

## The Chilean System of Unemployment Insurance Savings Accounts

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**Working Paper**  
**The Chilean System of Unemployment Insurance Savings Accounts**

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**Abstract**

In recent years, unemployment protection systems based on individual savings have been instituted in several developing countries. Chile was one of the first countries to establish such a system, which at the time was widely referred to as a model for other countries. Since its institution in 2002, the Chilean UISA has gradually been rolled out to cover the wage-earning population to the point that since 2009 its administrative data can be considered to be representative of this segment of the labour force.

This paper examines how the Chilean UISA works, both in terms of its coverage and levels of benefits and how it is different from a traditional unemployment insurance. We undertake a detailed analysis of the administrative data produced by the UISA system, which also enables us to examine the functioning of the Chilean labour market. Based on the interaction between employment characteristics and the conditions imposed by the benefit system, we assess the efficacy of the system and analyse, using simulations, the impact of potential reforms that could improve the system.

Keywords: Unemployment Insurance Savings Accounts, Unemployment, Chile, Labour Markets

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# The Chilean System of Unemployment Insurance Savings Accounts

## 1. Introduction

During recent years, several developing countries have implemented or have legislated to implement unemployment insurance systems that are based on a financing mechanism which relies principally on savings accounts established for individual workers. These unemployment compensation systems have been promoted by Washington-based development institutions because of their low fiscal cost as well as the low risk of moral hazard that is attributed to them.<sup>2</sup> This paper analyses how the Chilean unemployment insurance system, which was one of the first to be implemented based on individual savings accounts, works.

For the ILO, the protection of workers against the possibility of unemployment has been a priority since the institution was founded in 1919, and has been included in numerous social security conventions since then, such as Convention 102 (adopted in 1952), which agreed guidelines for the design and implementation of social security legislation and specifically included unemployment as one of the nine circumstances that it should cover. More recently, the Social Protection Floors Recommendation of 2012 emphasises the importance of integrating income security measures such as unemployment insurance into national social protection mechanisms and improving the articulation of social protection and social security (ILO, 2012).

Unemployment insurance, of course, constitutes an important mechanism of income protection. However, another premise of the Social Protection Floors Recommendation is also pivotal: it expresses the idea that "there is no excuse for any society to put off building social security for its members, and it can be done at any stage of development, even if gradually. All societies can grow with equity" (ILO, 2012: vi). As we will see in the discussion below, unemployment insurance has traditionally been the last social security component that Latin American countries have implemented, after health, pension and other types of social insurance. In fact, many Latin American countries still have not established unemployment insurance at all. In part, this lag is due to the perception that such an insurance requires a degree of institutional sophistication that developing countries do not have. The Social Protection Floors Recommendation, which explicitly includes unemployment insurance, however, encourages countries to establish minimum levels of income protection regardless of their level of development (ILO, 2012, pp. 5-6).

In this context, developing countries can opt for one of two basic models of unemployment insurance: first, the traditional unemployment insurance that exists in developed countries, which is based on shared financing mechanisms and benefit payouts according to the need and circumstance of each individual worker. The second alternative is to establish insurance based on individual savings accounts that do not pool risk between workers (or do so to a much lesser extent), and which pay out the savings accumulated by individual workers in their accounts in

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<sup>2</sup> See Vodopivec (2013) for a succinct summary of this literature.

the case of unemployment. While traditional unemployment insurance systems have been widely analysed in terms of their impact on labour markets and levels of income security, insurance based on individual savings accounts is a type of social protection that was implemented much more recently, and that therefore has not yet been studied with the same degree of detail.

This paper analyses whether unemployment insurance systems based on individual savings accounts (ISAs) are able to provide sufficient protection for unemployed workers in the context of the ILO's Social Protection Floors. Using administrative data from the Chilean system, we estimate both the coverage of the UISA as well as analysing the job characteristics of contributors. This analysis is important for other Latin American countries, which are in the process of considering implementing similar systems. Colombia, for example, legislated in 2013 to institute a new insurance system based on individual savings accounts, while Mexico has legislated that it will implement such a system in 2016.

This paper proceeds as follows: Section 2 explains how countries in Latin America came to implement ISA based unemployment insurance. Section 3 presents an analysis of how the Chilean UISA system works, section 4 analyses the administrative data for Chile, and section 5 simulates potential reforms to the existing Chilean system to examine whether it could be made less regressive. Section 6 concludes.

## **2. The Advent of UISA systems in Latin America**

Latin American countries began to consider implementing mechanisms that would protect workers against unemployment almost as soon as they began considering basic labour market legislation. The logic of protecting workers against unemployment is enshrined in dismissal clauses, which generally require employers to give one month's notice before making a worker redundant. At the same time legislation established severance pay mechanisms that required employers to pay a particular amount for each year during which a worker had been employed. These protection mechanisms were negotiated by unions over time during the 20th century, and were considered part of the status quo as far as labour markets were concerned. They also became part of a corporatist system of industrial relations during the period of import substitution industrialisation in which industries and their workers were protected by the state in an effort to develop productive expertise in new sectors (Murillo, 2001). Unions considered this legislation an "acquired right" that constituted the principal gain of their mobilisation efforts (Cook, 2007 and Sehnbruch, 2013).

It is important to note that labour market legislation in Latin America was negotiated around the logic of "traditional" employment relationships as they existed in Europe. This means that legislation supposes a long-term, stable employment relationship between the worker and a single, clearly identifiable employer, with a formal written contract, social security contributions, and a set of institutions that could enforce such legislation.

However, this kind of formal employment in Latin America has historically often only constituted a minority of overall employment, most of which has either been informal, agricultural or in domestic service, and is therefore not covered by the established legislation. A broad set of tools has therefore been developed over time in Latin America to deal with periods during which the unemployment rate increases. These tools include emergency employment programmes, severance pay legislation, unemployment benefits, individual savings accounts, and mixed systems that combine all or some of the above.

However, all of these mechanisms have proved to be unsatisfactory in the past as they often only provide minimal or partial protection against income loss during periods of unemployment. Emergency employment programmes, for instance, generally provide only jobs with minimal levels of income (generally below the minimum wage level). Severance pay legislation and ISAs may not provide adequate coverage if workers were employed for a short period of time and are difficult to enforce.<sup>3</sup> And unemployment benefits systems in Latin America have achieved only very low coverage levels due to the minimal amounts of benefits that they pay out.

Of all the social protection mechanisms that have been instituted in developed and developing countries over the course of history, unemployment insurance is perhaps the most contentious as there are no automatically identifiable characteristics that make a person eligible for a potential benefit, such as an age limit (as with pensions), household structure (as with single mothers or families with a number of young children), or a health criterion. By contrast, with unemployed workers the state has to monitor whether a worker is legitimately unemployed and looking for a new job (rather than being in active or working informally). In most countries, protection against unemployment is therefore the last social benefit to be instituted after health insurance, pension systems and insurance in the case of accidents, sickness or disability.

Between 1980s and 1990s, European insurance systems with "generous" benefits and durations were blamed for high unemployment rates in countries such as Germany, France, Italy and Spain, even though other countries with equally generous benefits had unemployment rates that were at least as low or even lower than those in the United States (Auer, 2000; Nickell (1997), and OECD (1994)).<sup>4</sup> The debate surrounding unemployment rates in Europe and the United States has led to the one of the most unsubstantiated public policy debates in the development literature. Although many counter-arguments have been made to this discussion, principally centring on the heterogeneity of European labour markets and their cultural differences, the debate that related high unemployment rates to high benefits was widely cited

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<sup>3</sup> To this day, we know very little about the extent to which severance pay is actually paid in Latin America. Critics contend that deals are made between employers and workers as the former force the latter to accept lower amounts of severance pay than is due in exchange for providing the paperwork that ends a working relationship and which is required to claim any unemployment insurance benefits.

<sup>4</sup> The literature that blames Europe's high unemployment rates on overgenerous insurance systems also systematically ignores the consequences of the fall of former Communist states in Eastern Europe that generated extremely high levels of inter-European immigration as well as the influx of historically high levels of immigration from northern Africa to Europe.

in developing countries, particularly in Latin America where many analysts repeatedly warned against establishing insurance systems which would create moral hazard. One influential Chilean labour market analyst, for example, wrote: "it is well-known that unemployment insurance systems in Europe have failed" (Beyer, 2000). This illustrates the simplistic arguments into which complex problems were distilled.

In order to offset concerns about benefit abuse, many developed countries have now limited the benefits provided by unemployment insurance, or at the very least established and enforced stricter job search criteria (Venn, 2012). The unemployed are therefore often obliged to demonstrate genuine job search efforts, accept jobs that are offered to them as long as these come close to offering salaries similar to past jobs, as well as personal registration to receive paycheques. However, these efforts are often expensive and difficult to implement, and it is not clear that they are cost-effective. In developing countries, such rigorous conditions are particularly difficult to administer and enforce because employment intermediation services are generally non-existent or ineffective.

