensión del seguro de salud a los excluidos"; and in German: "Mikroversicherung: Ausdehnung der Gesundheitsversicherung auf die Ausgegrenzten".

2. People and companies in the informal sector carry out their economic activities without reporting to authorities, without systematically complying with laws or benchmarks (e.g. not paying taxes or social overheads, not conforming to minimum wage, legal working hours, social protection laws, etc.) and without access to the justice system for dispute resolution.

was supported to leverage social dynamics, it was argued that it was necessary to invent *microinsurance* and to anticipate that microinsurance units would deliver context-relevant packages with affordable premiums.

The initial years: enthusiasm, confusion, division

In the early 2000s, the microinsurance space resembled a debating club. There was divergence on what microinsurance means, with three main propositions: defining microinsurance by reference to the target population ("the poor") (Churchill, 2006a, p. 12), or the product ("low cost and low coverage")[3] or the organizational characteristics of the insurance provider (mutual vs. social vs. for profit) (Preker et al., 2002). All three variants contain an element of truth, and none alone traces a coherent roadmap for politicians, and insurers, and the hitherto uninsured persons (the "target population"). To champion the approach relied to no small extent on a few individuals and NGOs that engaged in pioneering their notion of "microinsurance", competing for funding from the same donors, and seeking sub-national political champions, even when none had a resounding political endorsement. The conundrum of the initial years reflected simultaneously the enthusiasm and the divisions within the microinsurance space, which have not entirely dissipated to this day. Technical innovation and support to implementers came in no small measure from people interested in the role of insurance in development, and from practitioners of microinsurance that could not find ready answers to many issues in the insurance literature or in theoretical studies. The rather personalized promotion of microinsurance led certain early movers to establish in 2002 the CGAP Working Group (WG) on Microinsurance. CGAP (the Consultative Group to Assist the Poor) was established by donor organizations, multilateral agencies, NGOs, private companies and other interested parties, under the aegis of the World Bank (CGAP offices have been in Washington, DC) to offer advice mainly on microfinance. The first meeting of the microinsurance WG consisted of 16 persons who discussed (in the International Labour Office (ILO) Headquarters in Geneva) the need for an exchange of knowledge and a learning platform to enhance the effectiveness of microinsurance activities. Importantly, the ILO section that was until then engaged in supporting microfinance was among the champions for the creation of the WG on microinsurance, while the ILO's Social Protection sector was not formally involved. The first meeting led to other meetings and the creation of several "subgroups" each focusing on a specific topic. The participants in those annual meetings did not claim to command comprehensive knowledge about activities in the field and hence agreed to commission case studies on "good and

3. See www.policyholder.gov.in/Micro_Insurance.aspx.

bad practices in microinsurance", and "scoping studies". This led to the publication of two compendiums on microinsurance, in 2006 (Churchill, 2006b) and 2012 (Churchill and Matul, 2012), edited and coordinated by the ILO and funded partly by the Munich Re Foundation.

Several experts and practitioners never associated with the CGAP WG on microinsurance, nor contributed to the compendiums, in part because they were not personally known to the coordinators. The same group of activists that had brought about the publication of the compendiums decided to separate from the CGAP and launch the Microinsurance Network (MiN). The secretariat of the MiN has chosen Luxembourg as its location since its inception. Specific experts that were active in the CGAP WG took their distance from the MiN, notably because of a decision to start levying membership fees that were too high for many microinsurance practitioners.

In 2005, the Munich Re Foundation invited the better-known microinsurance "names" and organizations that might be interested to an International Microinsurance Conference (IMC). The IMC then became an annual event. Unlike academic conferences whose organization gravitates between different thought leaders, the IMC remained under the full ownership and control of the Munich Re Foundation, which could decide (in consultation with MiN) on the supporting role of others. The minimal engagement of academics and practitioners in the content of the IMC and their participation in its deliberations reflect concerns about the ability to promote microinsurance through this event.

The fragmentation thus grew, not only because some schools-of-thought felt crowded-out in a dialogue that seemed to give pride of place (notably in the IMC) to commercial insurance, but also because the MiN membership fees and the IMC participation fees were real barriers to access for many. A growing number of scientific articles on microinsurance-related topics were published independently of the realm of the MiN or the IMC. By the end of the first decade, some (mainly commercial insurers) learned that the simplistic definitions could not translate to a quick sweep of a mass market. Microinsurance was not merely "for the poor" or "low-cost and low-cover", but a market with different dynamics, which requires a different business model than either the social (governmental) or the commercial ones. So, while there were more and better evidence-based studies, the "cheerleading" of commonly accepted virtues of microinsurance was still absent.

Estimates of microinsurance cover

The first scoping study was commissioned by the MiN from the MicroInsurance Center and published in 2007 (reflecting data of 2005).[4] It stated

4. See the first scoping study.

that microinsurance activities were registered in 77 of the 100 (poorest) countries scoped. It included information on the risks that potential customers would like to insure (based on information from 11 countries). Health risks raised the greatest concern in eight of the 11 countries studied. Other scoping studies followed: Africa (in 2010, 2012 and 2015), Latin America and Caribbean (2011, 2014 and 2017), Asia and Oceania (2013), and Sri Lanka (2016). The summary results of the scoping studies are publicly available on the website of the MiN by region, class of risk, and source study. At the time this article is written, the MiN estimates that microinsurance coverage had reached 170.4 million lives insured in Asia and Oceania in 2013 (Munich Re Foundation, 2014), 52 million lives insured in Latin America and the Caribbean in 2016 (A2F Consulting, 2018, p. 5), and 61.8 million lives insured in Africa in 2015 (Microinsurance Network, 2016) (all risks and all models).[5]

Lessons learned during twenty years of implementing microinsurance

The value proposition of health microinsurance

The very first, most comprehensive insight gained is that the value proposition of microinsurance is three-pronged:

(i) Offering *the insured* insurance products that address their perceived priorities (*contextualized products*), at prices they regard as affordable, and with a better cost/benefit ratio than other financial transactions (e.g. savings or credit) could bring.
(ii) Offering *insurers* to diversify their customer base, their products, and their business processes.
(iii) Creating the necessary *civic infrastructure* locally and increasing *insurance literacy*; the combined effect of these two features is to catalyse the development of an insurance market in the informal sector.

