**S.O.S. Robots: a model for unemployment insurance in Mexico**

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**Index:**

Executive summary p. 2

1. Introduction p. 6

2. Robots on the horizon: problems and solutions p. 8

3. Social protection and unemployment insurance: a closer look p. 13

4. Four criteria for designing Unemployement Insurance in Mexico p. 20

5. A closer look at key policy questions p. 30

6. Survey of public opinion p. 38

7. Conceptual model of Adaptive Unemployment Insurance p. 43

8. Conclusion: An innovative take on an overdue social protection p. 54

Bibliography p. 57

Appendix A: Full list of survey questions in original language p. 61

Report for Nuevo león 4.0

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**Executive summary**

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New waves of automatization and robotization of economic activities are likely to result in substantial job losses and rising structural unemployment in Nuevo León in the following decades. While reliable and detailed predictions are still unavailable at the moment, industry leaders and international research point out that this ‘fourth industrial revolution’ holds a real threat to the livelihood of many formal and informal workers and the social fabric of the region. The consortium Nuevo León 4.0 brings together various stakeholders from the different economic sectors, public departments and academic institutions to further investigate the strategies and consequences of large scale robotization and to discuss desirable policy responses.

In this context, the present report investigates *unemployment insurance* as a suitable policy response to job loss and structural unemployment resulting from robotization. A previous report from the same authors (Ghys et al., 2019) focused on the policy option of Universal Basic Income. This first report also goes in depth about robotization, its possible destructive social effects and provides a typology of possible responses.

 This reports builds upon this earlier work, the international literature on unemployment insurance and original research on public opinions related to the thread of robotizations. This includes questions on reasonable replacement incomes and on the efforts (like looking for work or caring for family members) that people should do in order to receive unemployment benefits. We develop arguments in favor of unemployment insurance as a policy option that will strengthen the capacities of Mexico and Nuevo León to protects its citizens against social ills resulting from unemployment in general and unemployment due to robotization in particular. We develop and propose the blueprint of a flexible system for unemployment insurance. This system would be able to adapt the height of replacement incomes, the duration of entitlement and the financing by responsible actors, depending on the actual changes in unemployment rates. This means it can adapt to the economic circumstances depending on how the fourth industrial revolution unfolds in practice.

**Chapter 2 ‘Robots on the horizon, problems and solutions’** recaps the general challenge of robotization, which constitutes the main motivation behind this report (see Ghys et al., 2019 for a more elaborate discussion). This chapter explains why new waves of robotization, which will include new artificial intelligence technology, will be qualitatively different from earlier waves of innovation, as human labor is expected to become (almost) entirely redundant in various sectors. We then survey the available estimates of job loss due to robotization. While Mexico is not included in most statistics, we conclude that there is little reason to optimistic and thus confirm the importance of taking this challenge serious.

 Thinking about how to respond we propose three general types of responses: ‘Preventive responses’ like taxing robots or investing in creative and human labor intensive industries; ‘Meditating responses’ like retraining or rearranging the standards and expectations of full employment through work time reduction, the organization of retirement etc.; and lastly ‘compensating responses’ like universal basic income and unemployment insurance, that serve not to prevent unemployment due to robotization, but seek to minimize its negative social impact. The main argument is that a compensating response as such is never sufficient. A combination of preventive, mediating and compensating responses is required to protect the social fabric from disruptive aspects of the Fourth Industrial Revolution. In order to be effective, compensating responses should fit in a broader vision and flanked by mediating and preventive measures. For instance, people receiving unemployment insurance could receive retraining to work in new creative industries.

**Chapter 3 ‘Social protection and unemployment insurance: a closer look’** discusses the international literature on welfare state policies, unemployment insurance and active labor market policies. After explaining the main functions of unemployment insurance, we discuss the implementation of such policies in Latin America and in Mexico. We conclude this chapter by arguing that unemployment insurance is a realistic and desirable policy for Mexico and Nuevo León (different divisions of labor between the federal and state level are possible). It could serve as a compensatory strategy in the context of robotization, but even when job loss and structural unemployment would turn out to be low, experiences in other Latin American countries show that implementing unemployment insurance will help to reduce poverty risks and protect the social fabric.

 This chapter also highlights the challenges for unemployment insurance systems related to the high numbers of informal workers in Mexico. This challenge is of great importance when designing (un)employment policies and will return throughout various chapters of this report.

**Chapter 4 ‘Four criteria for designing unemployment insurance in Mexico’** discusses the following four criteria: ‘effectiveness’, ‘synergy with the policy context’, ‘sociopolitical sustainability’ and ‘connection to robotization’. These general criteria for a good unemployment insurance system are translated into concrete policy choices in chapter 7, when we present our conceptual model of adaptive unemployment insurance.

**Chapter 5 ‘A closer look at key policy questions’** gives an overview of more concrete policy choices that have to be made to have an effective, integrated en socio-politically sustainable unemployment insurance system that is relevant to the challenges of robotization in Mexico. It offers insights to answer the following questions:

* How much money should the unemployment insurance pay to beneficiaries?
* How many months should individuals be able to receive income support from Unemployment Insurance?
* Who will pay for the unemployment insurance? (Who should take responsibility)
* What efforts can we expect from people in return for receiving benefits?
* Who can participate in unemployment insurance?

The chapter provides examples and relevant benchmarks about the height and duration of replacement incomes. We also propose that it might be desirable to allow for some flexibility in the design depending on changes in unemployment rates at a given time.

 Concerning who should pay we argue that it is reasonable to assume that private companies should bare at least some responsibility for rising unemployment due to robotization. We also argue that such compensation systems should be broader than direct compensations from companies to their former employees that lose their jobs (severance pay) for several reasons explained in this chapter.

**Chapter 6 ‘Survey of public opinion’** presents the results of an original research on the opinions of Nuevo León citizens about robotization and replacement incomes. We took 366 surveys from inhabitants of Monterrey. The full questionnaire can be found in Appendix A, at the end of this report.

 A first result of this research is that most citizens regard robotization as an evolution that could affect their employment. About 14% thinks that a robot could fully do their job. The largest share, about 55% answers ‘yes partially’ to the questions ‘can a robot do your job?’. About 31% is convinced that a robot could not replace their job.

 Secondly we asked the citizens who they consider most responsible for preventing an increase in poverty if robotization does leads to increases in unemployment. Most of them feel that companies are most responsible (47,5%), another large share feels that the government is most responsible (38,8%), a much smaller share thinks that individuals who lose their job are to be held accountable for this job loss related to robotization (13,7%).

 Thirdly and crucially, we found broad support for unemployment insurance in Nuevo León. About 87% of all respondents are in favor of replacement incomes, limited in time, for those who lost their job due to robotization. Interestingly, 91,5% of the respondents think that all people who lose their job deserve protection, not only those who lose their job due to robotization. We thus find a broad support for unemployment insurance in general, not only as a compensatory policy for robotization.

 Thereafter we asked people about a reasonable amount, duration and reciprocity. We found that most of our respondents support a replacement income that is (much) higher than the federal (urban) poverty line (median of 7.000 pesos). Most people think that people should receive such replacement income for about 3 tot 6 months (median of 4 and average of 6,9 monhts). Lastly, most respondents think that at least some effort can be asked from people who receive a replacement incomes, ranging for looking for jobs, studying, doing a training trajectory, to some kind of care work or volunteering. Future research could refine our understanding of public opinions on these matters.

Building on the preceding chapters, **chapter 7** presents our ‘**Conceputal model of Adaptive Unemployment Insurance’.** This is a conceptual model, not a thoroughly calculated and tested one. We believe this could provide a strong basis for an in depth discussion about unemployment insurance as a policy option and a first blueprint for further developing a concrete policy strategy. This model is envisioned in this report for implementation on a state level (here Nuevo León), but we want to stress that this type of social policy would benefit from federal level implementation.

This chapter turns the four criteria of chapter four and the five questions of chapter five into concrete policy choices. They key innovative feature of our proposal is its ‘adaptive’ character.

We propose a model of employment insurance that is able to adapts some of its main parameters, to the actual economic situation with regard to jobs loss due to robotization. Depending on the type of scenario (with more or less unemployment) a different amount and timeframe for the replacement income, the reciprocity expected from beneficiaries and financing model is more appropriate. This is further explained below. The model is summarized in Table 11 on page 48.

 We identify four possible scenario’s to which these parameters could be adapted. The current situation (unemployment under 5%), a strained situation (unemployment between 5 – 10%), an unemployment crisis (unemployment between 10 – 25%) and a systemic crisis (unemployment over 25%). These different tiers can of course be discussed and refined. Here we chose for sufficiently large categories to ensure the stability of the system. The main function of the tiers, as conceptualized here, is to illustrate the basic logics of this adaptive system.

 Related to the amount, we propose a flat rate that is well above the federal poverty line, for example 5000 peso. When unemployment rises significantly, we propose to gradualy lower this amount in order to keep the system affordable.

 Looking at the duration, we propose 6 months of entitlement in the current situation. When (structural) unemployment rises, we propose to gradually increase the number of months, as it will be more difficult to find a decent job.

 When unemployment is low, it makes more sense to ask people to look for a new job as a condition for receiving a replacement income. When jobs are more scarce, a broader range of ‘reciprocal efforts’ would become acceptable conditions as well. For instance including education in the strained situation, care work in the employment crisis situation and volunteering in the most extreme situation.

 Lastly, we propose a mixed financing system in which the state, the industry and workers contribute in different capacities. If there is a clear correlation between a rise in structural unemployment and industry driven robotization, the contributions from the industry should rise accordingly.

The last chapter concludes by recapping the main argument of our report and identifying avenues for further research. These could include gathering more data about projected robotization in Nuevo León, exploring the potential of state and municipal governments in job creation for those who will find it most difficult to adapt to the evolving economy, further refining our conceptual model and further developing our understanding of public opinions on employment insurance and reciprocity.

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**1. Introduction**

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The 21st century brings a new social challenge to Mexico: the threat of sustained replacement of human labor by robots and artificial intelligence. This new wave in industrial development goes beyond helping humans perform tasks faster, as robots are conceptually different in so far that they replace specific human capacities (talking, driving, analyzing,…) with a certain degree of autonomy. The broad potentially impact of these developments makes it threatening even for regions with traditionally low unemployment, such as Nuevo León. This social issue questions the core of the capitalist social contract, which for most people resolves around wage labor. Those who don’t possess means of production of their own, depend on employment by a capitalist class, that in turn decides the conditions of production. *Whether one is optimistic or pessimistic regarding the extend of this transformation, it is a matter of justice that workers are protected from adversity as capitalist society enters unknown waters.*

 While the Mexican debate on policy responses is still premature, our previous report (Ghys et al, 2019) outlined that responses to robotization can roughly take three forms: 1) attempts to contain robots and artificial intelligence or prevent these technologies from replacing humans; 2) attempts to mediate the impact of replacement on the labor market; and 3) attempts to (financially) compensate people for their unemployment. We argued that a mixture of such strategies is required, instead of relying on ‘catch all’ solutions such as Universal Basic Income that only and partially compensate. In this report, written for the ‘Nuevo León 4.0’ policy network, we will focus on unemployment insurance as a more modest but adequate tool for compensation.