Positive arguments in favour of unemployment insurance, such as theories related to job – skill matching and counter cyclical expenditure, are therefore often outweighed by concerns about creating undue moral hazard. While this debate is difficult to resolve conclusively through empirical studies, as well as often being tinged by ideological concerns, there is at least one theoretical argument that almost all labour market experts can agree on: insurance against unemployment is not something that can be provided by private insurance services in free markets. On the occasions in history where this has been attempted, such as some European insurance systems during the 19th century, and more recently one of the schemes in Latin America, these attempts have failed (Berg and Salerno, 2008; Sehnbruch 2006). Adverse selection criteria generally mean that only those workers likely to become unemployed contribute to the system so that they become financially unsustainable. The failure of private systems to provide unemployment insurance that is sustainable over time due to adverse selection criteria has led even those experts who caution about the moral hazard of generous unemployment insurance benefits to recognise that a functioning unemployment insurance system can only be established by the state. This view was taken, for example, by the Pinochet regime during the 1980s.<sup>5</sup>

The combination of concerns about adverse selection and moral hazard has profoundly shaped the debate about unemployment insurance in Latin America from a theoretical perspective (Feldstein and Altman, 1998; Orszag and Snower, 2002; Parsons, 2003; Velasquez, 1996 and 1998). As a result, public policy makers have attempted to find a new balance between fiscal cost, social insurance and potential mechanisms of abuse by combining insurance contributions

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<sup>5</sup> In 1985, the Pinochet administration proposed the establishment of unemployment insurance based on individual savings accounts in recognition of the fact that unemployment insurance was necessary (a lesson learned from the severe crisis of 1982), and could not be provided through private means. However, although the proposed unemployment insurance was never implemented, it did provide the foundation for future proposals for unemployment insurance in Chile.

with individual savings accounts (Cortázar et al. 1995; Ministerio del Trabajo, 2000; Acevedo 2002 and 2004; Calvo, 2002; Solari 2002; Ramos, 2002).

### **3. The structure of the Chilean UISA**

The Chilean UISA is a mixed system which is financed by all three social actors (government, employers, and workers). The system generates two principal funding mechanisms: individual savings accounts for each worker financed by contributions from the worker and employer in the case of open-ended contracts, and only by employers in the case of workers with atypical contracts. In addition, the system generates a solidarity fund (Fondo de Cesantía Solidario), financed by employers and fiscal contributions. Unemployed workers can only receive payments from the solidarity fund if their own savings are insufficient to cover their period of employment.<sup>6</sup>

The contributions each worker makes to his or her individual savings account constitute the workers personal savings, withdrawable only by the worker in the case of unemployment, termination of contract, retirement or any other event in which the worker leaves his or her job. The UISA system establishes different methods of financial contributions depending on the type of contract held by a worker. In the case of workers with open-ended contracts, employers pay 1.6% of gross wages into the individual savings accounts of their workers, in the same way as pension contributions are made.

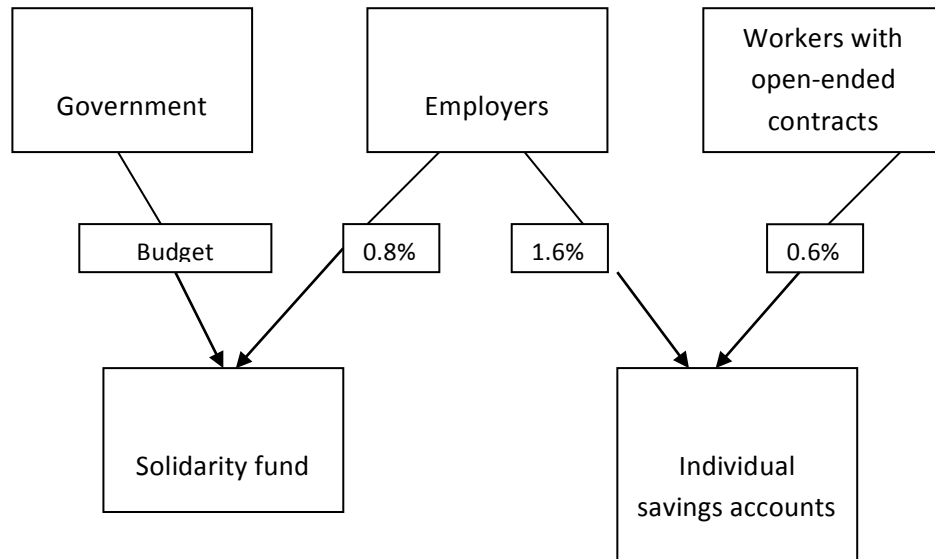
Workers pay an additional 0.6% of their gross wages into their individual savings accounts. This adds up to a 2.2% monthly contribution from the employer and worker into each account. Over the course of one calendar year, these contributions add up to one quarter of a worker's monthly wage. In addition employers contribute 0.8% of their total gross payroll into the solidarity fund, which also receives a predetermined amount from fiscal contributions. Finally, both the individual savings accounts and the solidarity fund are administered by the *Sociedad Administradora de Fondos de Cesantía*.

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<sup>6</sup> For example, 12 contributions during the last 24 months are required.

**Figure 1**

**The structure of the Chilean unemployment insurance system for workers with open ended contracts**



*Figure from Sehnbruch 2006b.*

For workers with fixed term contracts the contributions to the UISA system are made by employers in their entirety, and amount to 3% of a worker's gross wage. 0.2% of this contribution is paid into the solidarity fund.

All of these payments are limited to a maximum of 11 years. If a worker stays in the same job for more than 11 years, contributions to the UISA system cease as it is assumed that 11 years allow for a sufficient accumulation of resources in the individual savings accounts that the worker is covered for all the eventualities (Cortázar et al. 1995; Beyer, 2000; Acevedo et al., 2006).<sup>7</sup> Nevertheless, the employer's obligation to contribute to the solidarity fund remains until the end of the working relationship.

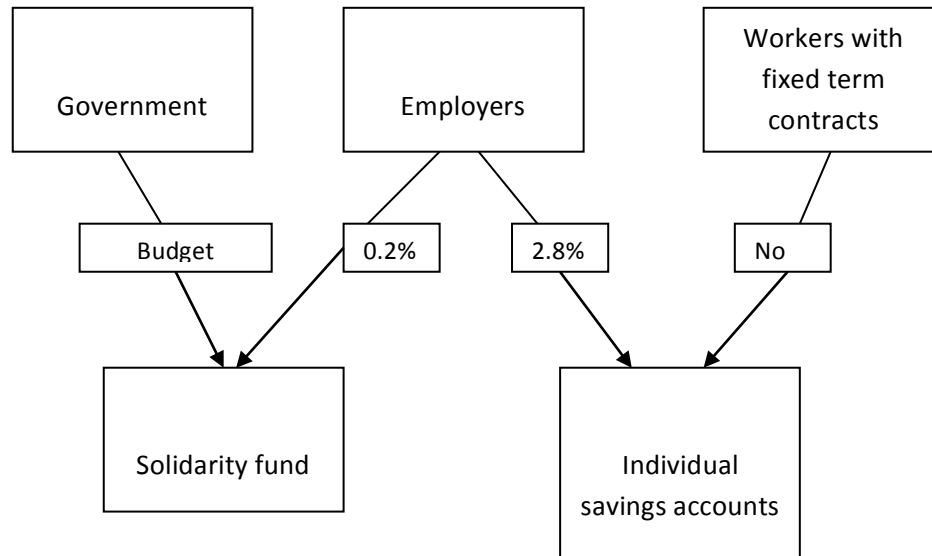
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<sup>7</sup> In addition, the limitation of unemployment insurance payments to 11 years is related to the structure of severance pay in Chile, which is set at one month's wage per year of service with a limit of 11 months wages. Since accumulated savings from the unemployment insurance system are deducted from severance pay liability, the insurance legislation matched this time period.



**Figure 2**

**The structure of the Chilean unemployment insurance for fixed term workers**



*Figure from Sehnbruch 2006b.*

To withdraw money from the individual savings accounts, workers have to have a formal written contract and have to have contributed (not necessarily continuously) for 12 months in the case of workers with open-ended contracts, and for six months in the case of workers with atypical contracts over the course of the last 24 months. Also, workers have to be between 18 and 65 years of age, and have to have been unemployed for at least 30 days. This last condition means that workers have to finance the first month of unemployment out of their own pocket. The number of payments that can be withdrawn from the individual savings account depends on the amount of savings accumulated by the worker. Replacement rates decrease in increments of 5% from 50% to 20% over a maximum period of seven months. If a worker has sufficient savings the number of withdrawals that can be made is unlimited although after the seventh month of unemployment the replacement rate is maintained constant at 20%.

If a worker changes jobs without passing through a period of unemployment in between, his status in the UISA system is reset. The worker then has the option of either withdrawing his funds from the savings account or leaving them in the account for future use. In either case this does not affect the obligation of the new employer to contribute to the insurance system.

The conditions under which the UISA system operates described so far applied to all salaried workers regardless of whether his own funds accumulated in his individual savings account are insufficient, and if the worker has registered a minimum of 12 contributions to the solidarity fund during the last 24 months, the last three of which have to have been continuous and from the same employer, he has the right to additional payments from the solidarity fund. The amount and number of payments made by the solidarity fund are calculated according to a matrix stipulated by the law (see Table 14 below). It is this inclusion of a solidarity fund that

distinguishes the Chilean UISA system from other unemployment insurance systems in Latin America and that led to its description as a model for other developing countries<sup>8</sup>.