The value proposition reflects the positive attribute that *microinsurance* is contextualized *insurance*, and access to it is *voluntary and contributory*. This formulation of the value proposition also serves to clarify that microinsurance is the result of the catalyse of the hitherto absent demand and supply of insurance, rather than merely an intermediation service. Given that microinsurance generates new demand and new supply, it would be erroneous and misleading to compare it to various technology-driven intermediation mechanisms (or "platforms") which facilitate transactions between sufficient existing solvent demand and ample supply

5. See the summary results of the scoping studies.

for a well-known service, (aka "on-demand economy"; e.g. Uber, Airbnb). Platform businesses are hugely scalable for as long as they can exploit the information on demand and supply that they obtain free of charge to apply discretionary pricing that is determined through a "secret formula".[6] Unlike the platform model, the timeframe for microinsurance transactions is much longer, each episode cannot be considered as "one-off" independent of all others, and most importantly, creation of the demand (and the supply), and its scaling, is contingent on engaging the target population in discussions about prioritizing demand and willingness to pay. These discussions also set the "rules of the game", based on adherence to transparent insurance principles (Wrede and Phily, n.d., pp. 11–12), and enable negotiations of the scope of the package to suit the price, when the rate-making techniques use clear macro-level, meso-level and micro-level data (Biener, 2013).

Understanding the demand for microinsurance

The knowledge and field evidence gained during the last 20 years on why people buy insurance voluntarily has challenged the classical economic explanation[7] that framed this decision in terms of individual perceptions of risk aversion (or loss aversion under the Prospect theory) (Nyman, 2002). According to the Expected Utility (EU) theory, there is voluntary demand for insurance because it is a mechanism to transfer wealth from states with higher wealth to states with lower wealth, i.e. insurance can equalize an unequal distribution of wealth, under the *a priori* assumption of a diminishing marginal utility of wealth. Dror and Firth (2014) challenged the classical EU theory by claiming that in the settings of poverty and informality, there may be *dormant demand* (reflecting needs) that does not necessarily and always generate solvent demand (reflecting willingness and ability to pay). Conversion of *dormant* to *solvent demand* follows economic decisions that are taken by *groups* of closely related persons rather than individually. These researchers also contested the constituting assumptions of the EU theory that the choice of each individual is independent of the choice of all other individuals; and that claims events of one individual are also independent of claims of any other individual (Dror and Firth, 2014). Empirical evidence from microinsurance upheld this challenge to the EU theory (Dror, Chakraborty and Majumdar, 2018).

6. The algorithm takes account of the flat fee (the minimum pickup price), the estimated time spent in the car, the distance travelled during the trip, and "surge" values (e.g. when demand is high, or the weather bad, rush hour, or a special event, etc.).

7. With reference to Bernoulli (1738), von Neuman and Morgenstern (1944), Freidman and Savage (1948), Pratt (1964), Arrow (1965), Pauly (1968), Kahneman and Tversky (1979), among others.

Fels (2019) argued that the classical explanation of demand, notwithstanding its popularity, is not satisfactory because firstly, the utility is derived not from money itself but from the consumer goods that people buy with it, and the value of such consumption is not identical across states of nature. And secondly, if the marginal utility is diminishing, then a rational individual would spend money first on the most essential expenses, and then on expenditures of less and less value. This would contradict the optimality of an equal distribution of wealth across states of nature. Fels' critique is even more relevant for health microinsurance because the risks (disease, disability) are mitigated ("equalized") not merely by what money buys but by the unpaid services of caregivers who are mostly family and friends. Therefore, the quantum of money does not fully and accurately represent the values that produce equalization. The more accurate representation of equalization is the perception of risk exposure, welfare gains from the insurance, and for health risks, the welfare gains from local informal or unremunerated care plus formal health care provision. And demand is created when an individual espouses consensus decisions of his or her reference group on these perceptions, which reflect social considerations as much as financial ones. What is novel here is the structured process to reach consensus, which builds on but is different from the human quest to entwine social and cultural considerations (as is well documented regarding Friendly Societies in the United Kingdom in the nineteenth century; see Gorsky, 1998).

Dror and Firth's (2014) theory of demand calls for the application of a fundamentally different business model than the top-down model, which emphasizes the imperatives, directives, and strategic goals and plans that are formulated at the top and communicated to the ranks below. That different business model must accommodate the customer-centric and community-centric dynamic that engages the target population in consensus-building on rationing (what to insure at which price), and that builds a process with inherent incentives to deliver the promises and shield customers from mishandling. This flatter business model relies on group dialogue (which we call *insurance education* and *awareness creation)* during which people first sieve through many needs that seem unfulfillable ("dormant demand") before they express "solvent demand" for a few needs, i.e. the specific coverage for the price they are willing to pay. This process differs fundamentally from selling a prescribed package and price as a "take-it-or-leave-it" proposition by commissioned agents to willing buyers. In the informal sector, agents are perceived mostly as untrusted parties because they obtain advantage from selling, rather than from delivering what they promise. Such a proposition rarely generates solvent demand even if a subsidy discounts its price. Consequently, the understanding of demand explains why the classical top-down business model – that social insurance and commercial insurance apply – is ineffective for the promotion of microinsurance.