 Unemployment insurance is a core component of most welfare states (Garland, 2014), and usually takes the form of periodic payments that support workers who have recently lost their employment due to circumstances out of their control. While internationally far from innovative or new, this aspect of social security has been historically absent from both Mexico as a federal entity and Nuevo León as a state. At the same time, the context in which this report was written is decisively different from the 20th century European context in which this policy instrument was first developed. One key difference is that Mexico suffers from high rates of informal employment, while unemployment insurance is traditionally based on contributions from formal employment. This is a challenge rather than an insurmountable obstacle, since various other Latin countries with a large informal sectors have implemented such policies. The second difference is that unemployment insurance was envisioned as a macroeconomic stabilizer that protects people throughout economic cycles of growth and crisis. The fourth industrial revolution is not a cyclical event, but a potential permanent change of which the long term effects are unpredictable. While the authors have previously argued to take potential disaster scenario’s serious, unemployment compensation must both be feasible in sustainable in best- and worst-case scenarios.

 This report will lay the groundwork for implementing unemployment insurance as a response to robotization, and **will propose an innovative model that is tailored to the Mexican context and is flexible enough to both be valuable in the current situation and in that of a sustained crisis**. The core idea is a ‘tiered’ unemployment protection that is designed to change core parameters such as for example benefits and requirements depending on the overall situation of the labor market. This way the model can both be effective in today’s economy and political climate, as be both sustainable and inclusive in a future with higher rates of unemployment. It is important to note that this is a *conceptual* model, constructed through a literature study, the analysis of various policy choices, and comparison to experiences elsewhere (see chapter seven). This report will not offer a detailed or budgeted ready-to-implement solution or simulation, for such implementation requires more precise government data unavailable to the authors. Besides this conceptual orientation, this report also offers an empirical study of public attitudes in Nuevo León on the topic of unemployment insurance as a response to robotization (see chapter six). In order to be implemented successfully, it is important that there is societal support for policy programs. The combination of a conceptual model and information on public attitudes can serve as a comprehensive starting point for discussing the effective implementation of this social policy. We repeat the important reservation *that unemployment insurance (or any compensation-oriented policy) is by itself insufficient to stem the social impact of robotization*.

In the remainder of this introduction we will outline the general structure of this report and the content of the subsequent chapters.

 The second chapter sketches the general context of robotization and its potential impact on work and surrounding social problems. After giving an overview of the problem, we will briefly outline the landscape of possible policy responses, and orientate the position and limitations of unemployment insurance within it.

 The third chapter will further introduce the concept of unemployment insurance and the evolution of social protections against unemployment more broadly. We will analyze and draw conclusions from experiences with these type of policies in Latin America, as well as in Mexico.

 The fourth chapter delineates the objectives and criteria of our analysis. There exist many variants of unemployment protection around the world, opening up a web of policy choices and arguments. In this chapter we defend the four broad criteria (effectiveness; compatibility with policy context; social sustainability; and adaption to robotization) that inform our argument.

 The fifth chapter offers a more detailed discussion of the key policy challenges and design choices that are involved in implementing unemployment insurance in a country like Mexico. We will show the complexity behind variables such as coverage, funding, duration, etc.

 The sixth chapter shares the results of our survey on public attitudes towards unemployment insurance as a response to robotization. We consider this relevant background information for broader discussions, even if conceptual model is based on academic analysis.

 The seventh chapter presents our actual proposal for unemployment insurance. We give an overview of the different components of this model and detail the various policy choices involved in its design.

 After this follows a brief conclusion that ties up loose ends and sets out the agenda for further research and action.

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**2. Robots on the horizon: problems and solutions**

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“Constant revolutionising of production, uninterrupted disturbance of all social conditions, everlasting uncertainty and agitation distinguish the bourgeois epoch from all earlier ones” (Marx & Engels, 1848, p. 16).

In this part we will in sequence discuss the advent of robotization; it’s potential impact on society and the labor market in particular; and the spectrum of policy responses. The discussion is aimed at providing the context of this report, rather than discuss these issues in depth. For a complete discussion see our previous report for Nuevo León 4.0 (Ghys et al, 2019).

**2.1. Understanding the challenge**

The process that we call ‘robotization’ refers to the current development and implementation of advanced robotics and artificial intelligence in all aspects of our economy.

This development is generally seen as the core part of the so called ‘fourth industrial revolution’ (Schwab, 2016), although authors sometimes also include broader concepts such as the knowledge economy and globalization in this transformation (Johannessen, 2018). Just like the steam engine, electricity and combustion and computers decisively changed economy and society in the previous three industrial revolutions, robotics and A.I. are expected to transform the world as we know it.

 We consider robotization to conceptually consist of technologies aimed at a) replacing specific human functions (such as speech, motoric functions, navigation, analysis, etc.); b) doing so with a degree of independence. The word ‘robots’ refers to physical machines that do this, while Artificial Intelligence to the software that mimics intelligence; both used in the process of automatizing economic processes. A qualitative difference with previous advancements in machine is that these are often not ‘tools’ used by humans to perform tasks: automatization usually replaces the human herself in doing the task. This ‘revolution’ does not just include the increased capacity to do these tasks as good or better than humans, but also the ability to produce and operate such technologies at increasingly lower costs. Our use of the terms ‘robotization’ or ‘automation’ in practice refers to a combination of technologies including artificial intelligence, robotics, cloud data, machine learning, drones, etc.

Various authors have warned of the societal and economic impact of robotization, especially when related to the labor market. Amongst others Rifkin (1995), Brynolfsson and McAfee’s (2014), Ford (2015) and Johannessen (2018) have called for increased attention to this development. Amongst others Karabarbounis and Neiman (2014) and Oppenheimer (2018) have pointed at evidence of the impact that the early stages robotization are already having on labor markets. While some of these authors try to end on a constructive note, at least the risk of massive technological unemployment has been cemented as a core policy challenge for the future in various regions, including Mexico.

 The replacement of human work by robots ties in with various social problems. One is that it could lead to an even further increase in inequality, as productivity can rise while simultaneously decreasing the labor share in the produced value (Johannessen, 2018). This would be especially troublesome for Mexico, a country typified by inequality and a low share of wages in the produced value (Hernandez, 2015). The second problem is a potential increase in poverty, since shocks in employment can generate (lasting) crises in the income of millions of families. This would be a new structural cause of poverty (Ghys, 2018; Royce, 2015), as these developments would happen largely out of the control of workers. Lastly, sustained unemployment could have further non-economic social consequences for individual, as work is a central part of societal integration (Jahoda, 1982; Foster, 2017). Seeing one’s skills become redundant could have a severe impact on the life purpose of individuals. As Abramo, Cecchini and Morales (2019) note: “Work is a fundamental mechanism for building autonomy and identity, upholding dignity and expanding the scope of citizen action; it is also the main avenue for social and economic integration” (p. 24). Unemployment insurance is of course primarily a financial compensation mechanism.

 While many of the studies above (for example Oppenheimer, 2018) use case studies as examples, some authors and institutions have attempted to estimate the impact on domestic labor markets (no specific numbers exist for Mexico). Frey and Osborne (2013) were amongst the first to make a meta-estimation based on what skills are vulnerable to estimation, and wrote that 47% of jobs in the United States could be lost to automation. Arntz, Gregory, Zierahn (2016) give a more conservative estimate of 9% job loss in the United States, using variations within jobs and conservative estimations of what robots could do. We will focus on the OECD study of Nedelkoska and Quitini (2018), which is both the most refined, recent and international estimation: it takes into account evolutions in machine learning and looks at 32 OECD countries (but not Mexico). The report estimates **that globally almost half of jobs will be affected in some way**: roughly 14% of jobs are at very high risk (<70%) of being automated, while 32% are have a risk between 50 and 70 percent. A different way of looking at this is their estimation that the median job has 48% chance of being automatized (Nedelkoska, Quintini, 2018 p. 48). When breaking this down into different sectors, they note that this impact is unevenly spread across the labor market: “Automation is found to mainly affect jobs in the manufacturing industry and agriculture, although a number of service sectors, such as postal and courier services, land transport and food services are also found to be highly automatable” (Nedelkoska, Quintini, 2018, pp. 8-9). Many of the sectors with the highest risk of automation are prominent in Nuevo Leon, including quarrying, vehicle production and land transport[[1]](#footnote-1).

 We want to repeat two more insights into the problem from the previous report, before moving on to solutions. The first regards to the position of Mexico. An important observation of Nedelkoska and Quintini is that these estimates greatly vary across countries: from 33% (Slovakia) to 6% (Norway) for the number of jobs with very high risks; to a 39% – 62% variation on the median job risk. Although Mexico is not included in these estimates, given Mexico’s past policies of attracting investment with cheap low-skill labor, there is little reason to be optimistic in comparison to other countries. Bowles (2014) mentions that within Europe, the economically less advanced countries are highly vulnerable, due to their reliance on low-skilled occupations. A recent survey of companies by Boston Consulting Group (Küpper et al, 2019, p. 8) indicates that 51% of Mexican companies expect an absolute reduction in their number of employees due to robotization in the next five years. Nedelkoska and Quintini (2018) also conclude that there is a strong correlation between education level and vulnerability to automatization. If we look at for example the OECD (2019a) indicator for population with tertiary education, we see that Mexico ranks amongst the lowest with only 22.6% of young people receiving this (OECD average is 44.5). A different indicator is that Mexico has the largest part of adult population (62.6%) within the OECD statistics (2019b) who have an education level below secondary. All of this increases need for research on more exact estimations of the Mexican risk for automation.

 The second issue relates to the broadness of the employment crisis. The fourth industrial revolution certainly most heavily affects routine functions in production, in which it (conceptually) would not differ that much from previous waves in mechanization. But those who see robots as another step in the evolution towards a service economy where people get the opportunity to perform more ‘human’ work, might be in for a more rude awakening. Besides that ‘material’ activities such as building are deeply ‘human’ in themselves, robotization would also affect service jobs (Nedelkoska, Quintini, 2018). Examples of technologies that are currently in development include self-driving cars replacing taxi drivers, the use of robots in managing warehouses or A.I. manning certain call center or sales jobs. As Standing remarks: “The disruptive character of what has been dubbed the ‘fourth technological revolution’ also appears to be more generalized than in preceding seismic changes, which predominantly hit low-skill manual jobs ” (2017, pp. 105-106). Some authors claim that robotization will actually mainly affect the service sector, including ‘higher’ professions such as lawyers, since this is exactly what robotization is about (Johannessen, 2018). Robots are developed with the specific goal of mimicking or even outperforming humans at ‘human’ activities, including intelligence itself. Thinking that these technologies will fail at doing what they are explicitly designed for (replacing humans) betrays a refusal to face the core of the problem.

 Although the nature of the treat is increasingly clear, the estimation of its scope forms a debate on its own, on which we have only briefly touched. The position of the authors of this report is that robotization, even in more optimistic estimates, is a societal challenge that should be taken serious. Policy action is needed to prepare ourselves to protect citizens from the possibly disastrous social impact of robotization and to prevent the more negative scenario’s from unfolding.