Beneficiaries of the UISA system are also registered by its administrator in municipal employment offices (OMIL). This means that registration with the labour market intermediation services is automatic. For this purpose a national employment exchange was created (Bolsa Nacional de Empleo), which facilitates the process of employment placement services of municipal administrations, thus contributing to a better match between employment demand and supply. Unemployed workers receiving insurance payments and made redundant for economic reasons have preferential access to vocational training programs offered by Chile's national training and employment service, the Servicio Nacional de Capacitación y Empleo (SENCE). Unemployment insurance payments cease if a worker refuses a place on a vocational training program offered and financed by the SENCE. Similarly, insurance payments are suspended if a worker without justification rejects an employment opportunity offered by is local municipal employment intermediation services, which would have allowed him to receive a salary equal or superior to 50% of his last wage.

The UISA system instituted in 2002 and reformed in 2009 is not retrospective. Only informal employment contracts that entered into effect after 2002 become part of the unemployment insurance system. Thus the UISA system will gradually replace the unemployment insurance benefits that existed prior to 2002. Workers hired before 2002 can voluntarily become part of the new system. The UISA system operates in parallel to the severance pay legislation, which entitles workers with open-ended contracts made redundant for economic reasons to 1 month's wage per year of employment duration with a maximum limit of 11 months' wages. The UISA system does not affect severance pay entitlements, except for the fact that savings accumulated by the employer in the individual savings accounts while a worker was employed are deducted from them. UISA contributions can therefore be regarded by employers as a provision for future severance payment costs.

These conditions mean that workers who are self-employed, employers and wage-earners without formal written contracts are excluded by this insurance system, as well as workers under the age of 18 or over the age of 65. Workers, who have not contributed to the insurance for at least 12 months in the case of open ended contracts (and six months in the case of atypical contracts), or workers who are unemployed for than 30 days do not have the right to obtain payments from the UISA system. The four main factors that determine benefits received from the UISA are the reason for unemployment, duration of employment, the wage level, and the contractual status of the worker. And the time period over which workers receive benefits depends largely on the duration of their prior employment. These are the conditions that we have to take into account when analysing the empirical evidence that relates to the functioning of the Chilean unemployment insurance system.

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<sup>8</sup> Workers can claim benefits from the solidarity fund only twice in five years. If they become unemployed a third time, they will not be eligible for benefits.

## 4. Empirical Evidence from the Chilean UISA

### 4.1. The Coverage of the Chilean UISA

The most basic question regarding the UISA database relates to the extent of its coverage. As discussed above, the system began operating in 2002. All new formal employment contracts initiated after this date became part of the UISA. Workers employed informally or working independently are therefore excluded from this insurance by definition. However, the inclusion of contracts existing prior to 2002 in the system was not mandatory. Since very few workers affiliated to the UISA system on a voluntary basis, the statistics below illustrate the gradual roll out of the system. Every year it covers a slightly higher proportion of the labour force, although after 2009 the rate of increase slowed dramatically.

Table 1 below shows how the UISA system has grown since its inception as new jobs became part of it thus extending its coverage to a growing part of wage-earners. The table relates administrative data from the insurance itself to labour force estimates from official survey data. We can thus estimate that the insurance now covers approximately 80% of the formal wage-earning labour force, and approximately 65% of the total labour force.<sup>9</sup> However, the table also shows that the coverage levels of the unemployed are much lower by comparison, at between 40 and 50% during recent years. This difference is due to the fact that unemployed workers registered by the official survey data include those workers who had worked informally prior to becoming unemployed. This means that approximately 50-60% of the unemployed are not part of the UISA system, a conclusion which is consistent with previous studies which have been undertaken on this issue (Sehnbruch, 2006 and Ruiz-Tagle and Sehnbruch, 2010).

From Table 2 below, we can see how the UISA system developed in terms of the types of contract that became part of it, the average and median wages of workers by type of contract, as well as the evolution of the average duration of employment and unemployment. The data reflects the fact that the UISA system was rolled out gradually: as we can see, the proportion of contracts that were of a short-term nature initially was greater than the proportion of open-ended contracts. However, this situation reversed in 2006, which reflects the fact that open-ended contracts also rotate quite frequently. Since 2009, the proportions of open-ended contracts and atypical contracts have been broadly stable, which shows that the system matured around this time. This coincides with the data presented in Table 1, which shows that the coverage of the UISA system has increased very little since 2009.

In terms of income levels, the data in Table 2 shows that median wages are significantly lower than average wages, both for open-ended and atypical contracts. This finding is consistent with the high levels of inequality of income levels in Chile: average statistics are distorted by a few high income earners. Table 2 also shows that atypical contract wages are on average equivalent

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<sup>9</sup> Wage-earners not covered by the insurance (the 20% that make up the difference) are not covered either because their contracts predate the insurance, or because they are excluded from the insurance by definition (age or public sector).

to half of open-ended contracts when comparing average wages and around 60% when comparing using the median.

Table 2 also shows how both the duration of employment and the duration of unemployment have developed since the inception of the UISA system. Again, we can see that while the system was being rolled out, the contracts that first became part of it were of an extremely short duration. Although this duration has increased since inception, it has plateaued at a very low level of just above two years for open-ended contracts and under a year for atypical contracts. Another noteworthy fact is also that the average duration of unemployment in months is persistently higher than the average duration of employment in years for both types of contract, but especially for atypical ones<sup>10</sup>. This means that on average workers do not have enough savings in their individual savings accounts to cover the period during which they are unemployed, and should therefore receive insurance benefits from the solidarity fund, provided that they did not resign voluntarily. As we will see in the more detailed analysis below, however, this is not the case in practice.

We should note that job rotation levels among wage earners are extremely high in Chile, in part due to a mechanism that is known as the “Multirut”, where companies use multiple tax IDs within a single holding structure. Workers can therefore be rotated between one tax ID and another, which really counts as a new job every time. Unfortunately, we cannot estimate the real extent to which the Multirut mechanism has been used, and therefore do not know exactly how many workers are affected by it. Nevertheless, we can be certain that this mechanism has a significant impact on how the UISA system functions, in particular in terms of its coverage levels, which are discussed in more detail in section 5.<sup>11</sup>

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<sup>10</sup> This tends to be diminishing for open-ended contracts as can be seen for year 2012 on column 18 on table 2. This is due to sample bias for short unemployment durations, as data only extends to February 2012.

<sup>11</sup> In June 2014, the Chilean government introduced new legislation into Congress that would significantly restrict the use of the Multiruts. However, this legislation has not yet been passed.

**Table 1: Proportion of total work force and unemployed covered by the unemployment insurance system (1000s)**

Year	Open-ended contracts in ui	Atypical contracts in ui	Total contracts in ui	Wage earners, NENE	Administrative data coverage of wage earners (%)	Total labour force, NENE	Administrative data coverage of total labour force (%)	Total unemployed in ui	Total unemployed, NENE	Administrative data coverage of unemployed (%)
2003	130,8	480,7	611,5	3.672,7	16,6%	5119.1	11.9%	24.7	526.7	4.7%
2004	535,8	903,2	1.439,0	3.806,3	37,8%	5286.1	27.2%	67.9	578.5	11.7%
2005	915,7	1.045,3	1.961,0	3.987,4	49,2%	5438.7	36.1%	110.7	541.7	20.4%
2006	1.269,5	1.197,6	2.467,1	4.166,4	59,2%	5442.2	45.3%	150.5	448.9	33.5%
2007	1.597,2	1.282,4	2.879,7	4.360,3	66,0%	5555.5	51.8%	177.9	414.4	42.9%
2008	1.928,1	1.382,1	3.310,2	4.583,5	72,2%	5762.4	57.4%	208.2	483.7	43.0%
2009	2.175,4	1.376,4	3.551,8	4.500,1	78,9%	5839.9	60.8%	269.6	606.9	44.4%
2010	2.359,1	1.301,0	3.660,0	4.908,1	74,6%	6210.1	58.9%	256.2	552.8	46.3%
2011	2.525,4	1.473,6	3.999,0	5.146,7	77,7%	6448.8	62.0%	263.9	500.1	52.8%
2012	2.728,5	1.562,6	4.291,1	5.360,2	80,1%	6520.0	65.8%	226.5	526.7	43.0%

Source: Authors' calculations based on UISA database and data from the National Employment Survey (NENE). The data from the UISA database are annual averages, except for the year 2012, where we have calculated the average of the two months of that year for which we have data (January and February).