The business process of microinsurance: Contextual, composite, clear

Target populations are not only uninsured but also uninformed about the concept of insurance. Their world revolves mostly around their families, villages and occupations. This is the context into which insurance must fit in. The evidence has shown that when people do not understand how insurance works by reference to their rules-in-use, they are unlikely to trust it.[8] If they do not trust insurance, people are unlikely to pay for it. So, the business process of microinsurance must begin by engaging with the target group in "*insurance education*", which means a dialogue about the risks that should be insured, how to explain the business process, and how to resolve disputes. The objective of insurance education is to catalyse the participation of illiterate and innumerate people as "active agents of change rather than as passive recipients of dispensed benefits" (Sen, 1999, Preface).

Contextual. It should be recalled that most adults in the informal sector rely on friends and family, rather than on financial advisors, for advice on matters that involve the use of money. They discuss first which risks to prioritize. The dominance of health risks has emerged as the top priority everywhere and has, therefore, become the main anchor for microinsurance. Moreover, working out a way to manage this category of risk has often been done in group meetings, often informal ones at the grassroots level, rather than relying on experts and meetings far from home. The group looks up to the local knowledgeable person(s) rather than to someone that draws a personal gain from people's decision to enrol. Therefore, commissioned agents are not best suited for this task, and insurance education cannot be added to the sales transaction.

The impact of insurance literacy on the uptake of insurance and on willingness to pay has been confirmed by several evidence-based studies. One such study reported a positive correlation between improved knowledge about life insurance and trust in life insurers among hawkers in Dhaka City, Bangladesh (Manik and Mannan, 2017). Another study, in three community-based health insurance (CBHI) schemes in rural India, concluded that awareness-raising before the launch led to a substantially higher understanding of insurance concepts among an intervention group than the control group, and was a positive determinant for enrolment in CBHI (Panda, Chakraborty and Dror, 2015). A systematic review of 54 studies (from many LMIC, published between 1991 and end-2013) concluded that when individuals understand how their CBHI functions, they are more likely to enrol (Dror et al., 2016). Finally, a study from urban Bangladesh stated that

8. See Landscape Study of Micro Insurance Education.

the effect of an educational intervention on health insurance among informal workers led to a significantly higher willingness to pay for health insurance among the treatment vis-à-vis the control groups, and post-treatment compared to pre-treatment (Khan and Sayem, 2013).

Consensus building is the didactic method of *insurance education* to implicate the community in the entire process. Engaging locals to perform the administrative jobs is a trust-building measure, notably because the community designates the persons it considers as trustworthy, and because generating jobs locally adds to the perception that the local insurance improves welfare.

Composite. Even though health risks have been the first priority, it is also true that once people accept the logic underlying insurance, they want their microinsurance units (MIUs) to act as a local "one-stop-shop" to cover livelihood risks, i.e. health, crop and livestock. People in the informal sector are very reluctant to deal with the "silo" practice of insurers requiring individuals to deal with an agent that sells only one class of risk, each with different requirements. The MIUs that have offered a bundled, or *composite,* package covering both health and crop and livestock saw higher enrolments and higher renewal rates for health because the insured persons perceived their overall welfare gains from insurance as more compelling. Also, the single-point-of-contact at MIU level removed a concern that each person must face more powerful insurance agents alone; the group represented all group members. There are other examples to show that bundling health insurance with other financial services improves client retention. For example, a recent article described a significant positive impact on client retention, especially among younger women, when a large microfinance institution in Pakistan enabled customers to buy health insurance when accessing credit (Hussain and Ahmed, 2019).

The recurring substantive item of business is *package composition*. In microinsurance, package composition is first-and-foremost an exercise in rationing and prioritization, because it is impossible to cover all risks from birth to death. The choice is made based on available services, perceptions of risk exposure, and cost limitations. Most people want to *insure expensive care more than rare care*, and most people consider the *aggregate cost for the household rather than the cost per person or episode* of illness. Thus, the aggregate cost of many episodes of short illnesses of several household members may cost the household more than an episode of hospitalization of one member. In LMIC, medicines represent by far the most significant slice of total healthcare costs. However, the premium to insure this benefit-type would be too expensive for most people. Episodes of hospitalization can be expensive but are rather rare.

The discussion about package composition is not purely about financial priorities, but also about who should determine the priorities. Traditionally, women are the caregivers and men control money. In microinsurance, a pool of money is created to pay for episodes of cost-generating events that require unpaid care as well. With the view to overcoming the potential conflict between the roles of men and women, groups of women (usually self-help groups – SHGs) participate in a game-like selection process (called CHAT: Choosing Healthplans All Together) to pick one package out of several options (each with a different price) pre-selected by village leaders. Then, the women present their choice in a facilitated meeting at home, when other household members (menfolk and younger and older persons) can react to the choice of package. In a follow-up meeting of the women, they may change their choice of package, notably to reflect the feedback of the family. Many SHGs (each usually comprising 10–15 members) perform this exercise. The package for the entire microinsurance is the option that most SHGs chose after the second round (Dror et al., 2014).

Package design and pricing are interconnected. It is essential to note that *the price determines the coverage*, not the other way around as is the practice in both commercial and social health insurance in rich countries. Therefore, it is essential to estimate how much people pay accurately. Considerable effort has been devoted to empirical estimates of willingness to pay (WTP) (Nosratnejad, Rashidian and Dror, 2016). However, it has also become clear that there is a gap between declared WTP and actual payments (Chakraborty, Majumdar and Dror, unpublished). This gap made it necessary to modify the pricing of the package from a pure actuarial premium of the components retained, plus administration loading (but zero profit loading) to a calculation that adds some loading reflecting income shortfall, and some profit when for-profit providers entered the space of microinsurance (Dror, forthcoming, Chapter 5). As members pay only for the benefit-types and the maxima they chose, they can select a benefits package to suit a specific affordable price. The total cost was then divided by the number of members, so that each would pay the same amount, regardless of age, gender, health status, or any other differentiating parameter (*community rating*). Community-rated premiums differ from income-rated premiums (often applied by social health insurance) and from risk rating (that commercial insurers routinely apply to most other risks). This solution reflects not merely practical considerations (more straightforward calculations and fewer data requirements) but also the prevailing sentiment that this is a fair distribution. This ratemaking ignores the cost of seed capital that each microinsurance scheme needs to ensure its viable operations in the initial few years. Ideally, the cost of repaying seed capital should be loaded as well, and according to one estimate, adding it would

hardly make a difference when spread over 15 years (Dror, Majumdar and Jangle, 2019).