**2.2. Facing the challenge**

In previous publications we outlined three main approaches to protecting society from the impact of robotization (for further literature on each, see Ghys et al, 2019), of which a summary can be found in **Table 1**. These are not meant to be exhaustive, but help initiate or structure debate on the subject. In short, the first **preventive approach** is to stop or contain robotization itself or the replacement of human labor by robots. This can be done by halting investment in these technologies, taxing the use of robots or promoting a ‘human’ economy. Although conventional wisdom favors prevention of problems, this approach generally gains little support, as Robots and AI a regarded as ‘the future’ by many, including investors who are convinced that robotization will provide them with competitive advantages.

 The second approach is to **mediate** the effects of robotization on society, by adopting policies that prevent the replacement of existing jobs from translating into overall high unemployment or inequality. One part of this are policies aimed at stimulating (re)employment, such as retraining efforts or active labor market policies. Another are policies aimed at ‘depopulating’ the labor market or redistributing the available jobs. This could be done through work time reduction, which creates more jobs out of the same activities, or by reducing the amount of people depending on labor, for example by raising pensions. A last variant of mediating policies would include changing the basic economic power relations, so that workers get more control over their changing environment, for example through the promotion of worker cooperatives.

 Finally, the third approach would be to **compensate** people for their technological unemployment and protect them from the risk of (extreme) poverty. This ‘downstream’ approach is naturally less ambitions than the others, since the robotization and unemployment themselves are not addressed.

|  |  |
| --- | --- |
| Type of response | Type of policy |
| 1. Preventive |  |
| a) | Disinvesting in and stopping automatization |
| b) | Taxing robots |
| c) | Investing in creative/labor intense industries |
| 2. Mediating |  |
| a) | Retraining |
| b) | Active labor market policies |
| c) | Work time reduction |
| d) | Cooperative ownership |
| e) | Depopulating labor market |
| 3. Compensating |  |
| a) | Universal basic income |
| b) | Unemployment insurance |

**Table 1: Non-exhaustive spectrum of policy responses**

Compensation for technological employment is usually envisaged in two distinct models: Universal Basic Income and some form of Unemployment Insurance or assistance. The option of Universal Basic Income is discussed at length in our previous report from Nuevo León 4.0 (Ghys et al, 2019). In short, it proposes that the government pays every single citizen (employed or not) a certain low amount of money monthly in order to protect their purchasing power. While some variants of this policy could be feasibly combined with other measures, we identified certain challenges with this approach. This includes the danger of funding this at the cost of other social policies, the financial cost that comes with paying for both employed and unemployed people, and the fact that most models pay too little to protect people from poverty. In the current report we explore Unemployment Insurance as a more targeted, and less ambitious alternative. In unemployment insurance a monthly financial transfer is made only to people who have (recently) lost their employment due to causes outside their control. The goal of this is to temporarily protect their social position, until they can be reintegrated into the labor market. When viewed within the bigger landscape of policy responses, one can clearly appreciate the tangible impact of this policy in compensating families, but at the same time it’s limitations are very clear: it only temporarily protects people, without tackling the larger problem. We consider the modesty and obviousness of the limitations of this model also a strength: unemployment insurance can only be understood as a piece in a larger puzzle, and cannot be constructed as a ‘catch-all solution’. As we stated before, protecting the societal fabric from the disruptive aspects of the Fourth Industrial revolution will require a combination of daring policies that prevent, mediate and compensate the risk. In the remainder of this report we will analyze which exact shape this particular puzzle piece should take.

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**3. Social protection and unemployment insurance: a closer look**

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“Article 25. (1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control” (United Nations, 1948, Universal Declaration of Human Rights).

In this part we will take a closer look at the concept and context of unemployment insurance. We start by situating it within the larger institutional context of the welfare state, within which we will discuss the functions of social protection programs in general and unemployment insurance in particular. Next we discuss the development and status of these type of (historically European) policies within Latin America and Mexico, before drawing conclusions.

**3.1. Social protection**

Social insurance developed as part of a larger institutional order commonly referred to as the welfare state. All advanced capitalist countries have developed welfare state policies in some capacity. Although there are indeed large national differences, what these systems all have in common is that they are about:

“the government of the economy and the population in the interest of security, stability and welfare, utilizing tools of insurance, economic management and comprehensive social provision together with the taxes, legal regulations and forms of expertise required for their operation” (Garland, 2014, p. 340).

This definition highlights the purpose of such policies: security, stability and welfare for all citizens in a certain region or society, allowing them to participate as peers in society. The idea that people who work within a capitalist economy for their livelihood should be protected against the social risks that emerge from that economy – like unemployment, accidents, illness and old age - became ‘a normal social fact’ in almost all technologically advanced societies. This marriage between capitalist economic development and social protection of the people via democratic decision making is essential to the progress of late modern societies. If economic shocks and developments destabilize the social fabric, these social ills, like mass unemployment, bad health, broken families, marginalization and related problems, will in turn destabilize economic processes of production and consumption and thus the whole society (Pierson & Castels, 2006, Garland, 2014).

 One aspect of the welfare state is social protection from misfortune. Social protection policies can mean different things, but we can distinguish three main types: social insurance, social assistance and labor market regulation (see Barrientos & Hulme, 2008).

 Social insurance refers to protection against social risks that are related to people’s life course like maternity or old age, and work related social risks like sickness and unemployment. In most cases such systems are publicly regulated and financed via contributions by workers and their employers. For instance in many European countries, employment benefits are financed via ‘social contributions’, paid for by employers as part of the employees’ gross salary. By working for an extended period of time, workers build up their right to receive benefits when they lose their job. People who did not contribute to the system cannot receive these benefits. Social insurance policies are generally not targeted at a specific vulnerable group, but include a large share of the population. While social insurance systems proved to be very effective in reducing poverty and inequality, historically its main goal has been status maintenance rather that equality or the eradication of poverty (Garland, 2014 ). Besides these publicly coordinated systems, private social insurance schemes, like private pension systems exist as well. In this report we will focus on the unemployment insurance.

 Social assistance is specifically targeted at people in poverty. It can entail (rather low) replacement incomes, in kind benefits or social services. Access to social assistance often, but not necessarily, depends on an assessment of people’s needs and resources. Different from social insurance, which is financed via work-related contributions, social assistance is commonly financed via taxes. Although our focus is mainly on social insurance, in the model (chapter 7) we propose we will return to the option of providing social assistance to certain groups outside the formal labor market. Lastly, labour market regulation is about the standards at work and related responsibilities of the employers towards their workers. It is also about workers’ rights to organize themselves and have a voice in the within the company and broader sector.

Unemployment insurance thus refers to programs that pays people a monthly amount in the months after losing their (formal) work. In most (but not all) cases, these workers have previously contributed to the fund that pays them. Additionally, individuals are typically required to cooperate in job searching or participate in any vocational program the government offers them. Such conditions for receiving a replacement income became increasingly commonplace around the world since the 1990’s. These measures to stimulate continued labor market participation are part and parcel of what many authors described as a shift from a more passive to a more active welfare state or, from a more critical perspective, a shift from welfare to workfare (Peck, Theodore, 2010).

 **Unemployment insurance** **programs are popular around the world because they fulfill three main functions**: 1) to prevent poverty and to cushion the impact of job loss on the incomes of working families; 2) to act as a Macroeconomic stabilizer of household demand during crisis; 3) Improving labor markets by giving the unemployed opportunities to better match their skills and employment (see Van Breugel, 2016, p. 34).

 The function of poverty prevention is easy to understand. Unemployment can provide an unexpected crisis in the income of families, as Velásquez notes for Latin America: “For a large group of workers in the region, facing job loss without protection or help from third parties is a catastrophic situation that puts household living standards at risk and increases the likelihood of falling into poverty” (2016, p. 86). By offering a monthly compensation, this shock can be buffered while the recipient can find a new source of earned income. Looking at the available evidence, Vodopivec (2013) concludes that “during economic downturns, unemployment benefits can strongly reduce poverty” (p. 6).

 The function of macroeconomic stabilization is less frequently discussed. As macroeconomic shocks lead to unemployment, social protection in general can help buffer that period of the economic cycle, while offering a very direct tool for keeping consumer demand up: “The strong impact of unemployment insurance as an automatic stabilizer stems from the fact that the benefits are used mainly for consumption, so they are immediately transformed into effective demand” (Van Breugel, 2014, p. 47). This smoothens consumption and thus the overall flow of the economy: “Research in developed countries (…) suggests that unemployment benefits play a significant role in consumption smoothing” (Vodopivec, 2013, p.6). It thus makes society more resilient as a whole.

 The third function of improving labor markets might seem counterintuitive on first sight, since people get paid outside of work. Yet at the same time this also enables people to look for the best matching (formal) job instead of any (informal) job: ”They can be effective in ensuring a basic level of wellbeing that will then enable people to take better employment decisions. This, in turn, can speed poverty reduction and spur local and general economic activity” (Abramo, Cecchini, Morales, 2019, p. 41). Additionally, unemployment insurance hands governments both the carrot and stick to get people to work. The ‘carrot’ part refers to the incentive to be covered by social insurance through formal employment, and the opportunity to offer retraining and job orientation. The ‘stick’ part refers to the facts that in many countries the unemployment agency now has leverage to demand active job searching behavior of recipients.

**3.2. Social protection and unemployment insurance in Latin America**

In popular discussions on social protection programs, one is sometimes confronted with the misconception that this would only work in richer Northern countries. Such attitudes ignore that social protection programs, including unemployment insurance, are being adopted in developing countries all over the world (Vodopivec, 2013).

 Latin America in particular has seen a significant increase in welfare policies over the past decades (Cecchissi, Filgueira, Robles, 2014; Fleury, 2016; Abramo, Cecchini, Morales, 2019). As Fleury (2016) recounts, efforts to expand welfare stagnated in the 1990’s as various Latin countries implemented privatizations, but in the 20th century countries like Chile, Argentina, Bolivia and Brazil increased the role of the state in providing social protection to the population. She adds that “the main trends in this change are the expansion of state actions resulting in broader coverage, partial or full-re-nationalization, increased social spending, and a combination of vectors of need, supply and demand to determine investment and fiscal effort” (2016, p. 5). According to Cecchissi, Filgueira, and Robles (2014, p. 32), there is a general trend towards increased coverage, achieved through a) increased formality, b) broader eligibility, c) including non-contributory systems. The latter refers amongst other things to innovations like Conditional Cash Transfers, which pay families a certain subsidy if they undertake certain improvements (such as sending their children to school).