**Table 2: Total coverage of the unemployment insurance system in terms of its contributors and beneficiaries**

	Variable	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Open-ended Contracts (OCs)	(1)	23.7%	39.4%	47.1%	51.6%	54.9%	58.5%	61.8%	62.8%	62.8%	63.1%
Atypical Contracts (ACs)	(2)	76.3%	60.6%	52.9%	48.4%	45.1%	41.5%	38.2%	37.2%	37.2%	36.9%
Average Income of OCs	(3)	\$709.1	\$771.6	\$832.6	\$852.3	\$912.5	\$929.6	\$1008.7	\$1057.9	\$1116.4	\$1208.0
Median Income of OCs	(4)	\$431.8	\$485.0	\$522.1	\$552.7	\$589.6	\$607.2	\$655.8	\$683.4	\$727.0	\$793.8
Median Income as % of av. income	(5)=(4)/(3)	60.9%	62.9%	62.7%	64.9%	64.6%	65.3%	65.0%	64.6%	65.1%	65.7%
Average Income of ACs	(6)	\$465.1	\$514.9	\$524.0	\$533.4	\$534.2	\$543.2	\$575.1	\$588.0	\$606.6	\$645.0
Median Income of ACs	(7)	\$385.1	\$401.9	\$403.4	\$416.2	\$417.3	\$418.2	\$441.5	\$451.9	\$458.6	\$488.4
Median Income as % of av. income	(8)=(7)/(6)	82.8%	78.0%	77.0%	78.0%	78.1%	77.0%	76.8%	76.9%	75.6%	75.7%
Average income for ACs as % of average income for OCs	(9)=(6)/(3)	65.6%	66.7%	62.9%	62.6%	58.6%	58.4%	57.0%	55.6%	54.3%	53.4%
Median income for ACs as % of median income for OCs	(10)=(7)/(4)	89.2%	82.9%	77.3%	75.3%	70.8%	68.9%	67.3%	66.1%	63.1%	61.5%
Average duration of employment (months) for OCs	(11)	2.7	6.9	10.4	13.4	16	18.1	20.9	24.1	26.5	28.1
OCs, % 3 months or less	(12)	67.6%	32.3%	25.0%	20.7%	20.5%	18.1%	15.4%	14.3%	14.7%	13.3%
Average duration of employment (months) for ACs	(13)	2.4	4.5	5.4	6.1	6.4	6.5	7.1	7.1	7.3	7.4
ACs, % 3 months or less	(14)	76.7%	56.3%	55.0%	52.5%	54.2%	54.0%	50.8%	53.5%	52.9%	53.6%
Average duration of unemployment (months) for OCs	(15)	1.4	2.7	3	3	3.1	3.3	3.6	3.7	3.9	2.7
Unemployment over three months	(16)	2.0%	2.9%	2.8%	21.6%	27.4%	26.6%	21.6%	28.7%	27.5%	18.4%
Average duration of unemployment (months) for ACs	(17)	1.5	2.9	3.5	3.9	4.1	4.3	4.3	5.2	5.2	5.4
Unemployment over three months	(18)	29.3%	27.2%	15.6%	28.5%	25.7%	17.1%	28.7%	26.3%	14.6%	29.5%
Duration of unemployment (in months) relative to the duration of employment (in years) for OCs	(19)=12x(15)/(11)	6.1	4.7	3.5	2.7	2.3	2.2	2.1	1.8	1.7	1.1
Duration of unemployment (in months) relative to the duration of employment (in years) for ACs	(20)=12x(17)/(13)	7.6	7.6	7.7	7.7	7.7	8	7.2	8.7	8.6	8.8

Source: Authors' calculations based on the UISA database for each employee's principal employment. Data for February of each year. All prices are based on 2012 dollars. Exchange rate used: 486.75 Pesos. Following the methodology used by the supervisory body of the UISA system, we excluded data for open-ended contracts with only one month of contribution and which appear only once in the database, as these payments represent irregular one-off payments.

Table 3 below shows the extent to which the Chilean unemployment insurance system covers people who claim unemployment benefits in terms of its individual savings account mechanism and solidarity fund. Unfortunately, we cannot analyse the situation of *all* unemployed workers, as the UISA system only registers people who actually claim benefits. The data shows that 95.8% of the unemployed receive payouts from their individual savings accounts, while only 1.2% of the unemployed receive contributions only from the solidarity fund. Another 3% receive mixed payments from both their own account and the solidarity fund. This means that very few unemployed are actually covered by the insurance component of the UISA system, i.e. by the solidarity fund.

In terms of the levels of benefits received, we can see that they are significantly below average wages, and we can also see that the benefits paid out by the solidarity fund are significantly below those paid out by the individual savings accounts. This means that the individual savings accounts constitute the principal source of “insurance” for unemployed workers. This is particularly true for atypical contracts, where fewer than 2% of workers use the solidarity fund. Even during years with high unemployment rates (2008-2010), the solidarity fund only covers 23% of employees for open-ended contracts and 5% for atypical contracts.

**Table 3: Total yearly average payment and percentage of people receiving payment by fund**

	Total					Open-ended contracts					Atypical contracts				
	Only ISA	Only SF	Both	Average ISA payment	Average SF payment	Only ISA	Only SF	Both	Average ISA payment	Average SF payment	Only ISA	Only SF	Both	Average ISA payment	Average SF payment
2003	98.7%	1.0%	0.3%	\$146.7	\$163.2	60.6%	30.1%	9.2%	\$187.6	\$163.2	100.0%	0.0%	0.0%	\$145.7	\$0
2004	93.8%	4.5%	1.7%	\$190.1	\$166.8	68.2%	23.2%	8.6%	\$215.6	\$167.	99.9%	0.0%	0.0%	\$185.4	\$135.4
2005	91.7%	5.7%	2.6%	\$208.4	\$167.1	75.4%	16.9%	7.7%	\$215.9	\$167.3	99.9%	0.1%	0.0%	\$205.3	\$141.2
2006	92.0%	5.3%	2.8%	\$225.	\$163.	81.4%	12.2%	6.4%	\$228.1	\$162.9	99.8%	0.1%	0.1%	\$222.9	\$172.4
2007	92.5%	4.8%	2.7%	\$234.5	\$160.6	84.7%	9.8%	5.5%	\$243.7	\$160.6	99.9%	0.1%	0.1%	\$226.7	\$159.7
2008	91.3%	5.8%	2.9%	\$252.6	\$162.3	84.2%	10.6%	5.3%	\$257.3	\$162.3	99.7%	0.2%	0.1%	\$247.8	\$159.5
2009	84.0%	11.5%	4.5%	\$265.4	\$169.7	73.1%	19.6%	7.2%	\$303.5	\$172.9	98.3%	0.8%	1.0%	\$224.8	\$105.2
2010	84.3%	9.3%	6.4%	\$278.8	\$170.6	76.1%	15.6%	8.2%	\$341.7	\$185.6	94.1%	1.7%	4.2%	\$214.2	\$98.8
2011	87.8%	7.3%	4.9%	\$306.4	\$183.	79.7%	12.9%	7.4%	\$370.7	\$190.8	97.7%	0.3%	1.9%	\$236.7	\$96.4
2012	95.8%	1.2%	3.0%	\$328.9	\$172.1	93.9%	1.9%	4.2%	\$377.7	\$183.1	98.5%	0.2%	1.3%	\$261.2	\$108.4

Source: Author's calculations based on unemployment insurance database using yearly averages. All prices on 2012 USD. Exchange rate used: 486.75 Pesos



Table 4 shows average duration in months by average income decile. Average income was created as the sum of all monthly wages for each person divided by the number of worked months. Data considers only the main employment of every employee working in February 2012.

We can draw two main conclusions from Table 4. First, employment duration clearly increases with income levels. This means that lower income deciles, where the proportion of shorter-term contracts is higher, are unlikely to accumulate enough savings in their individual savings accounts to be able to cover a period of unemployment. Only in the seventh decile does the median duration increase above one year, and only in the tenth decile above two years.<sup>12</sup>

**Table 4: Duration distribution by average income decile**

Decile	Mean	Median
1	8.4	2
2	15.3	5
3	15.3	6
4	17.0	8
5	17.3	8
6	20.1	10
7	23.4	13
8	26.5	16
9	29.3	20
10	33.4	25
Total	20.6	9

Source: Authors' calculations based on the UISA database and each employee's principal employment. Data for February of each year. Average income defined as total income divided by number of contributions.

## 4.2. Transition Matrices from the UISA system

The data presented so far shows the important differences between job characteristics, insurance coverage and benefit levels of workers with atypical and open-ended contracts. The fact that workers in the Chilean unemployment insurance system rotate so frequently, however, prompts the question of what this rotation looks like in terms of the transitions in the labour market from one job to another, or from a state of unemployment or inactivity to employment.

The literature from other countries shows that workers with atypical contracts tend to get “stuck” in a pattern of frequently rotating jobs with limited terms, and find it difficult to transition into long-term stable jobs (Esping-Andersen and Regini, 2000). In Chile, however, all jobs seem to rotate very frequently, so we have to ask whether the same pattern applies.

Unfortunately, we have to bear in mind an important restriction when analysing this data: the unemployment insurance database does not allow us to distinguish between

<sup>12</sup> Table 4 only shows correlation between income and duration. To conclude anything about causality, further analysis would be required to discard possible endogeneity issues, as duration could explain incomes variations, vice-versa or something else could explain both.

workers who are unemployed, inactive, or working informally. All we can tell from the data is that a particular worker has stopped contributing to the system. This is an important caveat to bear in mind as the data below shows important levels of rotation between states of non-contribution to employment, and vice versa. In addition, we must note that the transition matrices below only include those workers in the UISA database from 2002 to 2012, which, as previous tables have shown, are biased towards short-duration employments up to approximately 2009 when, as noted above, employment patterns stabilise.