Clear and Simple. For microinsurance, achieving simplicity and transparency is not just "nice to have", but essential because its target population would rather disengage than accept an unclear business process. People that do not know insurance and are *a priori* distrustful of innovations cannot overcome their reticence when the business process fails to *integrate* the membership register with the register of the applicable plan and with the book of accounts; or when members must submit documents or fill information repeatedly (*redundancy*) or when the process is slow for inexplicable reasons (*bottlenecks*) or cannot be fixed when problems arise (*lack of visibility*). Clarity about the business process emerges from group dialogue. Therefore, the issues related to enrolments, claims handling, policy modifications, and renewals, are discussed with the community in detail, then performed and controlled by suitably trained persons from within the community (Dror, forthcoming, Chapter 12). Experience has shown that the initial dialogue and training require repetition over several initial enrolment/renewal seasons. Therefore, microinsurance schemes require technical assistance (TA) for 3 to 4 years. TA is non-financial assistance provided to each microinsurance to adapt the package design and price, train local staff tasked with the implementation, and support the proper use of a management information system (MIS) for the collection, interpretation, and presentation of data. The TA provider must speak the local language, as most TA is done onsite.

In conclusion, the need for clarity about customer value is congruous with the simplicity of the process. New technological applications can facilitate "smarter" products and better support. However, technology cannot outweigh the values that shape the adoption of microinsurance by the target population. Specific niche proposals have operated differently with niche uptake. When the objective is to achieve scale and sustainability beyond just niches, then the entire business chain must support a customer-centric model.

Scaling and sustainability of microinsurance

Another important lesson learned over the twenty years has been that the road to scaling and financial sustainability of microinsurance could not rely on ceding risks to reinsurance. Every commercial or social health insurance routinely draws its financial capacity to protect against risks by ceding significant portions of its portfolio to reinsurance. Microinsurance needs reinsurance even more than larger insurers because of its small group size (which could skew the diversification of risks and the distribution of claims) and weak managerial skills

(which require technical assistance). Yet, the reinsurance industry has not shown interest in servicing this market segment.

In 2000, a team of specialists (who worked then at the ILO, the World Bank, field projects, and academia, and led by the author of this article) launched a project to develop a model for dedicated reinsurance for health microinsurance labelled Social Reinsurance (shortened to Social Re). The Social Re project aimed to frame a new approach to sustainable community health financing based on demonstrating i) the positive effects of reinsurance on microinsurers' financial results, ii) the variables affecting the decision to cede risks to reinsurance, and iii) a protocol for calculating the reinsurance premium under various scenarios (Bonnevay et al., 2002). The Social Re project was funded and peer-reviewed by the World Bank and the ILO and its results published jointly by both institutions in 2002 (Dror and Preker, 2002), yet neither organization championed the provision of reinsurance for community-based health insurance schemes.

The experience of Social Re to advance the objectives of international development through reinsurance is consistent with other unsuccessful attempts (Haueter, 2019).[9] The thinking among reinsurers about the role of countries and international organizations regarding regulation and management of risks is told elsewhere (Haueter and Jones, 2016, Chapter 1). Stated succinctly, the industry has been reticent about state control of (re)insurance, and intergovernmental activity in this space was considered an intrusion. The few successful initiatives of international organizations on this issue include the creation of Africa Re (in 1973) and Asia Re (in 1979), in large part due to the absence or inefficiencies of national reinsurers in the relevant countries and retrocession to global market leaders. The risk class that has generated most dialogue (between reinsurers, certain international specialized agencies of the UN, governments, and NGOs) has been the cluster of natural catastrophes related to climate change. However, there has been no serious dialogue about reinsurance of health risks, let alone microinsurance.

In the absence of recourse to reinsurance, microinsurance schemes can ensure their financial sustainability by the retention of capital. A study that compared the two options concluded that reinsurance was the cheaper and preferable

9. Haueter mentions several examples. For example, the International Relief Union (IRU), created in 1932 (after long deliberations by the League of Nations since 1921), had initially been designed as an insurance vehicle but the idea failed to be implemented. Repeated attempts to restructure it along insurance and reinsurance principles were equally unsuccessful. It was dissolved in 1982. Other United Nations (UN) organizations, such as the United Nations Development Programme (UNDP) tasked by the UN with crisis prevention and recovery (1965), toyed with the idea of adopting reinsurance practices but limited their activities to cooperating with the industry on risk prevention. In 1971 the UN General Assembly created UNDRO (UN Disaster Relief Organization) to ensure emergency relief activities in case of natural or other disaster situations, but it ceased to exist in 1992 when it was incorporated into the UN Office for the Coordination of Humanitarian Affairs (OCHA).

solution (Dror and Armstrong, 2006). However, 20 years of field experience have taught us that microinsurance schemes are exposed to another source of financial vulnerability that reinsurance does not typically resolve. In the initial years of operation, the membership, premium levels, and other parameters are suboptimal. Therefore, microinsurance schemes cannot fully load their administrative costs on premiums in the initial years of operation, and capital is required to cover such deficits. Implementers have known this issue for a long time, but as most implementation projects were funded through grants, which did not entertain research, the scientifically accurate estimate was finally published much later (Dror, Majumdar and Jangle, 2019). It has shown that the capital required is very low, but not zero.[10] Thus, microinsurance schemes require capital at inception, independent of the question of whether they can cede risks to reinsurance or not.