 It is important to recognize that this expansion of social policy was overall successful in reducing poverty (Fleury, 2016). The following Table 2 illustrates poverty rates in some of the main Latin countries during the period in which the expansion of social protection was most notable. It is based on information from the Economic Commission for Latin America and the Caribbean (ECLAC, 2014, p. 17)[[2]](#footnote-2).

|  |  |  |
| --- | --- | --- |
| Country | Poverty around 2005 | Poverty around 2012 |
| Argentina | 24.8 | 4.3 |
| Bolivia | 63.9 | 36.3 |
| Brazil | 36.4 | 18.6 |
| Chile | 13.7 | 10.9 |
| Colombia | 45.2 | 32.9 |
| Ecuador | 48.3 | 35.3 |
| Mexico | 31.7 | 37.1 |
| Peru | 52.5 | 25.8 |
| Uruguay | 18.8 | 6.1 |

**Table 2: Poverty rates during Latin America’s social turn.**

Notice how all countries except Mexico, which lagged behind in social policy, have reduced poverty. Admittedly, this includes countries like Colombia and Peru, who have embraced the welfare state less enthusiastically than others. Also, the fall in poverty rates has stagnated as the region went to various political and economic changes after 2013. Yet also more recent data by ECLEC (2019) confirms that Mexico (and middle America) has been unsuccessful in reducing poverty and inequality in comparison to other Latin Countries, largely because they spend less on social programs. Amongst others Abramo, Cecchini, Morales (2019, pp. 22-23) point towards a direct relation between social inclusion and more advanced welfare states.

 At lot of the aforementioned social programs include pensions and social assistance. If we look at unemployment protection in particular, we see that various Latin countries already have these types of policies. The following **table 3**, reproduced from Velásquez (2016, p. 87), gives an overview of unemployment protections as they existed in various countries in 2016. Note that to keep oversight we only cover *federal* unemployment insurance and severance pay here, ignoring arrangements of obliged saving accounts (which Mexico didn’t have) or assistance to poor families on provincial or local levels (of which Mexico has a fractured assemble).

|  |  |  |
| --- | --- | --- |
| Country | Severance Pay | Unemployment insurance |
| Argentina | X | X |
| Bolivia | X |  |
| Belize | X |  |
| Brazil | X | X |
| Chile | X | X |
| Colombia | X |  |
| Costa Rica | X |  |
| Dominican Republic | X |  |
| Ecuador | X | X |
| El Salvador | X |  |
| Guatemala | X |  |
| Honduras | X |  |
| Mexico | X |  |
| Nicaragua | X |  |
| Panama | X |  |
| Paraguay | X |  |
| Peru | X |  |
| Uruguay | X | X |
| Venezuela | X | X |

**Table 3. Severence pay and unemployment insurance in Latin America.**

Notice how all countries (including Mexico) have a system of severance pay, which refers to the official obligation of companies to pay a certain sum of money to workers they fire. This is crucially different from Unemployment Insurance in term of funding (only the company), duration (once vs. periodic), and coverage. We see that some of the stronger countries like Argentina, Brazil, Chile, and Uruguay, but also Ecuador and Venezuela already have unemployment insurance. Those concerned with the sustainability of such programs should take into account that countries like Brazil have had Unemployment Insurance since the 1970’s (Robles, Mirosevic, 2013). We will return in more detail to the specific arrangements of these countries when discussing the various policy design choices in chapter five and seven.

Although unemployment insurance is thus proven to be possible in Latin America; it is certainly not without problems. Fleury (2016) mentions that high inequality and informality of the labor market increase the challenge. In many countries, until reforms were made in favor in inclusivity, it were the middle and higher income workers with stable employment that enjoyed most welfare state benefits and regulation. The high rates of informal employment in Latin America are particularly troublesome when it comes to coverage:

“Because the program is limited to the formal sector, the beneficiaries are limited to a subset of workers who, by and large, belong to the better off, non-poor segments of the population and thus it is unlikely that UI would significantly contribute against the reduction of poverty and income inequality” (Vodopivec, 2013, p. 3).

Of course we are looking at unemployment insurance as a defensive measure in the context of robots, rather than as a tool of redistribution. Nonetheless, we propose that this could be a way to hit two birds with one stone, i.e. improve social protection in general and prepare for the challenges of robotization in Nuevo León. However, unemployment insurance assumes that both employment and unemployment are ‘formal facts’ that can be documented. Without this, we both encounter problems in terms of contribution (how to pay into it if one does not pay taxes), benefits claims (how to proof one got fired?) and control (how to make sure one is not working)? Countries have tried to deal with this by for example broadening the coverage and options to contribute from informality, or compensating for this exclusion by implementing various universal social assistance programs parallel to unemployment insurance. We will come back to this problem later in the report.

**3.2. Unemployment Insurance in Mexico**

Despite the fact that an adequate standard of living and social security are constitutional rights in Mexico, as a federation it has never adopted a general unemployment insurance (Valencia, Foust, Tetreault, 2012). Velásquez (2016, p. 97) remarks that Mexico is one of the countries with higher GDP in the region, but did not follow the pattern of implementing unemployment insurance that other countries did when they could afford to do so. This fits within a broader trend of Mexico underspending on social policy relative to its social needs in comparison to other Latin countries (Cecchissi, Filgueira, Robles, 2014; Valencia, Foust, Tetreault, 2012; ECLEC, 2019). In fact, it had the lowest social spending of the industrial countries within the OECD: 7.5% of its GDP compared to 20.1% on average for 2018 (OECD, 2019c). This might change. The new Mexican government that came to power in 2018 has sharply expanded its social policy, including amongst others doubling the minimum pension, expanding assistance for persons with handicaps, (massively) expanding Conditional Cash Transfers in education, etc. But no unemployment insurance.

It is relevant to note that unemployment insurance is not without precedent in Mexico. The previous EPN government proposed it as part of a set of social reforms in 2013. This was partly done to respond to pressure from international organizations pointing out the aforementioned underspending on social protection. It also responded to the increased vulnerability of low pay workers after legal changes make short term contracts more flexible (Velásquez, 2016, p. 105). The presidential initiative never passed the senate for political reasons, but the design also showed certain flaws (see further also Bensusán, 2014). One of them is coverage, since the requirements to enter this program were extremely strict: in normal situations one had to first have paid for 24 months, and one could only use this one every five years after a 45 day waiting period. Additionally, it did not include funding for the employment and training promotion component. Worst, the program was financed almost entirely through contributions by the workers themselves, *coming out of their own housing fund*. This came down to a reshuffling of social rights rather than redistribution. The above factors, combined with the low benefits paid, made the design a misfit with the objective of protecting workers in flexible jobs (Velásquez, 2016, p. 106).

 Unemployment insurance **was** **actually implemented** within Mexico on a state level in Ciudad de Mexico (Valencia, Foust, Tetreault, 2012). The ‘Seguro de Desempleo’ started as an experiment in 2007, only covering people who involuntarily lost their job in the formal sector. It has since expanded to take into account woman who got fired for pregnancy and local ex-prisoners in 2013. In 2016 it incorporated unemployed journalists who suffered from persecution, and in 2017 also people who lost their livelihood due to natural disasters. We will briefly describe the program as outlined in the *Gaceta oficial de la ciudad de México, No. 13* (Gobierno de la Ciudad de México, 2019). The program is both oriented at economic support, and at channeling the people to training and re-employment programs available at the state level. It can give unemployed workers payments for up to six months, once every two years and for a maximum of two times. In January 2019 the Unemployment Insurance paid 2568.50 pesos per month to right holders. As we can observe this is a modest program, but it is more inclusive than the proposed federal one and has proven to work for over a decade.

**3.3. Conclusions**

We can draw three broad conclusions from the previous analysis. The first one is that Unemployment Insurance is a defendable social policy with merits of its own *regardless* of our central context of robotization. Other countries have adopted it for different reasons, including protecting to social security of families and as a mechanism for macroeconomic stability through the smoothening of demand in times of crisis. The current risk of a sharp increase in unemployment due to robotization only adds an additional reason to (re)consider this program.

 The second is that there are sufficient precedents to defeat the idea that Unemployment Insurance could not work ‘in a country like Mexico’. To start, we saw that various Latin American countries have had this policy for decades, some of them within an economically weaker context than Mexico. Additionally, Unemployment Insurance has already been considered on a federal scale and actually exists with Mexico on a state level in CDMX. There are thus no reasons to assume this could not work for Nuevo León or the country as a whole.

 Third, we saw that a recurring topic is the issue of informal labor (and by extension, inequality in social rights). Unemployment insurance normally assumes formal contracts, and while this didn’t stop countries with similar problems from adopting the program, further analysis is needed to consider if and how these policies could better be adapted to a context of high informality. We will return to this question in the following chapters.

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**4. Four criteria for designing Unemployement Insurance in Mexico**

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Unemployment insurance comes in many shapes and sizes, in many different countries, for various reasons. There is a great complexity in deciding upon a model for Unemployment Insurances, for it includes many design choices, which each come with benefits and disadvantages (Van Breugel, 2016). We will deal with this web of choices in two ways. One, by designing a model that is flexible and thus can go for the best choice in the best situation (see chapter seven). Two, by transparently delineating which the underlying goals of our analysis are. What is the model of insurance supposed to achieve or take into account? This chapter will define and defend the four broad criteria that we took into account when developing both this research project and our proposed model of unemployment insurance. The discussion of these criteria in itself serves as a *crucial part of the overarching argument* and understanding of Unemployment Insurance, and will set the tone for the remainder of this report. Our framework is based around the following four criteria:

**1. Effectiveness**

**2. Synergy with the policy context**

**3. Sociopolitical sustainability**

**4. Connection to robotization**

**4.1. The concern for effectiveness**

In part two of this report we reflected on the limits of Unemployment Insurance in protecting society from the risks of robotization. Now our concern for effectiveness resolves around designing a policy that is capable of achieving its own goals of protecting people from the negative consequences of unemployment. Cecchissi, Filgueira and Robles remind us that: “Social protection should guarantee a sufficient level of welfare to sustain living standards that are considered basic for a person’s development, while also facilitating access to social services and promoting decent work” (2014, p. 9). Social protection is both a human and constitutional right in Mexico. Yet this country also has a long history of developing (and rebranding) ineffective social programs that might serve certain political purposes, but fail to meet the standard of structural poverty reduction (Ghys, 2018). Throughout the decades, administrations and policy levels we have seen programs that are underfunded, and/or programs that were only accessible to a part of the population or only temporarily so, or that were implemented in a way that served clientelism or corruption. If unemployment insurance is designed in an ineffective way (such as the 2013 attempt), it would merely serve as a political excuse for real action to protect society from the dangers of the fourth industrial revolution. **It should thus either be effective or not be**. In what follows we what shall split effectiveness into concerns regarding sufficiency and concerns regarding (actual) coverage.

Sufficiency is a key element of effectiveness, because the program must meet the goal of at least temporarily protecting people from poverty. In our previous report for Nuevo León 4.0 (Ghys et al, 2019) we established that the most realistic models of Universal Basic Income in terms of implementation are all insufficient in protecting people from anything but extreme poverty. Unemployment Insurance should be more effective in two ways. One is that the insurance is selective, while basic income is universal and thus has to divide its resources over literally all citizens (and in some variants does so by cannibalizing other policies). The second reason is that UBI is often indented as supplementary income (one can work), while Unemployment Insurance by definition **replaces** income. *One cannot both claim to be unemployed and generate income from work, therefore the unemployment insurance should always be conceived as having to be sufficient by itself*. Practically, if benefits are too low, interest in going through the process of claiming them might be low.