The tables that follow show movements between a worker's current type of contract and his or her previous one. The data shows a significant amount of movement between types of contract, even though having an open-ended contract makes it more likely that the worker moves to another open-ended contract in the next job (66.3%). The same goes for workers with atypical contracts (52.0%) while workers who were inactive seem to be more likely to move into work with atypical rather than open-ended contracts.

**Table 5: Employment transition (by type of contract)**

		Last employment								
		Open-ended	Atypical	Total	Open-ended	Atypical	Total	Open-ended	Atypical	Total
Previous job	Open-ended	17.4%	8.9%	26.3	33.7%	18.3%	26.3%	66.3%	33.7%	100.0%
	Atypical	26.6%	28.9%	55.5	51.6%	59.7%	55.5%	48.0%	52.0%	100.0%
	Inactive	7.6%	10.7%	18.2	14.6%	22.0%	18.2%	41.4%	58.6%	100.0%
Total		51.6%	48.4%	100%	100%	100%	100%	51.6%	48.4%	100%

Source: Author's calculations based on unemployment insurance database for each employee's principal employment from October 2002 to February 2012. It considers each employee last two employments. If an employee has had only one employment, it is classified as "inactive" on the "Previous job" row.

One interesting point to note, as table 6 shows, is that workers who switched from one job straight into the next were much more likely to move into open-ended contracts than into atypical ones, regardless of their type of contract in the previous job. Conversely, workers who were unemployed (strictly speaking who were not contributing) between jobs were more likely to move into an atypical job. In this case, workers with open-ended contracts were slightly more likely to obtain another job with an open-ended contract (74,9% and 54,1% for a direct transition and for unemployment between jobs, respectively), while workers who had atypical contracts and became unemployed (or stopped contributing) were extremely unlikely to move into an open-ended contract (only 15,5% do). The same holds for workers who were inactive, but not to the same extent (41,%).

**Table 6: Employment transition (by time between jobs and contract)**

		Last employment								
		Open-ended	Atypical	Total	Open-ended	Atypical	Total	Open-ended	Atypical	Total
Previous job	No unemp – OC	11.5%	3.8%	15.3%	22.3%	7.9%	15.3%	74.9%	25.0%	100%
	No unemp – AC	22.9%	8.7%	31.6%	44.4%	18.0%	31.6%	72.5%	27.5%	100%
	Unemp – OC	5.9%	5.0%	11.0%	11.5%	10.4%	11.0%	54.1%	45.9%	100%
	Unemp – AC	3.7%	20.2%	23.9%	7.2%	41.7%	23.9%	15.5%	84.5%	100%
	Inactive	7.6%	10.7%	18.2%	14.6%	22.0%	18.2%	41.4%	58.6%	100%
Total		51.6%	48.4%	100%	100%	100%	100%	51.6%	48.4%	100%

Source: Author's calculations based on unemployment insurance database for each employee's principal employment from October 2002 to February 2012. It considers each employee last two employments. If an employee has had only one employment, it is classified as "inactive" on the "Previous job" row.

From table 7 below we can see that almost a third of all job changes were with the same employer. There are three potential reasons for this: first, a worker hired with an atypical contract may receive a new open-ended contract with the same employer after an initial period of trial. Second, in the case of workers who were hired under an atypical contract, these contracts may be renewed. Thirdly, workers with open-ended contracts may be switched to atypical contracts, which can occur when employees decide to flexibilise the labour force. It is less clear, however, why workers with an open-ended contract would be switched to another open-ended contract with the same employer.

Workers with open-ended contracts are very likely to obtain another open-ended contract when the switch occurred (61,3%), while workers with atypical contracts were even more likely to obtain an open-ended contract (77,3%). In the case of workers who switched employers, the data shows that they were more likely to obtain an open-ended contract if they had previously had one (67,2%). However, if they had an atypical contract in their previous job, it was extremely unlikely that they would receive an open-ended contract now (18,6%).

**Table 7: Employment transition (by change in employer and type of contract)**

		Last employment								
		Open-ended	Atypical	Total	Open-ended	Atypical	Total	Open-ended	Atypical	Total
Previous job	Same emp. - OC	2.5%	1.6%	4.0%	4.7%	3.2%	4.0%	61.3%	39.0%	100%
	Same emp. - AC	21.5%	6.3%	27.8%	41.6%	13.1%	27.8%	77.3%	22.8%	100%
	Different emp. – OC	15.0%	7.3%	22.3%	29.0%	15.1%	22.3%	67.2%	32.8%	100%
	Different emp. - AC	5.2%	22.6%	27.7%	10.0%	46.6%	27.7%	18.6%	81.4%	100%
	Inactive	7.6%	10.7%	18.2%	14.6%	22.0%	18.2%	41.4%	58.6%	100%
Total		51.6%	48.4%	100%	100%	100%	100%	51.6%	48.4%	100%

Source: Author's calculations based on unemployment insurance database for each employee's principal employment from October 2002 to February 2012. It considers each employee last two employments. If an employee has had only one employment, it is classified as "inactive" on the "Previous job" row.

From the data presented in these transition matrices, it is difficult to come to a definite conclusion regarding whether workers become "stuck" in a particular type of contract, as few jobs in the unemployment insurance database can be considered long-term or stable. Rather, it seems that the high job rotation leads to a relatively high level of fluidity between different types of contract, as well as between states of employment and inactivity or unemployment.

### 4.3. The capability to generate income

The previous parts of this section have demonstrated the extent to which employment conditions, in particular wages and employment durations vary depending on a worker's type of contract. It is therefore important to analyse what determines the particular characteristics that we have observed. We study what the UISA system tells us about the employment capabilities of workers, specifically about their ability to generate income.

Our estimates are based on the methodology used by Ruiz-Tagle and Sehnbruch (2013). The capacity to generate income is estimated only for people currently working in order to correct for selection bias. We calculate these estimates separately for men and women. While the unemployment insurance database includes fewer variables than those used by Ruiz-Tagle and Sehnbruch, its panel structure is more accurate than any panel survey.

However, although the database allows us to replicate the estimates of Ruiz-Tagle and Sehnbruch (2013), the structure of the unemployment insurance database generates certain restrictions. In particular, we only have basic information on contributors, which means that we cannot analyse the impact of variables such as vocational training or unionisation that are usually included in household surveys. Another factor is that we can only account for formal employment, which can result in differences when calculating employment and unemployment durations. For example, unemployment duration is defined as the number of months between the last and the second to last employment.

Since we have no information on individual workers when they are not formally employed, we used the taxable income of contributors as a static measure of their ability to generate income. In addition, since we only have individuals with a positive income level, this allows us to estimate the following wage equation without having to correct for selection bias:

$$\log(w_i) = \alpha + \beta x_i + u_i$$

where  $\log(w_i)$  is the logarithm of the income level and  $x_i$  by the respective regressors that we control for (among them the type of contract) and  $u_i$  is the error term. Since income is included in the logarithm, the parameter  $\beta$  represents the impact in percentage points of  $x_i$  over  $w_i$ . For example, if  $x_i$  is age, this translates into  $\beta$  percentage points more income per additional year of life.

Table 8 shows that when analysing the capacity to generate income, having an open in contract significantly relates to higher income levels: 25% more income for men and 32.2% for women, with an aggregate effect of 27.4%.

This table also shows the relation between durations and income. Income is related positively by employment duration and negatively by unemployment duration: 1

additional month of employment duration increases income by 2.9% while 1 additional month of unemployment reduces income by less than a percentage point (0.4%). Both effects are higher for men than for women.

**Table 8: OLS estimations on log of income**

	Male	Female	Total
Contract	0.250*** (0.00750)	0.322*** (0.0106)	0.274*** (0.00613)
Duration of employment (months)	0.0338*** (0.000740)	0.0198*** (0.000905)	0.0285*** (0.000576)
Duration of unemployment (months)	-0.00619*** (0.000531)	-0.00155** (0.000727)	-0.00440*** (0.000430)
Demographic variables	Yes	Yes	Yes
Schooling	Yes	Yes	Yes
Economic activity	Yes	Yes	Yes
Constant	11.31*** (0.0867)	10.88*** (0.114)	11.01*** (0.0676)
Observations	52,525	23,929	76,454

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Source: Unemployment insurance database. All data from January 2010 to December 2011. Data only for people with at least two different employments during that period. The dependant variable is the logarithm of taxable income. Demographic variables include employment duration squared, age, age squared, and a dummy variable capturing different comuna of birth and residence and dummy variables for each marital status. Schooling is included as dummy variables for each schooling level. Economic activity is included as dummy variables for each line of business.

These results are representative only for people with at least two employment histories between January 2010 and February 2011. Including people with only one job would bias the results, as they would not have unemployment periods in the database. Extending the time period for the database to further back would also bias the estimations because, as previously shown, prior periods in the database are not representative of the total labour force and are biased towards atypical contracts and lower paying jobs.

## 5. Potential Reforms to the Insurance System

The analysis presented in the previous section highlights two factors that are key variables in the functioning of Chile's UISA system: On the one hand, a high proportion of workers have short-term contracts, and, on the other, the duration of employment contracts is very short, even for workers with open-ended contracts.