The most recent estimate thus examines whether the seed capital required could be sourced as a loan (at least in cases when MIUs function as mutual-aid schemes). The analysis concludes that the microinsurance could repay the capital plus interest in full over 15 years. The same model can obtain an estimate of the capital required in other jurisdictions, subject of course to the calibration of the data for each jurisdiction. This lays the foundation to claim that when donor funding is on the decline, microinsurance could be promoted by attracting development loans or "impact investors". This shift could represent an opportunity, not just a liability, considering that grants have not always been associated with the scaling of microinsurance services.[11]

Finally, since 2016, the Insurance Development Forum (IDF) (established by the International Insurance Society under an agreement with the World Bank and the UN) supports the scaling of microinsurance (one of the IDF's five Working Groups is dedicated to this topic, and one of the objectives of the IDF

10. Using data from rural India and Nepal and reference point 2017, the estimated capital is merely 1.56 US dollars per person (only once).

11. Over the last twenty years, there was one notable example of relatively large grant awards for microinsurance by the Bill and Melinda Gates Foundation (starting in 2008) to three microinsurance recipients: the ILO's Microinsurance Innovation Facility; the micro insurance agency (renamed MicroEnsure) which is a for-profit insurance brokerage; and the microinsurance project of the Aga Khan Foundation. The Aga Khan project, a valid field implementation in challenging areas, was discontinued when the grant funds were depleted. MicroEnsure has always functioned as a commercial agent/broker, and there is no objective evidence that it created any different welfare gains for the rural poor than any other broker that would have justified a large grant. The Microinsurance Innovation Facility, which received by far the largest sum, distributed small awards for the experimentation of many actions. The facility never published any conceptual framework, or criteria for the selection of projects, or the methods that should be developed or tried, and not a single grant was given to experiment the effect of seed capital on sustaining the operations of mutual or cooperative microinsurance schemes. The Facility ceased to exist when the grant funds ran out.

is to "close the protection gap").[12] It is probably too early to tell whether the IDF will (take effective action to) develop synergies between microinsurance practitioners and the industry.

The conclusion on scaling and sustainability of microinsurance is that in the last 20 years, NGOs and grassroots organizations took the lead in efforts to understand, promote, implement, and sustain microinsurance. The (re)insurance industry has changed its attitude over the last 20 years, from an initial reticence to engage, to more openness to engage in large projects that are often not viewed as true microinsurance (even if they are called micro). There is now more clarity on how to enhance the sustainability of microinsurance, and the industry has created a forum that could act on this knowledge.

Unresolved issues and a way forward for microinsurance

One of the most poignant unresolved issues is "mainstreaming" microinsurance, i.e. reaching the stage that society-at-large accepts this practice as having its scalable and sustainable "Unique Selling Proposition". Microinsurance has been variously described as "at best complementary to other more effective systems of health financing" (Ekman, 2004) or as a system "trapped by lack of funds, poor quality of care, and lack of trust" (Adebayo et al., 2015), i.e. operating within the unmet expectations of funders, providers and administrators. There is still a tendency to view microinsurance as a niche market.[13] Our analysis (Dror et al., 2016) concluded that voluntarily participation in microinsurance (originally referred to as CBHI schemes) is neither transitional nor a trap nor per se a niche, but the vehicle enabling the participants to influence priority-setting and governance. The transition from niche to mass is not predicated on associating this form of health financing with inferior quality and quantity of welfare gains, but the opposite.

Like every cause, microinsurance needs a champion (a person or organization) that should forge a working alliance of political powers, technical expertise, and risk capital at local, country, or the international level, to support grassroots groups in catalysing solvent demand. In 1999, nobody championed microinsurance. In 2019, there are at least three. At the highest level, Queen Máxima of the Netherlands is the UN Secretary-General's Special Advocate for Inclusive Finance for Development (UNSGSA). The Microinsurance Network

12. See the Insurance Development Forum (IDF).

13. A google search for *champions of microinsurance* brings up material issued by the (MiN) about the activities of a few recognized developers of market niches, some that were obligatory add-ons (e.g. credit-life to securitize credit) and others that responded to government-driven agenda (e.g. crop insurance in certain states in India where the government paid the premium).

(MiN)[14] and the IDF were explicitly created to encourage or initiate more direct action. These champions must apply their gravitas to attract investors and leading implementers to participate in developing microinsurance at scale. However, action should happen when the global champions can support a country level or a sub-national level champion. The sought outcome of successful championing would be to bring about *the conditions that enable large-scale additions to insurance through contextualized microinsurance*. The agents of change that are in office are not always in power to develop MIUs, and those in power are rarely in office.

The collaborative dialogue between those in office and those with social power can develop around microinsurance. Political contributions towards mainstreaming must occur at the national level. It starts not with money or laws, but with firstly clarifying publicly that microinsurance activities are a legitimate objective in the informal sector. In many countries, people in informal settings are anxious about recording any transaction, lest the authorities might use such records against them in a different context. People at the base of the pyramid often consider the government as *a potential threat, not merely do-gooders*. So, political "endorsement" consists of legitimizing the role of groups in *managing risks from the ground up*. This would mean assisting people at the local level to become involved in the package design and pricing of their microinsurance. Public endorsement is essential even if the government neither delivers nor regulates services nor subsidizes premiums.

The industry can help achieve political support by disseminating the message that microinsurance activities can scale when they offer context-specific products rather than low-cost and low-coverage standard packages.

Political championing of microinsurance should entail facilitating access to risk capital for the expansion of voluntary and contributory MIUs. An example of how this could be done is for governments to post collateral for loans raised for seed capital to MIUs. Governments would benefit from this form of support as well because the capital would originate from private sources, and the results would be an increase in domestic revenue generation (in line with Target 17.1 of the Sustainable Development Goals – SDGs)[15] when more people pay premiums to more MIUs. Furthermore, the welfare gains that MIUs deliver reduce pressure on the government to deliver everything for everybody.