 How high the compensation should be in practice is a discussion that we will continue in the following parts of this report. Our argument here is conceptual, and concerns the effectiveness of Unemployment Insurance in temporarily avoiding poverty. Poverty is best conceptualized as a relative condition (Townsend, 2010): it cannot be seen in isolation of general wellbeing and the organization of society, and is thus relative to generally valued living standards. One is always poor in relation to others. We thus define poverty as a situation in which persons have such a lack of resources in relation to the general distribution and living patterns, that they become socially excluded in multiple domains of life (compare, Ghys, 2018). Yet poverty can also have ‘absolute’ consequences, in the sense of falling below some kind of minimum bar of physical subsistence (and thus suffering from hunger, homelessness). The latter is in politics often connected to notions of ‘extreme poverty’.

 The effectiveness of Unemployment Insurance in protecting people from poverty thus depends on what the aim is: to avoid relative poverty or extreme poverty. A glimpse at what this means in real terms is informative. Since we are primarily concerned with income, we will use the CONEVAL income poverty line, which is also the most consistent one since it is tracked since 1992. CONEVAL offers two income poverty lines: one for normal poverty and one for extreme poverty. They are both tied to the cost of a basic of goods, with one being the absolute minimum and the other including other goods and services required for dignified societal participation. Since the prices are variable depending on the location, this is further splits in an urban and rural line. These lines themselves are updated monthly to adjust for inflation, but the overall poverty rates depend on a bigger census that at the moment of writing is only available for 2018. **Table 4** outlines the poverty lines as monthly income in Mexican pesos based on data for September 2019 (CONEVAL, 2019a).

|  |  |  |
| --- | --- | --- |
|  | Rural | Urban |
| Extreme income poverty | 1.105, 39 | 1561,33 |
| Income Poverty | 1.999,84 | 3.091,84 |

**Table 4. Income poverty lines**

In 2018 at least 61.1 million Mexicans or 48.8% of Mexicans were in poverty; and at least 21 million or 18.8% of Mexicans in extreme poverty (CONEVAL, 2019b). Since the majority of the population in Nuevo León lives in an urban environment and prices are comparatively high compared to the rest of the country, we are thus always looking at the higher of both numbers. Ethically, avoiding income poverty should be the preferred outcome, which would translate into a minimum (initial) compensation of more than 3.091 pesos. When it comes to the survival of our social tissue in times of crisis, 1561 pesos is the absolute minimum for Unemployment Insurance to be considered effective or useful. We will discuss the level of compensation in more detail later, which of course could also be chosen to be far above this.

Social policies can also fail to be effective by not reaching their intended audience or only part of the population. We thus incorporate a concern for coverage in our criteria of effectiveness. Programs can fail to be effective because they are applied geographically unequally, which hinders their translation into social rights. They can also have certain physical or social barriers that prevent people from actually applying. Yet for our discussion a factor is relevant: the criteria for application.

 As we saw earlier, the 2013 attempt at Unemployment Insurance had very restrictive rules for application, which limited the coverage to those groups that are least vulnerable. We could also look for example at Unemployment Insurance’s small cousin, severance pay. This policy, which exists is almost all Latin American countries, implies that workers who get fired should receive a certain financial compensation for that. However, as Valencia, Foust, and Tetreault remark about Mexico:

“Severance payments are scarce and heavily concentrated within the higher income deciles, since these are the deciles with a higher proportion of formal workers with a contract. This is also likely to be due to the fact that higher income workers have access to better legal support. In 2010, 69.4% of the value of severance payments was concentrated in the two highest deciles and 5.2% in the poorest four deciles” (2012, p. 35).

Add to this that there are many practical ways companies get out of paying such benefits (not unlike taxes or shares in profit), from forcing employees to resign themselves, to working with subcontracting or refusing to give contracts at all. Although most versions of unemployment insurance still depend on a formal proof of losing work (thus the former employer), the costs would not be directly paid by that employer, lessening the incentive to cheat.

 The related issue in terms of coverage is the aforementioned problem of informal work. According to the International Labour Organization (2014), just under sixty percent of the Mexican workforce works informally. Looking at numbers for 2014, a state by state breakdown shows that Nuevo León was estimated to have a below average of informal employment rate of 39.5%. This is still a sizeable part of the population that would not be covered by Unemployment Insurance, even if they (cleaning staff, workshop staff, etc.) *are certainly vulnerable to technological replacement as well*. We will return to the question of what to do with this group later. We could also mention irregular (for example seasonal) or part time employment to the common exceptions that might reduce coverage under a strict system. In conclusion: in order to avoid reproducing inequality, an effective policy design tries to be as inclusive as possible within what is administratively feasible.

**4.2. Synergy with existing policies**

The second criterion we focus on is the compatibility and synergy with the wider policy context. Social policy can never be seen in isolation, since it exists as part of a bigger welfare state and system of rights. Since policy in a federal state like Mexico runs the risk of being fractured amongst institutions and levels of governance, one would want to avoid overlaps where the same thing is done twice. Policies could be designed in a way that they supplement or synergize with the existing policy landscape.

 We have so far implicitly assumed that unemployment insurance would be part of public policy, since that is how it works in virtually all other countries. For the sake of completeness, let us state that such policies are very hard to organize outside the state since market failure would occur (Vodopivec, 2013, pp. 3-4). Besides the perversity of trying to create a for-profit model out of a crisis relief measure, unemployment insurance needs public enforcement. Social security works because it is based on mandatory contributions and coverage (plus no selection of clients). The monitoring, investigation of recipients, and social work that comes with organizing this in practice also benefit from being included in the public sector. Making it a public system also helps to increase the scale of the insurance, which allows for bigger and thus more stable risk pools. Lastly, by incorporating this insurance into the legal framework of the state, one can turn it into enforceable social rights (Fleury, 2016). Much of the above would *logically also imply that such a program would benefit from being organized by the federal government*, but given this report is written for Nuevo León 4.0, we will assume the state perspective.

 In what follows we shall first discuss how our model would fit the overall policy and political context, followed by an orientation of unemployment insurance within the landscape of specific existing federal and state social policies involving cash transfers.

The sudden expansion of social policy that happened in the wake of political changes on the national scale seems to favor policies like Unemployment Insurance. Many of the new or reformed social programs follow broader evolutions in Latin America. We can note the expansion of social assistance, for example in the conditional cash transfers for school (the Benito Juarez scholarships) or the compensations with people with disability. Note that some of the programs, such as the increased minimum pension, are universal rather than selective in design. A last general observation is the more active involvement of the state in active labor market policies. This includes large public works programs, but also policies like ‘Jóvenes Construyendo el Futuro’, which directly subsidize the employment of young people.

 To understand how unemployment insurance would fit within the broader policy landscape, we made an overview of the most important social programs that involves cash transfers, both on a federal and state level. **Table 5** gives an overview of the main federal program’s anno summer 2019, note that these might have changed at the point of reading. Note also that most of these programs have different (more generous) rules applying to indigenous people that are *not* included in this stylized summary[[3]](#footnote-3).

|  |  |  |  |
| --- | --- | --- | --- |
| Program name | Domain | Target group | Support per month |
| Programa de Apoyo para el Bienestar de las Niñas y Niños Hijos de Madres Trabajadoras | child care  | Children 1 to 4 years | 800 pesos  |
| Beca Bienestar para las Familias de Educación Básica | School | Children in school until secondary under 15 | 800 pesos  |
| Beca Benito Juárez para jóvenes de Educación Media Superior | School | People in higher secondary education, 14- 21 year  | 800 pesos |
| Jóvenes Construyendo el Futuro | Labor market | Unemployed people 18-29 years | 3600/month |
| Programa pension para el bienestar de las personas con discapacidad | Care | Handicapped people aged 0-29 | 1275 pesos |
| Programa para el bienestar de las personas adultas mayores | pension | All people age 68 and over | 1275 peso  |

**Table 5: Federal cash transfers, based on information of the Federal Government of Mexico**

Most of these programs specify they are for people living in poverty, since no technical criteria is provided. Note that the Jóvenes Construyendo el Futuro program is not truly a cash transfer, since it is partly a scholarship program, and partly an employment program where people *earn* the money as wage. **Table 6** shows the main social programs including cash transfers for the state of Nuevo León as they existed summer 2019[[4]](#footnote-4).

|  |  |  |  |
| --- | --- | --- | --- |
| Program | Domain | Target group | Support  |
| Inclusión para mujeres jefas de familia en condición de vulnerabilidad | child support | Single mothers aged 17-64 with children under 15 | 500 pesos per month |
| Beca ciudadana para la educación básica del estado de nuevo león | School | Students in basic education | 1250 pesos *once per year*  |
| Apoyo para la educación media superior | School | Students in upper secondary education | 2000 pesos *once per year* |
| Programa de inclusión para personas con discapacidad en condición de vulnerabilidad | Care | People with disabilities | 700 pesos per month |
| Programa de inclusión para personas de setenta años o más en condición de vulnerabilidad | Pension | People aged 70 or older | 700 pesos per month  |

**Table 6: Nuevo León cash transfers, based on information of the government of Nuevo León**

When comparing the policy landscape in both tables, two broad conclusions can be distilled. The first conclusion is that there is a gap in coverage between age 29 and 68 for the active part of the population. The federal conditional cash transfers cover people until graduating high school, and then offer some form of job protection under the Jóvenes Construyendo el Futuro program until 29, although we must note this support is only for one year. After this there is no protection until the pension, which for the record in the case of the federal minimum pension is compatible with work (it is a universal income). **This suggests that our unemployment insurance scheme would serve to cover up a hole in federal provision between ages 29-68**. The program could start with people anywhere from 18 until their late twenties, and should stop at 67 in order to transition into pensions (like it is designed in CDMX).

 The second conclusion is that in almost all cases, the Federal programs are (from the perspective of the client) superior to the state ones. The state programs were most likely brought into life to cover up holes in federal coverage, but since 2018 the latter have improved. The protections on the Nuevo León level are either: a) more limited in coverage (f.e. only single mothers instead of families for child support; elderly aged 70 instead of 68 for pensions); b) pay less (500 for people with disabilities vs. 1250); c) are more limited in time (f.e. annual vs. monthly school support). In case the programs are mutually exclusive (which is true of various of the state programs), an informed client has no apparent reason to prefer state over federal support. Logically, this would imply that Nuevo León will see a steady decrease in applicants for its social programs, and thus would spend on its social policy as time goes on. In other words, **the new federal policies could substantially relief the state budgets for social policy, potentially opening up resources for Unemployment Insurance**. To what extend these resources are actually available is an empirical question.

 In conclusion, unemployment insurance would be a fitting addition to the Mexican welfare state, with the current policy context both favoring federal implementation, as well as creating space for Nuevo León to innovate by introducing it.

**4.3. Socio-political sustainability and popular support**

The third criterion focuses on the fact that social policies need to generate a minimum of public support and solidarity in order to be politically sustainable in the long run. This implies taking into account popular attitudes: “Sustaining generous welfare states over long timescales requires the support of electorates” (Horton & Gregory, 2010, p. 270). That does not mean that public policy has to follow popular attitudes, as obviously sometimes leaders need to make unpopular choices. Nor should public attitudes be taken at face value, as if policymakers could not interact with them. Rather, it suggests that a good policy takes into account potential concerns and engages with them in its design and implementation: “Welfare institutions have the potential to shape attitudes because they structure the context in which citizens evaluate policy” (Horton & Gregory, 2010, p. 272). In what follows, we will explore some key points of interaction between social insurance and notions of solidarity, fairness, stigma and popular concern, etc. We want to remind the reader that for these very reason this research project includes a survey of some of those attitudes, making the sixth chapter an empirical counterpart to this discussion.