Given the conditions of the UISA system described in section 3 that govern who can receive benefits from the system or not, the data presented above prompts the question of how many unemployed workers are actually covered by the system and to which extent.

The tables that follow estimate the coverage of the UISA at different points in time by asking how many workers of those contributing to the system would be covered if they were to lose their job. To simplify matters, the tables below only includes each worker's main employment.

The first group of workers presented by the tables 10 and 11 below, is the proportion of workers who are not entitled to UISA benefits because they did not contribute a sufficient amount of time to the system. Within this category, the data distinguishes between open-ended and atypical contracts with an insufficient number of contributions (under 12 and 6 months, respectively) and other reasons, such as not having enough savings to receive at least one payment, or being unable to use the solidarity fund because of not satisfying duration requirements (at least 12 contributions in the last 24 months, and at least 3 of them with the same employer).

Another group of workers are those who are entitled to UISA benefits, and the tables that follow distinguish between their different types of contract and by whether they are entitled or not to receive payments from the solidarity fund or only from their own savings account.

To be able to apply for solidarity fund benefits, a worker has to satisfy the contribution requirements stipulated by the UISA, and not have enough resources available in his or her individual savings accounts to cover the payments detailed in table 9. Open-ended contracts can receive up to five payments from the solidarity fund, while workers who held atypical contracts can receive up to two payments that amount to 35% and 30% of their previous salary respectively.

For example, a worker with an open-ended contract with an average income of \$500.000 CLP would receive a \$250.000 payment in his or her first month of unemployment if s/he had accumulated enough own savings. However, if this worker's individual saving account only contains savings of \$200.000, s/he will be entitled to receive a total benefit of \$230.709, composed of \$200.000 from the individual savings account and of \$30.709 from the solidarity fund. For the next four months, s/he will then receive the respective upper bound value for payments from the solidarity fund.

**Table 9: Solidarity funds benefits description**

Month	% of average income	Lower bound	Upper bound
1	50	\$106 855	\$230 709
2	45	\$88 642	\$207 639
3	40	\$77 713	\$184 567
4	35	\$68 000	\$161 496
5	30	\$58 285	\$138 426

Source: [www.afcchile.cl](http://www.afcchile.cl), February 2012.

Table 10 shows the extent to which employed workers are covered by the UISA. For this table, we consider the relationship between a worker's current job, and all of his or her accumulated savings in the UISA system, regardless of whether these were accumulated during the current job, ordering previous job(s). As we can see, 52,4% of all workers employed in February 2012 would not have the right to receive any benefits from the UISA system at all if they were to become unemployed at that particular point in time. Over 90% of this group would not be entitled to benefits because the short duration of their jobs did not allow them to make enough contributions to the system.

The remaining 47.6% of workers would be entitled to some form of payment from the UISA system. Of these workers, most would benefit because they have enough savings accumulated in their own account. Only 15.8% of workers who are covered by the insurance system would be entitled to benefits from the solidarity fund. Almost all of these workers previously held open-ended contracts. Conversely, workers who hold atypical contracts are only covered by this system to a very limited extent.

**Table 10: Coverage of the UISA of all employed workers, including savings from previous jobs**

	Nov. 2011	Dec. 2011	Jan. 2012	Feb. 2012
OCs with insufficient contributions	21.0	21.9	23.3	24.2
ACs with insufficient contributions	18.9	21.6	23.2	24.5
Other reasons	4.5	4.3	4.0	3.8
Subtotal	44.4	47.8	50.5	52.4
OCs - Right to Solidarity Fund	17.8	16.8	16.2	15.6
ACs - Right to Solidarity Fund	0.4	0.4	0.3	0.2
OCs - Enough savings, no Solidarity Fund	28.2	26.8	25.9	25.3
ACs - Enough savings, no Solidarity Fund	9.1	8.2	7.2	6.4
Subtotal	55.6	52.2	49.5	47.6
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Author's calculations based on unemployment insurance database considering all UI savings in their labour history and including only their main employment. Data for the four last months of the sample.

Table 11 shows the extent of the UISA system's coverage if we only consider savings from a worker's current job, and exclude those savings that were accumulated during previous periods of employment.

As table 11 shows, when comparing it with table 10, the only differences is the between groups composition. People unable to access the UI are the same, but now more unemployed moved from having enough savings to needing the Solidarity Fund, as savings during one job are significantly lower than when considering the complete labour history but employment durations, and therefore, the number of contributions, remains unchanged.

When analysing February 2012, open-ended contracts with right to use the Solidarity Fund go from 15.6% to 19.3%, and from 0.2% to 1.3% for atypical contracts, with the subsequent drop in people with enough savings.

These results prompt the question of whether the coverage of the unemployment insurance system would improve if the conditions related to the minimal number of contributions were relaxed even further.<sup>13</sup>

Table 12 presents the results of such a hypothetical exercise. It shows what would happen if minimum periods of contribution to the UISA were halved to 3 months for atypical contracts and 6 months for open-ended contracts.

<sup>13</sup> The 2009 reform of the unemployment insurance had already brought down minimum contribution periods to 12 months and six months respectively.

If we compare the results presented in Table 12 with those in the previous tables we can see that the coverage of the UISA increases significantly as the proportion of workers excluded from the system decreases from 52.4% to 35.3%. This increase in coverage is principally driven by the workers who would now have the right to access to the Solidarity Fund, especially by those workers who hold atypical contracts.

**Table 11: Coverage of the UISA of all employed workers, excluding savings from previous jobs**

	Nov. 2011	Dec. 2011	Jan. 2012	Feb. 2012
OCs with insufficient contributions	21.0	21.9	23.3	24.2
ACs with insufficient contributions	18.9	21.6	23.2	24.5
Other reasons	4.7	4.5	4.1	3.9
Subtotal	44.6	48.0	50.6	52.5
OCs - Right to Solidarity Fund	22.1	20.8	20.0	19.3
ACs - Right to Solidarity Fund	2.4	2.0	1.6	1.3
OCs - Enough savings, no Solidarity Fund	24.0	22.8	22.1	21.6
ACs - Enough savings, no Solidarity Fund	7.0	6.4	5.7	5.2
Subtotal	55.4	52.0	49.4	47.5
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Author's calculations based on unemployment insurance database considering all UI savings in their labour history and including only their main employment. Data for the four last months of the sample.

**Table 12: Distribution of UISA coverage if contribution periods were halved**

	Nov. 2011	Dec. 2011	Jan. 2012	Feb. 2012
OCs with insufficient contributions	7.4	9.1	11.4	12.8
ACs with insufficient contributions	6.2	7.2	11.2	15.2
Other reasons	6.9	8.7	8.1	7.3
Subtotal	20.6	25.0	30.6	35.3
	31.4	29.5	28.0	26.8
	14.2	13.6	11.0	8.9
OCs - Right to Solidarity Fund	26.7	25.4	24.5	24.0
ACs - Right to Solidarity Fund	7.2	6.6	5.8	5.1
OCs - Enough savings, no Solidarity Fund				
ACs - Enough savings, no Solidarity Fund	79.4	75.0	69.4	64.7
	7.4	9.1	11.4	12.8
	6.2	7.2	11.2	15.2
Subtotal	6.9	8.7	8.1	7.3
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Note: Hypothetical exercise showings what would happen if, given the actual durations, wages and individual savings, duration requirements to apply to the UISA and the Solidarity Fund were halved. As in Table 10, the data refers to all savings accumulated by a worker throughout his or her employment history.

The data presented in the table above shows that reducing the periods of minimum contributions to the UISA system would indeed improve the coverage of the system. However, overall, the proportion of workers not covered would still be relatively high at around one third of all employed workers.



In addition to this result, we must consider that the data presented in Table 3 in this paper shows that very few workers who actually become unemployed actually use the solidarity fund, which suggests that very few of the unemployed are actually entitled to benefits when they become unemployed. As discussed above, we unfortunately cannot estimate the real coverage of the UISA system of unemployed workers, as our database only includes unemployed workers who actually claim benefits. However, we do know that very few unemployed actually claim benefits.

Changing the contribution periods of the UISA is, however, only one potential solution to the general problem of low coverage. By far, the most significant problem of the Chilean UISA is that the job rotation of workers, in particular of those with atypical contracts, is so high that it would be difficult for any unemployment insurance system (even traditional ones that are not based on individual savings accounts) to function.

The problem of high job rotation is partly due to the “Multirut” phenomenon described above. However, since we do not know the exact extent of the use of multiple tax IDs (“Multiruts”), and know that job rotation levels are high anyway given the extensive use of atypical contracts, we should examine the possibility of changing the overall structure of the Chilean UISA system so that it provides employers with incentives to increase job stability.

There are two ways in which this can be achieved: first, employers can be charged for the use that their employees make of the unemployment insurance system, or alternatively, employers can be charged an increased fee for unemployment insurance at the beginning of an employment relationship.

The first mechanism is known as an experience rating and is used in the United States to ensure an equitable distribution of the costs of unemployment compensation among employers. It is a procedure for varying employer contribution rates to unemployment insurance through their tax bill according to the extent to which the employer actually uses the insurance. In effect this produces a kind of unemployment insurance risk rating. This is accomplished by keeping an individual experience rating account for each liable employer.