Various forms of risk capital have become more available than in years past, but the microinsurance space must create the proper forum(s) to capture this greater accessibility by microinsurance practitioners (e.g. implementers, or providers of

14. The Microinsurance Network (MiN) was created in 2009, by the conversion of the Working Group on Microinsurance of CGAP (the World Bank's Consultative Group to Assist the Poor), which had been started in 2002.

15. See SDG Indicators.

technical assistance, or teachers of microinsurance in academic institutions[16]). Also, metrics developed by neutral intermediaries, such as the Global Impact Investment Network (GIIN),[17] to facilitate the validation of whether investors' expectations match projects' deliverables (and vice versa) make it necessary to assist microinsurance projects in preparing their prospectuses for investors. Such assistance could include attracting government or other support to facilitate categorization of the project as a "guaranteed" or "collateralized" asset.

Technical assistance entails the availability of suitably trained people to assist microinsurance activities at the grassroots level. Considering that microinsurance needs to be a dynamic and contextualized insurance with the view to attracting voluntary and contributory demand, the people that provide technical assistance must complete academic training, as merely on-the-job experience in the insurance industry is insufficient. Governments and research institutes should endeavour to include microinsurance studies as core curriculum in multiple disciplines that prepare people for work in development.

This review of 20 years of experience with microinsurance should also bring to the fore that mainstreaming microinsurance does not entail waiting for a "big bang", but consolidation and better leveraging of different actions that occur through many small steps.

There is now a growing volume of new theoretical and evidence-based publications. A leading insurance journal has been publishing a special issue on microinsurance once every two years since 2014.[18] An award for "best paper" could encourage practitioners and scholars to publish more.

There is now more published knowledge on microinsurance than ever before (Dror, 2018; forthcoming) and the time is ripe to make endeavours so that universities offer degrees, diplomas or certificates on microinsurance, to prepare future job entrants to assume roles in implementation. Disciplines preparing students for work in development (e.g. economics, development studies, law, social work, business administration, public health, agriculture, animal husbandry, etc.) should include some core courses on microinsurance so that when their graduates become job entrants, they are prepared to consider the opportunities that microinsurance presents for development.

16. With its relatively high fees, the international Microinsurance conference is unaffordable for many NGOs; with its setting in 5-star venues it is unpalatable (and unreasonable) for grassroots organizations; with very limited innovative information it is unattractive to scholars of the space; and there is no structured facilitation of results-oriented contacts between investors and practitioners.

17. See the Global Impact Investment Network (GIIN).

18. The *Geneva Papers on Risk and Insurance – Issues and Practice* (Vol. 39, No. 2, April 2014; Vol. 41, No. 2, April 2016; Vol. 44, No. 3, 2019).

Concluding thoughts

In conclusion, this article argues the case for the continuing relevance of, and need for, microinsurance. Crucial in this regard is the fact that not only has the informal sector not disappeared, as it was once thought it would, but it has grown in the last twenty years. Consequently, in the twenty years since its introduction, microinsurance has gained recognition expressly because it addresses a problem that has been overlooked by other conceptual streams-of-thought and institutional settings. Microinsurance approaches financial protection and inclusion differently from the classical forms of social security.

Twenty years of experience with microinsurance have added unique knowledge about the role and value of voluntary and contributory coverage in settings of poverty, rurality and informality in LMIC. This modus operandi is complementary (rather than competitive or conflictual) to the mandatory one because each of the models suits different population segments. It is quantitatively vast and qualitatively complex. There are now several organizations that are committed to champion microinsurance to achieve a multiplier effect. They build on twenty years of work, from the modest beginnings by the pioneers of microinsurance, that have demonstrated that microinsurance is neither just a dream nor "rocket science"; these goals are within reach with some political support, some seed capital, insurance education and the provision of technical assistance to groups that launch and operate the business model we call microinsurance. The foundations for these conditions are all in place and need to be intensified for more impact. Schemes that obtained excellent results at the grassroots level and in the informal sector generated added financial resources and improved human capacities. Scaling and sustainability of microinsurance are within reach. As the financial and human costs of inaction keep increasing over time, doing nothing is not a valid option. A Chinese proverb offers wise advice: "*The best time to plant a tree was twenty years ago. The second-best time is now*".

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Dror, David M. **Financing micro health insurance: Theory, methods and evidence** (World scientific series in health investment and financing, vol. 2). Hackensack, NJ, World Scientific, 2019. 550 pp. ISBN 9789813238473.

The title of this thought-provoking book suggests a rather dry, perhaps conventional, analysis of the issues around the financial sustainability of a micro health insurance (MHI) scheme, in terms of balancing costs against contributory income. In fact, the book's ambition – admittedly difficult to capture in a title that is in any way snappy – is somewhat iconoclastic. It invites a fundamental reappraisal of the orthodox assumptions brought by economists to this subject, which broadly fail to recognize the realities faced by those living in conditions of economic "informality", especially in low-income and middle-income countries; the "lens" offered by the orthodox financial market paradigm simply does not correspond to the world view of those living in the informal economy. The author suggests that this failure may reflect the fact that most material published to date has been compiled by providers (or their advisers and associates) and so presents a perspective focused on supply side rather than demand side concerns. In technical terms, the book therefore seeks to redress the balance, placing its emphasis squarely on the contributory or premium-paying capacity of insured groups. At the same time, a good deal of attention is paid to the wider implications for solvency and sustainability. However, a deeper theme concerns the capacity of the members of such schemes, individually and collectively, for self-assessment in a way that is simply not captured by the normal institutional perspectives.