We start by discussing the general context of stigmas surrounding vulnerable groups that plague virtually any public policy in the field of poverty reduction. Various stereotypes exist surrounding people in poverty, ranging from judgements about sexual behavior to substance abuse (Ghys & Inzunza, 2019; Royce, 2015). For the topic of unemployment insurance, the – continentally shared – stigma of laziness is the most relevant: “a common thread in the finding of studies on the general public’s perception of poverty is that people who are poor are poor because they are ‘lazy’ or, in other words, because they lack the initiative or the will to work hard” (Abramo, Cecchini, Morales, 2019, p. 34). Such stigma’s can cause hesitation and paternalist attitudes in policy implementation, yet they should be confronted head on: “In designing and implementing inclusive social and labour policies, one key element is the deconstruction of the idea that laziness is the main cause of poverty” (Abramo, Cecchini, Morales, 2019, p. 28). First of all, because these stigmas are often empirically wrong (see e.g. Standing, 2017). The majority of poor people work and would prefer to do so formally. Second, because unemployment insurance is not poverty relief, but a tool to protect *people who do work* from falling into poverty. In our very specific case: from losing their job to a completely external and overwhelming process of robotization. Third, various scholars have pointed out that the (unjust) stigmatization of people in poverty *in itself* can become a cause of the structural reproduction of poverty (Ghys, 2018; Royce, 2015; Gans, 1995). Policy makers should not feed into this, but instead explore how the policy design can avoid the concrete concerns that feed such attitudes.

 One of the main moral discussions relevant to unemployment insurance is the concern that making use of such services would reduce work incentive, especially if the payments are close to actual wages. Though such effects can occur, Abramo, Cecchini and Morales (2019) indicate they are often overstated. Much depends on how the policy is designed, for example how long the coverage lasts, if people are properly monitored, or if the payments are regressive or not – issues we will return to in the next chapters.

 Closely related is the concern that introducing unemployment insurance in economies with high levels of informal labor can allow people to both claim unemployment insurance and work informally. While this is partly unavoidable, Bardey, Jaramillo and Peña claim that: “UI benefits also generate an income effect that may allow the unemployed to devote less time in remunerated informal activities and consequently devote more time to secure a job in the formal sector” (2015, p. s126). As Van Breugel (2016, p. 49) remarks, coverage under unemployment insurance unemployment insurance in itself is an incentive for people to seek employment in the formal sector.

 While it is wise to acknowledge such concerns, it is useful to question how relevant they are in our context of robotization. As van Breugel (2016) reminds us: “when the economy slows, the potential job-search disincentive generated by unemployment benefits would be less because in that situation, the main reason for unemployment would clearly not be lack of effort, but slack demand” (p. 47). This report discusses unemployment insurance in a context of potential mass technological employment, caused by the replacement not just of people’s concrete position but their skillsets. *In such a scenario, any negative (temporal) effects on work incentive are a side concern*, as those who do find employment can count themselves lucky. It thus seems that in terms of policy design, **unemployment insurance should focus on encouraging reintegration into the labor market in times of low unemployment, yet concerns about work incentive become less pressing if the situation escalates**. Since we designed our model to be flexible, it allows exactly for such adjustments.

 A related issue is the concern for reciprocity. As Horton and Gregory (2010) remark: “Support for redistribution is often conditional on people feeling that those who are benefitting are making (or will make) some reciprocal effort to contribute back” (p. 272). It is generally known in sociology and anthropology that social interaction is often guided by expectations of reciprocity. Applied to unemployment insurance, this reciprocity can be given form in two ways:

 The first is that beneficiaries are expected to make some form of contribution, to the program in specific (social security contributions, saving accounts, etc.) or more broadly towards society. Contribution to the social insurance fund (or the state at large), even in low amounts, helps to solidify the ‘rights’ of workers since they can partly claim ownership of the program. This of course assumes formal employment, which raises the question of how to incorporate (if at all possible) a form of contribution for the coverage of the informal sector. We will later explore the tradeoff in basing the funding of the system on reciprocity versus equally important considerations of justice, such as capacity and responsibility for the underlying unemployment due to robotization.

 The second form of reciprocity relates to things people could or should do ‘in return’ for the benefits they receive. This can be in tandem or alternative to the first form. At a minimum, one expects people claiming unemployment insurance to make efforts to ‘get off’ the program and reintegrate into the labor market. But reciprocity can also be interpreted broader, and include for example showing merit through engaging in (re)training activities, care for others or volunteer work.

 Public support for social policies also depends on considerations of fairness and self interest. Social policies with broad or universal coverage have the advantage that more people have an interest in maintaining them (Horton, Gregory, 2010). It also reduces the risk of stigmatization of receiving groups. As discussed earlier, the process of robotization threatens very broad layers of the labor market, and thus could generate broader solidarities than normally occur in unequal societies. Yet if the participation of high-income workers is expected in a context of extreme inequality, this might also raise concerns of fairness when it comes to benefits. As we will discuss in more detail later, unemployment insurance can be organized to pay people a fixed sum or a percentage of their former wage – thus paying more to people who already earned more. The latter makes sense in European societies with broad middle classes and high contribution taxes, but might be seen as perverse in our context.

Political support and solidarity matter. Our research will incorporate this in two ways. The first is to include a survey on actual attitudes towards unemployment insurance as a response to robotization. Popular attitudes must be studied not assumed. We offer the data in chapter six as a background to the discussion rather than as a guiding line, since political and social sustainability must be weighed against the other criteria. The second is that notions such as reciprocity, inclusion, justice and concerns of overuse will inform (but not determine) the construction of our unemployment insurance model. Robotization is an important game changer in these rather classic welfare state debates, since it challenges traditional notions of responsibility, justice, contribution and work ethic.

**4.4. The connection to robotization**

Many of the criteria discussed above are part of classic welfare state debates, in which the context of robotization acts as an important game changer, for it challenges traditional notions of social risk (of unemployment), responsibility, justice, work, etc. The threat of mass unemployment due to automatization forms both the central motive and the explicit context for our discussion of unemployment insurance. Although the previous chapter showed the desirability of unemployment insurance as a social policy by itself, the adaptation of this policy to the context of robotization is a key criterion in this report. In what follows we discuss how automatization is relevant, resulting in two main recommendations for the design.

One specific element that the robotization discussion brings to the table is **unpredictability**. Unemployment insurance is intended to provide social security in the context of both ‘normal’ structural unemployment and cyclical downturns of the labor market. It also provides for macroeconomic stability in the case of sudden crisis, given this is limited over time. With automatization, we have a process that a) is hard to estimate exactly in terms of outcomes, b) might have either permanent or at least mid/long-term consequences in terms of employability.

 In the second part of this report we gave some estimates of global job replacement, including the estimate that the median job has a 48% chance of being automatized (Nedelkoska & Quintini, 2018). As we indicated earlier, we have no reason to be optimistic about Mexico being a positive exception to this. Yet the question remains how much the loss of roughly half the current jobs translates into actual unemployment. Besides the possibility of new jobs or other economic changes, that largely depends on which other policy measures are taken to contain or mediate the consequences of robotization. This uncertainty requires that our unemployment insurance program can work at various levels of unemployment.

 In addition, such a program must also be longterm sustainable in case the crisis in unemployment persists. Since robotization causes people’s skill sets to become obsolete, we might face a much more permanent type of replacement. Even if one is optimistic, at least on the short to mid-term a persisting problem of unemployment for millions can develop. The scenario in which there is little prospect of jobs questions the design of unemployment insurance in various ways: First, in terms of financial sustainability: we need to take into account the possibility of a linear (not cyclical) expansion of the number of beneficiaries. Second, in terms of effectiveness, since for example a six months coverage (a common timeframe in Latin America) is a very limited compensation in a context with structural high unemployment. Third, it makes little sense to require people to look work that doesn’t exist when setting out the conditions for reciprocity. Other types of merit must be included (study, care for others, etc.) when evaluation if a person is in compliance.

 Robotization would thus ideally ask for an unemployment insurance that works in various degrees of escalation, including a long term ‘doom’ scenario. If not adapted to the latter, it loses out to Universal Basic Income as a survival-policy. At the same time, the policy must be introduced in today’s economy, taking into account the previous three criteria. We solve this in chapter seven by presenting a model that changes parameters as the degree of unemployment increases.

Our context of robotization should also inform *ethical* discussions about justice and responsibility. Insurance usually compensates people for losses suffered from accidents, which can either happen on an individual or higher (company, sector, society) level. The question thus becomes to what extend robotization is an accident, and whom bears most responsibility for compensating for it.

 One would be hard pressed to produce an ethical argument in which the workers are the chief responsible for robotization. The problem of employees in that capitalist system is exactly that they don’t have control over the means of production, and thus can’t invite or stop robotization.

Besides lifting them of direct responsibility for robots, this realization underlines the need for protection: “if they cannot find a job in wage-employment (working for others), workers are unable to resort to self- or home production, because they are divorced from ownership of the means of production” (Vodopivec, 2013, p. 3). If we were to stretch the issue from a hyper-conservative point of view, one might blame the workers for not being competitive enough with robots or inviting robotization by questioning the contract (asking for higher wages). This argument fails for multiple reasons. First, it highly depends on the job if one can compete with robots at all through an increase of effort or a marginal decrease in cost. In the example of a taxi driver or assistant this might be conceivable on the short term, but in the example of a call center robot that can handle multiple calls simultaneously it is not. Many jobs will eliminated due to overwhelming gains in efficiency. Second, many automatization will happen not by replacing existing working, but by building fully robotized factories from the ground up. In this case, no individual worker in particular got replaced (or can be blamed), although the workers as a group lost opportunities. Lastly, even if there was any ground for this argument in a very high-income context, it would not hold for Mexico. Increases in productivity did not translate in increases in real wages for decades, and labor protection is overall weak. Labor costs and taxes are (intentionally) low in comparison to other countries, for example Mexico has the third lowest ‘tax wedge’ (tax contribution cost as total of employment cost) within the OECD (2019d). Furthermore, if we translate this discussion to funding, it might be unsustainable to place much weight on financial contributions through work when the problem itself is that human labor becomes rare (Van Lancker, 2018). As such, in a context of large structural unemployment due to automatization, additional mechanisms of funding an unemployment insurance system should be established, besides the classic wage based contributions.