The existence of an experience rating is more important in countries with low levels of employment protection, such as the United States. “In Europe, employment protection legislation takes over the role of experience rating, with similar effects on labor market flows and employment” (Vodopivec, 2004).

However, the literature on the experience rating used in the United States shows that this is an imperfect system as the maximum contribution or tax rates are set too low. This means that employers, who are in the higher experience rating bracket are not subject to any disincentive to reduce job rotation or layoffs (Feldstein, 1978 and Topel, 1984). In addition, Card and Levine (1994) as well as Anderson & Meyer (2000) find that the experience rating is negatively correlated with the economic cycle, producing more layoffs during times of economic downturns and fewer ones during economic expansions.

A further problem with the applicability of an experience rating in Chile is that the use of multiple tax IDs (“Multiruts”) circumvents such a policy. For an experience rating to work in Chile, legislation would first of all have to be introduced that prohibits multiple

tax IDs, and the authorities would then have to make sure that this legislation is actually enforced. Such a legislative step and the appropriate enforcement levels are eminently feasible, although the experience of the United States with an experience rating is not an unqualified success.

An additional complication in the Chilean context is that even beyond the “Multirut” problem, employment duration is very short. An alternative or even an additional option would therefore be to charge employers higher contributions to the unemployment insurance system with the objective of increasing the savings that workers accumulate in the individual savings accounts. This would certainly increase their benefit levels. However, *contributions could also be staggered over time so that employers have to pay higher rates at the beginning of the employment relationship, which then decreases over time.* Staggering contributions could maintain the overall costs of contributions, and would simply be a mechanism that distributes them differently. Unemployment insurance contributions would continue to be deducted from any potential severance pay liabilities in case a worker is dismissed. This in turn counters arguments that increased insurance payments would deter employers from hiring workers.

In addition, higher contribution rates to the unemployment system should become part of an integrated public policy that not only encourages longer employment durations but also combines this policy with greater investment in vocational training. The additional cost of unemployment insurance for employers could be offset by a potential tax credit in exchange for certified investment in training and worker education.<sup>14</sup> This would also counteract arguments that higher labour costs would potentially reduce hiring levels.

Of these two potential reforms to the Chilean unemployment insurance, the first option is impossible to examine or model with existing data as we have no information on the extent to which workers are rotated between different tax IDs of the same firm. This prevents us from estimating the impact of a potential experience rating as we do not know which tax IDs belong to the same firm. However, we can model the potential impact of increased and staggered contributions.

The figures below show the actual replacement rates received by the unemployed as well as simulations based on three different scenarios that plot alternative contribution regimes to the Chilean unemployment insurance system. The simulations use only the universe of workers contributing to the unemployment insurance system who actually become unemployed. All series calculate the replacement rate for each month for all employees that do not contribute the next month, dividing the amount they would have saved, given the different contribution rates, by the number of months he is missing from the database. This analysis assumes that all workers that lose their job then apply to the unemployment insurance.

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<sup>14</sup> At tax credit for vocational training currently exists in Chile and is known as the *Franquicia Tributaria*, which is administered by the *Servicio Nacional de Capacitación (SENCE)*. However, the consensus among experts is that the existing system is inequitable and ineffective (Jara, 2002; Sehnbruch, 2006a; and Comisión Revisora del Sistema de Capacitación e Intermediación, 2011).

As it is, these simulations are subject to Lucas' critique, as they consider a change in the contribution rates without considering the impact it would have on individual decisions in the labour market. Specifically, they do not consider the impact that changing the contribution rate would have on the probability of workers claiming benefits from the insurance, or their impact on both labour demand and supply decisions. To include these factors an actuarial model that defines certain parameters as demand and supply elasticity, as the ones estimated by the SAFP (Quintalla et al., 2013), should be developed.

The baseline in the graphs plots the replacement rate that workers currently receive from their individual savings accounts if we divide the total savings that they have accumulated in their accounts during their last job by the number of months that they are unemployed for. As described above, the contribution rates of open-ended contract workers at present is 2.2%, while workers with atypical contracts contribute at a rate of 2.8%. As we can see from the graphs that follow, the replacement rate of wages that the current unemployment insurance system is generating during a period of unemployment is approximately 20%.

The three cases plotted in the graph show different scenarios of potential reforms to the unemployment insurance system and the respective replacement rates that these reforms would generate. Case A refers to a contribution rate of 8% for both open-ended contracts and atypical contracts, which leads to an annual saving of one complete monthly wage. We have chosen this contribution rate first because it is equivalent to a worker's severance pay entitlements in Chile, and would therefore match existing entitlements. Also, when unemployment insurance proposals were first made in Chile during the 1980s, they were based on an 8% contribution rate as they did not contemplate the establishment of any kind of risk pooling, for example in the shape of a solidarity fund.

Case B, in turn, models a contribution rate of 4% for workers with open-ended contracts and 8% for atypical contracts. We chose the 4% contribution rate for open-ended contracts because this would accumulate approximately half a monthly wage per annum in an individual savings account, which could then still be supplemented by the Solidarity Fund. The 4% rate is also similar to the 4.11% contributions, which were proposed by unemployment insurance proposals that were put forward during the 1990s the most important of which was known as Protrac (Ministerio del Trabajo, 1997). In the case of workers with short-term contracts we chose a contribution rate of 8%, however, based on the logic that since the labour market is not paying a premium or compensating workers for the fixed term nature of their jobs, the unemployment insurance system should at least do so in order to ensure a more adequate coverage during what is essentially a pre-programmed period of unemployment. We therefore maintained the idea that a worker should at least accumulate a full monthly wage in his or her savings account during a contribution period of one year.

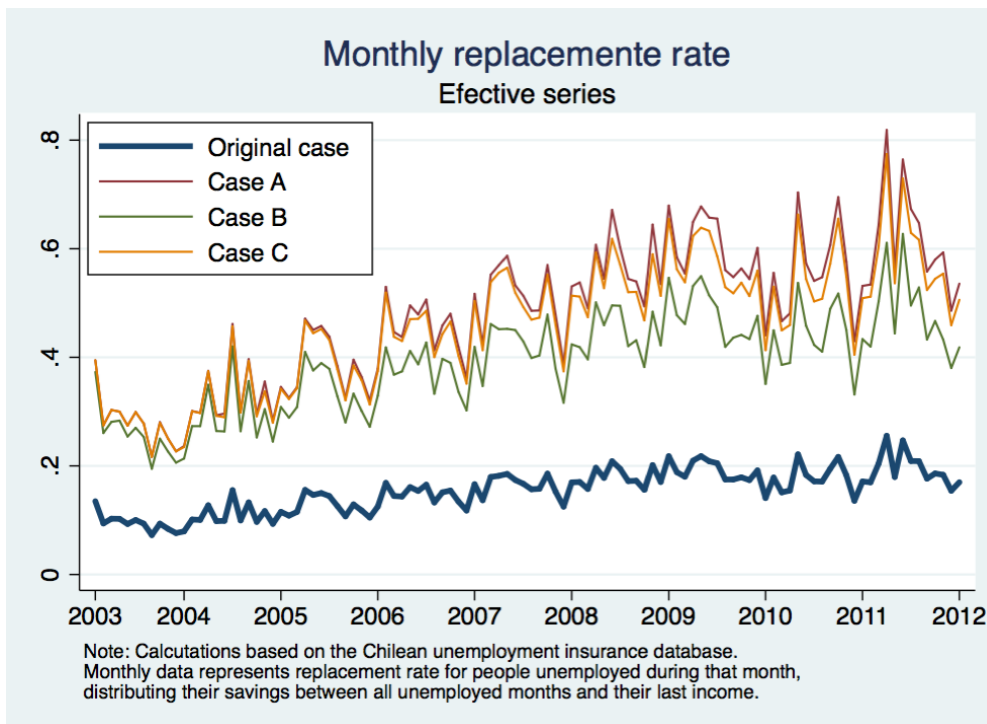
Case C then plots staggered unemployment insurance system contributions that begin at 8% for both workers with open-ended and atypical contracts, and are then reduced

by 1% per annum until they reach zero.<sup>15</sup> This scenario is based on the idea that employers should be rewarded for retaining workers, which as mentioned above should be linked to incentives for greater investment in vocational training.

As we can see from the graphs below, all three cases significantly increase the replacement rate of the unemployment insurance system. Case A generates the highest replacement rate, while Case B generates the lowest one. It is interesting to note that Cases A and C are very similar due to the fact that employment durations are so short that the effect of staggering contributions is almost negligible. We should note, however, that these simulations are based on the current behaviour of employers and workers in the labour market and the associated rotation levels. As discussed above, we cannot estimate the potential impact of legislation that would prohibit the use of multiple tax IDs by employers, nor can we model how any potential changes in legislation or contribution rates would change the behaviour of employers and workers.