David Dror is well-known as a researcher and practitioner in micro-insurance – the term itself first emerged in an article, published in 1999 in this very journal, co-authored by himself and Christian Jacquier, *Micro insurance: Extending health cover to the excluded* (Vol. 52, No. 1). Notwithstanding, as Dror observes, the ideas underpinning this class of "grassroots" insurance have been developing over a much longer period of decades, if not centuries.

Dror has compiled this book from 22 previously published articles, authored by himself with nearly 30 colleagues. These are grouped into four themes: Theory, Methods, Evidence and Impact. He provides a "chapeau" for each chapter, highlighting the main messages and focus points for each, together with a structured abstract summarizing the method, findings and conclusions (or final discussion points). The book is headed by a synthesis chapter.

Dror starts by observing the essential need that MHI seeks to address; namely, that of individuals and families for access to health care on terms that will not result in catastrophic long-term impacts on their financial well-being. This is far too often the outcome of high levels of out-of-pocket (OOP) payments associated with health interventions, especially in countries where the predominant framework of livelihood for those individuals and families is one of "informality". The power of health insurance is, or should be, to replace this modality of payment with regular contributions to a

risk-pooling system. However, despite the best efforts of governments (and, to some extent, other social partners) to implement appropriate insurance arrangements across, say, national or provincial levels, these have generally had only limited impacts, leaving a wide gap, in which the major player making significant progress has been the micro-insurance movement. Accordingly, the argument of the book rests on a fundamental assumption as to the crucial importance of MHI, and hence the broader "health" of this movement itself (in terms of finance and governance) in providing financial access to essential health care. That is likely to be so, at least until (presumably in the rather far future) governments generally have the capacity to mandate universal and national provision.

Formal insurance of any kind, let alone insurance of the risks of concern to social security practitioners, is a complex and subtle affair, not well-understood (in the present book reviewer's opinion) even in economically well-developed settings, let alone the lower-income countries. In this light, it may be pertinent to highlight the basis on which individuals or groups agree to share their risks in an insurance pool; this may be one of "mutuality" (typically insurances of a more-or-less commercial nature, with risk-rated premiums) or "solidarity" (social insurance, relying on contributions determined in some socially-oriented way). In the context of micro-insurance, with micro-insurance units (MIUs) which can be organized in a rather wide variety of ways, this distinction may not necessarily be, by any means, clear-cut.

Accordingly, Dror devotes considerable attention to the way in which the balance between income and outgo for a micro-insurance scheme is established, in fact, on the basis of "willingness to pay" (WTP); this is on the part of either individuals or the social group(s) to which they belong. He establishes that the decision to purchase a given package of insured benefits is typically one to be made on a basis which is (explicitly or implicitly) one of collective consensus, rather than individual choice alone. He discusses the practicalities and appropriateness of a range of techniques for assessing the level of actual cash contributions at which WTP, and hence the relevant financial balance, may be established.

Less attention is given, it seems, to the question of how to go forward in circumstances where the subtle issues of individual versus collective assessments of WTP are such as to preclude the establishing of an adequate consensus amongst the (actual or potential) subscribers to a group insurance. As the book explains, establishing a scheme in the context of a level of WTP determined to be realistic before start-up is a dynamic process in itself. However, it is necessary also to consider the dynamics of WTP after start-up. It is likely, to say the least, that levels of satisfaction amongst any insured group will differ, as individuals encounter differential experiences of treatment (if pre-paid) or of claims and settlements. As a result, some will wish to cease contributing and leave the group. Such changes in the group are likely to alter the risk profile of the insured group, perhaps very substantially, with the likelihood that the risk-carrier would wish to review the actuarial balance between contributions and benefits; this process may not be by any means self-stabilizing.

We may note that WTP is not, conceptually, identical to *fairness* in establishing contribution levels to a micro-insurance arrangement, although these notions are, obviously, quite closely related. This reviewer is happy to see that Dror treats the idea of fairness as being intrinsic to the insured group, and eschews (almost entirely) the increasingly-quoted, but rather dangerous (in the reviewer's opinion) notion of "actuarial fairness", in favour of "actuarial accuracy".

That said, it is important to note that the key feature of actuarial assessment is to ensure that financial estimates reflect long-term future financial and demographic prospects, not simply conditions at the instant of, say, entering into an insurance arrangement. In this light, it is important

to keep in mind, first, that actuarial assessment always incorporates an element of judgement, so "actuarial accuracy" is something that is and must be open to discussion – it should form part of the relevant framework of social dialogue. Second, the conditions underlying WTP next year may not be the same as those prevailing today, and may destabilize any consensus on "fairness" of premiums or contributions. Accordingly, consideration needs to be given to the implications for the "persistence" of the insurance agreement – the likelihood that insured individuals or groups will renew year by year.

Later sections of the book deal with the important question as to how insurance schemes protect themselves in relation to the fluctuations of annual experience which can potentially lead to insolvency. One approach is through a strong requirement for initial capitalization, another is through reinsurance. Each may have advantages and disadvantages; there is perhaps a feeling (whether or not stated explicitly) that a socially well-motivated initiative should not be excluded from a protective (commercial) market by capital requirement regulation which may seem excessive, and certainly difficult to meet for organizations grown in (generally poor) communities. Equally, corporate operators in the reinsurance industry, by nature large in size, may have limited empathy with the objectives of micro-insurers – although, as the book notes, they may in favourable circumstances be able to offer highly valuable expertise in formal risk management. Reinsurance capacity does not necessarily, however (in the view of this reviewer), have to be underwritten by the large, specialist corporations. Initiatives at the level of national governments, or regional bodies, may offer a way forward.

These issues are strongly intertwined with those of regulation, and it may be that this is an area in which the programme detailed in the book would profitably be extended. As with the question of capital requirements, this reviewer is not sure the book does full justice to these. The feeling (perhaps) in the "micro-insurance movement" that it is inappropriate that MIUs should be subject to the full rigour of the capital requirements for formal (commercial) insurance operators seems sometimes to be extended to the wider regulatory framework. It may be argued that this perspective carries grave dangers – the lessons of history (not least nineteenth century experience in the friendly society movement) are that unscrupulous operators will sooner or later find ways to take advantage of loopholes in such regulatory frameworks.