 The responsibility of capital is much clearer to establish, if only because those who control the means of production also decide the organization of production. Robotization is a choice, or better a series of choices, made amongst others by investors and owners. Robotization is to a large extend the answer to the demand of investors for lower costs and increased efficiency, and is pursued in *the explicit attempt to reduce labor costs*. This direct intent generates stronger responsibility in the scenario of robotization than before. One could object that the individual company (especially when not pioneering) is also reacting to pressures from competition, although that does not absolve the sector (or class) as a whole. Again, we cannot limit this responsibility to companies who actually replace particular jobs (as is the case with severance pay), since many new investments are robotized from the start. One could also argue that this responsibility cannot be limited to companies implementing automatization, but also - or even more - to those who develop the artificial intelligence and robots. This includes universities. As others have remarked, robotization will also increase inequality since the gains of this increased productivity will be concentrated in the hands of fewer people (Johannessen, 2018). It is thus clear that as a matter of justice, the private sector is ethically required to bear at least part of the responsibility to compensate. The latter is not just a matter of ethics, but long term a pragmatic matter of sustaining the social contract that allows private actors to make such disruptions. After all – and this is crucial – we are not going to experience a transformation to ‘*a*’ robotized economy, we will experience the transformation to *a capitalist* robotized economy. Both the development, uses and gains of the fourth industrial revolution are largely guided by private property relations. This implies that a small group, who is coordinating this economic transition, is benefiting from it, while a much larger group, with little or no control over this transition, is at risk of losing their main source of income to sustain their livelihood.

A model for unemployment insurance must not just be adapted to the context of Mexico, but also that of robotization itself. In the above we focused on two main factors. The first was that the unpredictability of structural unemployment both in extend and time require for an unemployment insurance model that can evolve along with the circumstance. The second is that since both the responsibility, the risks and the profits from the fourth transformation are unevenly spread, there is a stronger case for involving companies in the realization of unemployment insurance as a form of societal compensation.

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**5. A closer look at key policy questions**

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In this part we take a closer look at some of the key policy choices that need to be made in the process of implementing unemployment insurance, recapping some of the issues discussed earlier. *An overview of the final design choices and recommendations of our model will be presented in chapter seven*. Certain issues are so political in nature (for example tax rates) that in those instances our policy advise will be limited to broad recommendations.

 In what follows we will discuss five key debates in the following order: the height of the income replacement; the duration of the income support; the issue of funding; the requirements on the side of beneficiary; and finally the issue of coverage. While far from exhaustive, this covers the main subjects that are expected to come up in the early stages of public debate.

**5.1. Income replacement**

How much money should the unemployment insurance pay to beneficiaries? This seemingly straightforward question breaks down into smaller choices when it comes to actual policy design. If we look at how other countries in Latin America organize their unemployment insurance (for a clear overview, see Velásquez, 2016, p. 94), we see different approaches.

The first choice is between a fixed or what we will call a relative replacement rate. The first option is to five a flat sum either to all people or to all people of a similar category (for example adjusting it for singles or families). This is for example the case in Mexico City, where unemployment insurance in January 2019 paid a standard sum of 2,568 pesos (Gobierno de la Ciudad de Mexico, 2019). The other option is that the income replacement rate is linked to income from previous employment, usually calculated as a certain percentage of the average income over recent months or years. In practice the means that if one earned a lot in the past years, one would get a higher payment. Most Latin Countries adopt the second income replacement system, where the amount is related to previous income (Velásquez, 2016). Only Ecuador has a fixed sum system. Note that in most cases there are minimum and maximum amounts, which means that the income is related to previous income, but cannot exceed a certain amount. So although the relative option sounds like it provides more income than the fixed sum, this is not always the case. For example in the case of Argentina, Repetto and Potenza Dal Masetto (2012, p. 25) report that in 2012 people received 50% of their previous income, but with a minimum below the poverty line and the maximum less than half more of that.

 There is much to say for an approach that is connected to the previous income. If the replacement rate is generous, it could provide social security in the true sense of the word where people are protected from falling from their socio-economic position. If the funding is largely provided via contributions through work, it provides a bigger benefit to people who contributed more to the system. This is why this system is also popular in various European countries. Yet there are important reasons why this might not be fitting for our context.

 First of all in Mexico (and certainly Nuevo León) we are dealing with much large inequalities in income than exist in many European countries, which can results in perverse situations of upwards redistribution. If there are no ceiling to the amount paid, it would result in some people getting hundreds of thousands of pesos in compensations while others would fall below the poverty line. If there are minimum and maximum limits to how much one can receive, the question again becomes how much these are and what benefit this has over a fixed sum. Another disadvantage is that the relative system comes with a higher administrative costs for both client and government since these rates must be monitored. Lastly, one of the main arguments for this model is that it follows contributions, but as we will show later basing the funding heavily on worker contributions is a questionable choice in our context.

If one was to take a flat rate, the next question is how much this would be, and if this rate is the same for literally everyone. One could for example argue that certain profiles (for example single earner families) deserve a higher compensation than others (double unemployed couples without children). Keeping in mind this adds some administrative work, taking into account slight variations in profiles can add fairness to the system. Yet the question remains what the standard amount should be (that the others are pegged on). We previously established the criterion that UI should keep people out of income poverty, which for a predominantly urban state as Nuevo León means roughly 1561 pesos to avoid extreme poverty and 3.091 pesos to avoid poverty.

 Replacement rates could of course be (much) higher than this, especially if we want to make the policy appealing to higher income workers. One argument against this income rates that surpass the minimum wage might reduce work incentive. While this view holds weight, we must qualify that minimum wages in Mexico are close to the poverty line and the average income in Nuevo León is above the national average. In the next chapter we present survey data on public perceptions of income replacement needs.

 One last mechanic must be considered before reaching decisions on the income replacement: should the compensation be constant or decrease over time? A so called regressive Unemployment Insurance pays the beneficiary less money over time. This implies that there is not just one fixed number but a starting and an end value. The negative aspect of the mechanism is that people are left with less resources when they might need them most (as personal reserves run out over time). Yet there are three advantages in our context: 1) this allows to control costs in a crisis scenario; 2) it provides a tangible and predictable incentive to find work as fast as possible; 3) it allows for a higher initial sum (protecting demand and social security), which could decrease to for example towards one of the poverty lines. These characteristics make a regressive income replacement an interesting option for our flexible unemployment insurance model.

**5.2. Duration of income support**

How many months should individuals be able to receive income support from Unemployment Insurance? One option is for it to have no time limit, as long as applicants comply with the (behavioral) requirements. This variant is rare but exists for example in Belgium. While rising costs and raising concerns in terms of work incentive, this approach might have the benefit in the context of robotization of providing sustained protection in long term crisis situations.

 If we do limit the income support in time, as is the case in the vast majority of countries, the question becomes for how many months. In most countries this ranger from six months to two years (van Breugel, 2016, pp. 41-42), while in Latin America most range from 6 months to one year (Velásquez, 2016). In the case of Mexico City it is limited to six months. The usual logic behind making it shorter is that (besides saving costs) it will again create an incentive to find work. It is important that we are careful with this logic in our context of robotization, for this could be an example of social policies becoming ineffective by attempting to make them too strict. If the period becomes too short, beneficiaries might not have sufficient time to find a (fitting) job, or to be able (or motivated) to enroll in a meaningful training program. Furthermore, thinking of incentives is only relevant if there exist realistic job opportunities in the labor market for the profile of the beneficiary. If robotization causes unemployment rates to go up to for example 25 percent, a six month program would do little to avail social dislocation.

 What is the correct time limit thus not only depends on the solidarity and funding capacity of societies, but also on the situation on the labor market. Ideally UI would have ‘countercyclical’ design elements that encourage employment but also grant people more time when the situation on the labor market worsens. While the flexible conditions in our model (see chapter seven) are innovative in maximally applying this principle, there are minor precedents for this in Latin America. Countries such as Uruguay adding two months to the duration in times of economic crisis (Filgueira, Hernández, 2012), while other Latin countries such as Brazil and Chile also expanded their programs during the 2008 financial crisis (Velásquez, 2016).

**5.3. Funding and contributions**

Who will pay for the unemployment insurance? There are commonly three ‘pure’ answers to this politically sensitive question, which in reality are usually mixed: it can be paid from contributions made by the workers, it can be paid by contributions paid by the employers (or companies in general), and it can be paid from general state resources. In the variant where the burden of funding falls predominantly on the workers, UI is financed via social security contributions similar to pensions and healthcare. In this case, the social policy is an ‘insurance’ in the true sense of the word, since workers buy into it. This logic is popular in for example Western Europe (although not in a pure form) since it has the (political) advantage of granting them a sense of ownership or entitlement. It is easier to consider and defend social security as a right (which it is regardless) when one contributed to it. It is important to note that with social *insurance*, the money is paid into a general ‘pot’ from which claims are paid; in contrast to a (much less effective) system of individual *saving accounts,* where people can only receive what they have paid.

 The second option was to fund UI through employers contributions. This can done as a mirror of the previous option, where the employer pays social security benefits for the employee (which thus in practice comes of the same wage cost) as is often the case in developed welfare states. Or it could be done through a general tax for companies on for example profits (or robots, if that is technically possible), regardless of employment. While less conventional, the latter option would have the advantage of not weighing on employment creation, while holding sectors as a whole responsible for robotization and unemployment. Note that in both variants, unlike with severance pay, the individual company does not have to pay the benefits for the specific person they fire, but contribute to the system as a whole.

 In the third option, the state entirely covers the cost of this social program and buys the ‘insurance’ for workers, which effectively means it comes from general taxation (and thus everybody pays for it). This is normally how social assistance programs are paid, but is it far less common with social insurance than a mix of worker/employer contribution schemes. Still, full state payment is for example the case in Russia.

As mentioned earlier, countries rarely go for one type of funding exclusively, but adopt a mixture. **Table 7** shows the distribution of funding costs for Latin Countries that have UI as they worked in 2016, reproduced from data of Velásquez (2016, p. 94). Note that these are not entirely comparable since the (tax) systems work different (for example Chile doesn’t have a pure model but works with saving accounts), the purpose just to illustrate the spectrum.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 7: Funding** |  |  |  |
|  | Worker tax | Employer tax | State funding |
| Argentina | 0% | 0.89% -1.11% | Financial shortfalls |
| Brazil | 0% | 0% | Complete |
| Chile | 0.6% to individual account | 2.4% to individual account and solidarity fund | 12 million dollar/year  |
| Ecuador | 0% | 0% | Complete |
| Uruguay | Part of the 12.5% general social security contribution (includes other benefits) | Financial shortfalls |
| Venezuela | 0.5% (or 2.5% for independents) | 2% | Various subsidies |

As we can observe: a) in most countries the state still plays a (large) role in contributing to the UI; b) in case of specific contributions, the contribution of employers is always higher than that of workers. In the case of Mexico city the program is also exclusively funded through general state revenue, which for 2019 was budgeted to cost 580,500,000 pesos (including overhead costs) to give 227,064 payments to 52,443 persons.

 While the final decisions on funding will come down to political rather than academic considerations, we want to point out a number of guiding factors. The first is that basing the funding heavily on worker contributions (as in Western Europe) is problematic in our much more unequal context. Adding too much of a cost on the shoulders of (low-wage) individuals can be politically problematic, part of the reason why the 2013 federal attempt failed. A reinforcing factor is that this is ethically problematic in the context of robotization. As argued earlier, workers have no fault or responsibility for automatization, and should not be held responsible for the brunt of the cost. There are benefits in terms on right-building and ownership to including worker contributions to this compulsory insurance scheme, but if this is included it should proportionally be the lowest contribution.