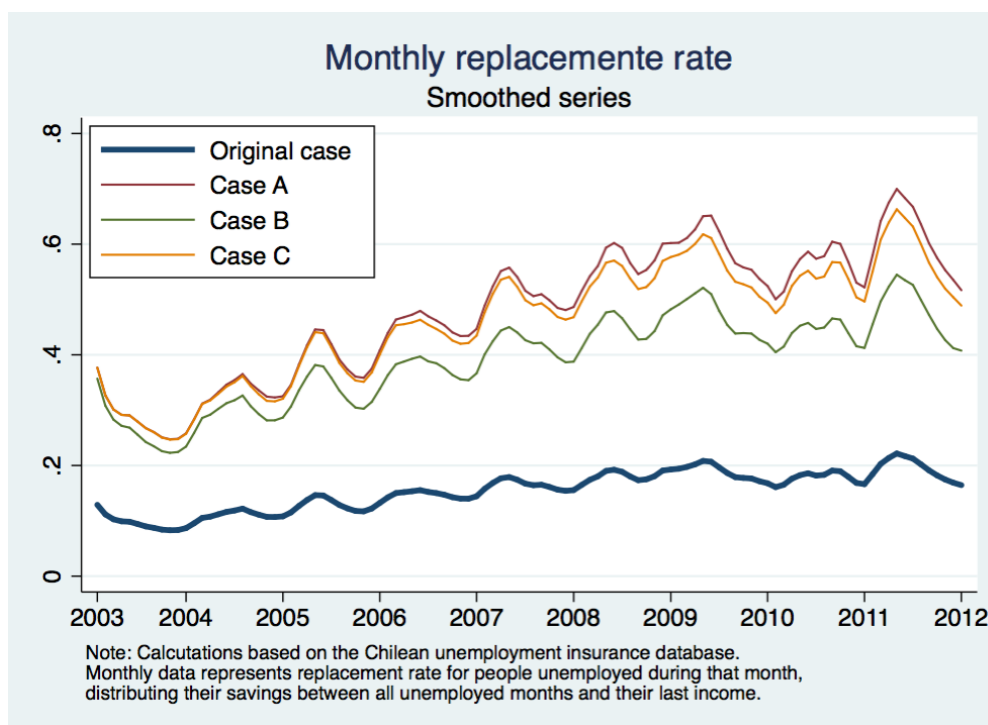
To have a better perception of the evolution of the replacement rates, the series estimated in the simulation are smoothed using local regressions, specifically using locally weighted scatterplot smoothing (LoWeSS). This methodology uses a series of non-parametric regressions around each observation, fitting a polynomial to each subset of data, and creating a smooth curve known as a Lowess curve. Different bandwidths were used, which define how much of the data is used to fit each local polynomial, and are included in the report.

**Figure 3: Monthly replacement rate of different contribution scenarios**



<sup>15</sup> We should note that the present contribution regime to the unemployment insurance system extends for a period of up to 11 years. We have not considered this cut off point in our simulations as the insurance has not yet been operational for 11 years so that its longest contributor has only been contributing for 9 years.

**Figure 4: Monthly replacement rate of different contribution scenarios**



These simulations show the importance of structuring unemployment contributions carefully to reflect the real capacity of workers to accumulate savings in their individual accounts. Each of the three cases modelled would provide unemployed workers with significantly better levels of coverage than the existing UISA.

## 6. Conclusions

The originators of the Chilean unemployment insurance had hoped that they had come up with an innovative system that combines individual savings accounts with pooled risk sharing, which would function with low administrative costs and avoid the typical “moral hazard” pitfalls associated with traditional unemployment insurance systems, while at the same time protecting the unemployed.

However, once the unemployment insurance system began to function, it became evident that the proportion of atypical contracts among Chilean wage-earners was much higher than expected, and that job rotation levels (regardless of the type of contract) were also extremely high. This meant that the insurance system did not achieve an adequate level of income protection for workers who became unemployed, especially during economic downturns. In particular workers who had short-term contracts received only very limited benefits. The insurance system was therefore reformed in 2009 in an attempt to respond to this problem. The reform extended both the duration and the level of funds paid out by the solidarity fund.

Our analysis, however, shows that both the coverage and level of benefits of the insurance system remain limited, due in large part to the very particular characteristics of the Chilean labour market, especially its high levels of job rotation and of atypical

contracts. Yet the simulations that we undertake in this paper use data on employed workers because the database does not allow us to define with any degree of certainty who the unemployed workers are. Since we know from other studies (Sehnbruch, 2006 and Ruiz-Tagle and Sehnbruch, 2010) that unemployed workers generally have jobs with more precarious working conditions (lower wages, short-term durations, atypical contracts, no vocational training, etc.), we must assume that the actual coverage rates of the UISA are even lower than those simulated here for workers who actually become unemployed.

This problem leads us to the inherent problem of the Chilean UISA system: given the characteristics of jobs in Chile, it would be difficult for any unemployment insurance (traditional or UISA based) to provide adequate coverage. While, as we showed, extending the system's accessibility by reducing contribution requirements would undoubtedly extend the system's coverage somewhat, this is unlikely to solve the fundamental problem generated by the high levels of job rotation in the Chilean labour market. We therefore consider that it is important to begin to think about using the Chilean UISA as a policy tool that could actually produce incentives that would foster job stability.

The Chilean case shows how important the interrelationship is between the conditions of a social security system or policy and the employment conditions on which it is based. If employment conditions are too precarious, social security systems cannot function appropriately. This is why we should begin to consider their potential not only as social protection mechanisms, but also as tools that impact how the labour market functions, and that have the potential to incentivise or de-incentivise undesirable employment conditions.

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## Appendix 1

### 4.1. Characteristics of the unemployment insurance database

To study how unemployment insurance systems work in practice, some basic variables are essential to the analysis. Since unemployment insurance contributions and benefits generally depend on a worker's income level, occupational status or type of formal contract, the duration of contributions, and the duration of unemployment, these are also the variables that allow us to assess the functioning of an insurance system.

When Chile designed its unemployment insurance system between 2000 and 2002, data from the household survey at the time significantly overestimated the proportion of open ended contracts in the labour market. At the time, data from the official labour market survey did not even include the variable type of contract. Policymakers therefore designed the insurance system based on estimates from the household survey, Casen, which were shown to be highly inaccurate once the insurance system began to operate and deliver administrative data. When the first administrative data from the unemployment insurance system became available, public officials were extremely surprised, and had to admit that the Chilean labour market was more precarious than they had previously assumed.<sup>16</sup>

The administrative data from Chile's unemployment insurance system is the most accurate and extensive information available on Chilean wage-earners. While the information is by no means complete, it is the best source of information on the functioning of the formal segment of the Chilean labour market. The data is also the best source of information for analysing how the unemployment insurance system is working in practice.

This section proceeds by first describing the data available from the Chilean unemployment insurance and the type of analysis we can undertake with it. It then proceeds to analyse the data itself, both in terms of how the unemployment insurance has evolved over time and in terms of the job characteristics, contributions and benefits of its workers. We then examine the data from an analytical perspective and discuss its implications for the functioning of the Chilean labour market.

The database of the UISA system consists of administrative data on all workers who have contributed to the system since 2003. The database consists of six separate databases, which contain data on different aspects of a worker's contribution history such as salaries, type of contract, periods of contribution (employment) and non-contribution (unemployment), and benefit history. By matching the databases with each other, we were able to reconstruct the employment trajectories of individual

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<sup>16</sup> This statement is based on numerous interviews undertaken by the author between 2002 and 2006 with officials at the Ministry of Labour and the Superintendencia de AFP.

workers. This allows us to analyse movements between employment and unemployment or inactivity, as well as movements between different types of contracts. We also have basic information on a worker's personal characteristics, such as age, gender and level of education. Appendix 1 contains a complete list of variables contained in the databases as well as an explanation of how they were merged with the relevant do files.

However, it is as important to describe the data not contained in the unemployment insurance system as it is to describe the data that is included. The following is a list of the information on workers contributing to the unemployment insurance system that we do not have:

1. We have no information on the employers that workers work for, such as the size of the firm, its turnover, or economic sector.
2. We cannot associate employer tax identification numbers that belong to a single holding company. This means that we cannot identify when employees are rotated between different tax IDs within a firm, a phenomenon that in Chile is known as the "Multirut", and which will be discussed in more detail below.
3. While we can analyse the employment history of workers and reconstruct their movements between different jobs or types of contract, we have no way of knowing whether a worker was employed informally during those periods during which he or she did not contribute to the unemployment insurance.
4. Similarly, we do not know from the data whether workers claiming benefits are genuinely unemployed or whether they are working informally while claiming benefits.
5. Approximately 15% of workers contributing to the unemployment insurance do so from more than one job (The maximum number of jobs held by a single individual is 7). While we can sum up their income levels from each job, we cannot analyse this phenomenon in any other way. In some cases, the contributions may be coming from two different tax identification numbers within the same employer.
6. We have no information on hours worked so wage levels cannot be calculated on an hourly basis. This means that, for example, we cannot explain why 16.3% of all workers in the database earn less than the required minimum wage, which is a surprising statistic given that all jobs contained in the database are supposed to be formal. The only way to explain this is if these jobs are part-time. However, we have no data with which to back up this assumption.
7. We have no information on whether workers have received some form of vocational training through the unemployment insurance system, a point which will be discussed in more detail below.