Thus the book documents the work to date undertaken in a rather wide-ranging programme of research, based on a significant reconsideration and reorientation of the usual framework for analysis of the financial (and actuarial) basis for the provision of health insurance cover through MIUs. In its nature, micro-insurance is a dynamically evolving entity, and, as in relation to a wide variety of its aspects, this research programme might fruitfully be extended. The foregoing paragraphs are intended to suggest several specific directions for further enquiry.

In summary, the book observes the ultimate ideal (arguably) that national governments would not only oversee but indeed provide for and finance universal health coverage. It leaves open the question as to how a transition might take place from an environment in the present, or near-future, where MHI has a crucially important role to one where its role, if any, might be peripheral. Can a movement such as micro-insurance foresee and, perhaps, plan for the uncomfortable prospect of its own long-term winding down?[1] The research described in Dror's book covers a wide set of issues with rather

1. This issue is comparable in some ways to that of "graduation" – the objective that a social assistance arrangement should foresee the prospect that it will not, and should not, be needed by its "clients" in the future. But maybe that comparison does not really help here.

complex aspects both technical and policy in nature. It has much to offer to an equally wide spectrum of those concerned in different ways with the effective provision of social security and social protection. It provides valuable and specific guidance to not only planners and policy-makers, but also those responsible for day-to-day administration of MIUs, and indeed anyone in this community seeking deeper understanding in relation to such schemes.

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Index for 2019

Index 1. *Index by titles*

Ref.	Title	No.
1	Access to social protection among people with disabilities: Evidence from Viet Nam	No. 1
2	Biometric technology and beneficiary rights in social protection programmes	No. 4
3	The digital economy and the future of European welfare states	No. 3
4	Effective retirement age from employment and full-time employment, and the impact of the 2008 crisis	No. 2
5	The effects on intra-generational inequality of introducing a funded pension scheme: A microsimulation analysis for Estonia	No. 1
6	Employer-oriented labour market policies in Sweden: Creating jobs and the division of labour in the public sector	No. 2
7	Ensuring universal social protection for the future of work: Enhancing social protection for workers on digital platforms	No. 3
8	Extending access to contributory pensions: The case of Uruguay	No. 4
9	Global employment and decent jobs, 2010–2030: The forces of demography and automation	No. 3
10	Has the redistributive effect of social transfers and taxes changed over time across countries?	No. 1
11	How fair are unemployment benefits? The experience of East Asia	No. 2
12	The impact of international migration on the public pension system: The case of Portugal	No. 1
13	Inequity in access to the Argentinian pension system (1994–2017)	No. 1
14	Introduction: Social security and the digital economy – Managing transformation	No. 3
15	Microinsurance: A short history	No. 4
16	The old-age pension law in Mexico: The promise of poverty in old age?	No. 4
17	The regulatory challenge of occupational safety and health in the online platform economy	No. 3
18	Second-pillar pensions in Central and Eastern Europe: Payment constraints and exit options	No. 2
19	Social health protection in Cambodia: Challenges of policy design and implementation	No. 2
20	Work, social protection and the middle classes: What future in the digital age?	No. 3
21	Youth-oriented active labour market policies and economic crisis: Explaining policy effort in Greece and Portugal	No. 4

International Social Security Review, Vol. 72, 4/2019

Index 2. *Index by authors*

Index 3. *Index by regions/countries*

Region/Country	Ref.	Region/Country	Ref.
Argentina	**13**	Republic of Korea	**11**
Cambodia	**19**	Latin America	**8**
China	**11**	Mexico	**16**
Estonia	**5**	OECD	**4, 10**
Europe	**3, 18**	Portugal	**12, 21**
European Union	**17**	Sweden	**6**
East Asia	**11**	Taiwan (China)	**11**
Greece	**21**	Uruguay	**8**
International	**2, 4, 7, 9, 14, 15, 17, 20**	Viet Nam	**1**
Japan	**11**		

Index 4. *Index by keywords*

Keyword	Ref.	Keyword	Ref.
Annuity	**18**	Microinsurance	**15**
Beneficiary	**2**	Middle class	**20**
Adequacy	**5**	Migrant worker	**12**
Biometric identification	**2**	Occupational safety	**17**
Cash benefit	**10**	Old-age benefit	**5**
Community	**15**	Older worker	**4**
Coverage	**7, 13, 14**	Pension scheme	**5, 12, 13, 16, 18**
Data protection	**2**	Poverty	**16**
Defined contribution plan	**16**	Public sector	**6**
Demographic aspect	**9**	Retired worker	**4**
Disabled person	**1**	Retirement	**8**
Division of labour	**6**	Retirement age	**4**
Dualization of society	**3**	Return to work	**6**
EC regulation	**17**	Social assistance	**2**
Economic recession	**21**	Social protection	**1, 2, 7, 15, 19, 20**
Employers participation	**6**	Social security administration	**14**
Employment	**4, 9, 17**	Social security financing	**12**
Employment policy	**21**	Social security legislation	**16**
Flexible retirement	**4**	Social security reform	**5, 16, 18**
Gaps in coverage	**1, 8, 15**	Social security scheme	**8**
Health policy	**19**	Taxation	**10**
Health insurance	**15, 19**	Technological change	**3**
ILO	**7, 17**	Unemployed	**6**
Income redistribution	**10**	Unemployment benefit	**11**
Informal sector	**15**	Welfare state	**3, 10**
Insurance	**15**	Women	**8**
Labour force participation	**4**	Youth unemployment	**21**
Labour market	**3, 7, 9, 14, 17, 20**		