 From this follows the second point, that is that the private sector has a more-than-normal responsibility for unemployment due to robotization, since they are directly initiating the problem (see earlier discussion in chapter 4). This responsibility grows when technological employment increases, and thus logically should their contribution (which provides further incentive to keep employment high). It is important to point out that Mexico has very low taxes for workers in comparison to other industrialized countries, not just in terms of individual tax rates (see OECD, 2019e) but also in terms of social security contributions. For example, Mexico has the second lowest tax wedge within the OECD, which refers to the amount of taxes as total labor cost for employer (OECD, 2019d).

 The alternative is to take all resources from general tax revenue, which is certainly a common practice for social policy in Mexico, but that does entail that *all* citizens would be contributing to this, rather than those bearing prime responsibility. It would almost take the character of a subsidy that lifts the responsibility for replacing people from the companies that actually implement it to the whole population. In that regard, more employer and investor focused tax schemes seem appropriate. The exception to this is if the program is to include a secondary social assistance net for informal workers, in this case it would be more logical that that state rather than the formal private sector pays for layoffs in the informal sector.

**5.4. Requirements and expectations for beneficiaries**

What efforts can we expect from people in return for receiving benefits? Unless the UI is entirely funded through worker contributions (a system we strongly advise against), the state is entitled to set certain conditions for people receiving help. For example the most basic expectation is for people to not actually work while receiving unemployment benefits, but this can be expanded into expectations relating to activation, etc. These expectations and conditions must be seen in relation to three factors: reciprocity, opportunity and control.

 Besides evidence of needs, people generally expect some sort of reciprocity of people using social services (see 4.3.). While far reaching conditionality is problematic from a social rights perspective (social security is an unalienable human right), one can for example make a strong case for the expectation that people look for work. As our survey data in part six will illustrate, people generally expect some type of reciprocity, but see this broader than just looking for work. Training, care for others or volunteer work can also be seen as signs of merit and reciprocity.

 It is easy to overlook that when people receive government support, this relationship between citizen and state comes with great opportunity for improving society, where the state can use this connection to both help and push people find work or train people. If we can look beyond the reciprocal obligation for individuals to ‘find’ work, we can see that the government can do much in helping people integrate into the changing labor market. As Velásquez (2016) comments, we should not see Unemployment Insurance as a mere cash transfer, but *actively* connect it to employment policy:

“Employment services and labour training foster the quantitative and qualitative mobility of human resources and, in an integrated mechanism with the use of cash benefits, can help to strengthen the economies’ adaptation capacity, improve the quality of job search, reduce the costs of re-engaging with the labor market, and help to avoid undesired transitions into informal jobs” (p. 99).

There are a wide range of international examples to learn from, for example in Argentina people can be requested to take part mandatory (vocational) training courses (Velásquez, 2016, p. 100). In Brazil UI is historically linked to training policies since its conception (Robles, Mirosevic, 2013), and in some cases can apply for scholarships for further training.

 Lastly, there are certain expectations towards beneficiaries that have to do with the need for oversight and control in social programs. It is not hard to image various ways in which people could abuse or cheat social provisions. Whether they actually do and if this has a significant cost (in many countries it doesn’t) is not as relevant as the public imagination that it might and the repercussions it could have for political sustainability and solidarity. Any social program must have some system in place to inspect compliance, whether it are meetings with officers, background checks, requirements of evidence, inspections, monitoring of income, etc. However, it is important to note that oversight and control *carry a financial cost of their own*, and at some point risk overtaking the cost of potential fraud. Making the ‘perfect’ follow up system might end up creating a bureaucracy that is both more expensive and less accessible than more general provisions.

We should thus consider the need, the opportunity, and the additional cost of steering people via their participation in Unemployment Insurance. This formalization of reciprocity is an important difference between Unemployment Insurance and Universal Basic Income. While the focus should initially be on labor market activation, the context of robotization also places limits on to what extend this is possible as an absolute requirement in a situation of escalating technological unemployment. Therefore we should consider these requirements as a broader spectrum. As Horton and Gregory (2010) mention, reciprocity can be found in various forms: job searching and working, training, care for others, volunteer work, etc. While the latter option of volunteer work to many might seem an attractive option, we should be cautious on how this might plays out in the context of robotization. *It is important to understand that besides volunteering in charitable causes, volunteer work is work that might replace existing jobs*. If we for example force unemployed people to maintain parks, we would be replacing existing formal jobs. It should thus be considered an option of last resort, after efforts for labor market integration have been exhausted.

**5.5 Coverage**

Who can participate in unemployment insurance? We already established that this should be adults who don’t work nor receive other replacement incomes such as pensions. We will split this crucial question into two smaller discussions: the question on the inclusion of informal workers; and the question of which parts of the formal sector are to be included. Much of our reasoning for the choices in our model presented in chapter seven will be explained here.

We will start with the question of the informal sector. Normally unemployment insurance only covers people with formal contracts who contribute to income taxes and social security. While welfare state provisions are typically hostile towards informal labor, in a country where the majority of people work without formal contract, the question rises if they should be included in unemployment insurance. We shall first cover the ethical case for the inclusion of informal workers, before discussing why this is troublesome in practice.

 A common imaginary of the replacement of people by robots is the disappearance of factory jobs in for example car assembly. Yet if we consider the broadness of the fourth industrial revolution, we must acknowledge that many informal workers are likely to be affected as well. Consider, for example cleaning and domestic workers, a sector in which formal contracts are often the exception. The same goes for farm workers, a sector with a considerable risk of job loss due to automatization. One must also take into account the fate of what one might call ‘shadow-employees’ such as Uber-drivers, people who technically don’t work for a company but in practice do. It should thus be clear that people with informal jobs also run the risk of losing income due to robotization, with the added complexity that they are already in a more vulnerable position. Excluding millions of people from social insurance risks entrenching the duality that already exists when it comes to social protection (Fleury, 2016).

 One might object that extending benefits to the informal sector encourages informal work, yet various scholars found dispute that such an incentive exists: “the risks of providing social benefits to informal sector workers appear to have been overestimated (…) in most cases, poor workers do not choose, nor do they prefer, to work in the informal sector; that is simply the only option open to them” (Abramo, Cecchini, Morales, 2019, p. 40). In addition, while there is an ethical need to *do something* for informal workers, yet this doesn’t have to be the same thing. In many countries a social assistance (less generous, noncontributory) protection net exists below the social insurance net. Next to an inclusive universal system, it is perfectly possible to provide a less generous, more strict protection parallel to the main unemployment insurance.

 While the including of informal workers is morally justified, there are important practical barriers that might make their inclusion *in the same* unemployment insurance scheme as formal workers unfeasible. One hurdle is that people without a formal contract (unless special arrangements are made) typically do not pay into social security, and thus don’t contribute to unemployment insurance. In the case that UI is strongly funded through worker contributions, this creates problems with reciprocity and solidarity. This to a lesser extend is true for employer contributions: while strong arguments can be made for a shared responsibility within the formal sector, it is harder to defend law abiding companies having to pay for the social impact of their competitors who violate labor laws (in so far these can be seen as separate entities). A solution to this first problem would be to pay the assistance to informal workers from general state resources, to which they do contribute via for example sales taxes.

 The second objection is that with informal labor unemployment is not an ‘objective fact’, in the sense that no contract was terminated. It is thus hard to proof when exactly one got fired and under what circumstances this took place. It would even be hard to proof one has worked or belonged to the active population all together. This furthermore leads to the moral hazard that people might claim unemployment insurance while still working, although such risk also exists to a lesser extend with formal sector employees. As mentioned before, these risks have been overestimated, and unemployment insurance also offers people tools to leave the informal sector. In the course of the past decade, the International Labour Organization has published various reports one the issue of informal labor. These sources could prove valuable for further developing a model of unemployment insurance that includes informal workers, as we would recommend .

The next big question is which formal sector workers are covered. Since more coverage means a more effective protection (see part 4), under normal circumstance this would simply be all public and private sector workers. Additionally, there often are varying requirements of how many years one must have worked before having access to this social right. However, the context of robotization raises the question if unemployment insurance should be limited to people who lost their jobs due to robots. We will pay special attention to this question since it was at the core of many discussions within the Nuevo Leon 4.0 network that required this study. One could consider a program that is limited just to the victims of robotization, because on the surface this limits costs and establishes a clear responsibility. Yet we want to draw attention to arguments for general coverage.

 One immediate administrative problem is how one could proof being replaced by robots or artificial intelligence. The problems start with defining what exactly counts a robot, and to what extend adopting artificial intelligence can be separated from other software related efficiency gains. Right behind this comes the problem of defining replacement. If robots for example partially replace *certain* tasks of workers, this can result in the aggregate need for less workers, while still making it hard to pinpoint which team member got ‘replaced’. Next is the problem of the administrative nightmare that comes with proving the above. Persons would depend on written evidence provided by the employer, indicating that the worker lost their job due to automatization. While one theoretically can assume this, the experience with labor laws in Mexico have proven that companies can be inventive in denying workers social rights.

 Even if replacement could be proven without excluding vast parts of the active population, the legality of designing a social policy that fulfills human rights for only for certain workers is ambiguous. While exceptions or modifications for certain sectors or profiles exist within welfare policy, to the best knowledge of the authors there exist no notional or international precedents of unemployment insurance that only covers people who got replaced by technology. As mentioned in part two of this report, unemployment insurance carries general benefits for society regardless of robotization.

 The next question is who would contribute to this insurance. As far as contributory insurance schemes are concerned, the general logic is that wider coverage (thus larger risk pools) makes insurance more efficient. Would the contributions be paid by all workers, or only those employed in high risk sectors? In case of the latter, the system would be limited due to small risk pools, while in case of the former it might be experienced as unjust. One would be faced with inquiries of what is so different from the viewpoint of the worker about being replaced by a robot versus being replaced by other machines or efficiency gains (or outsourcing). While differences exists, limited unemployment insurance to certain groups risks undermining solidarity, which in turn can both create stigma against those using the provisions and endanger long term political support.

 In relation to solidary, we must understand that the labor market impact of robotization is wider than that of those directly replaced. Not only can unemployment affect the larger economy through consumer demand, it can put pressure on wages by placing employed and unemployed workers in competition with each other. Furthermore, the impact on the labor market goes beyond the replacement of concrete individuals. Today, various new investments and companies *start* from fully automatized facilities (Oppenheimer, 2018). The impact on employment of this trend is masked on the short term here since nobody is fired, but (young) people are still indirectly denied opportunities for work.

None of the above prohibits designing policies that given special or preferential treatment to people who can proof they lost their employment due to automatization, but a general unemployment insurance seems to be the most certain way of implementing this.

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**6. Survey of public opinion**

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This chapter will provide original empirical input on the opinion of Nuevo León citizens regarding the topics covered in this report. We will first discuss the position of this empirical exercise within our research, before describing the methodology and discussing the results.

Why include a survey of public opinion in this policy report? First, in the fourth part of this report we touched upon the criteria of considering general public support and solidarity, both for fine tuning policy designs and political ends. Second, because of the democratic principle of taking into account input from civilians. While an academic survey is certainly a limited means to such end, democracy and public participation are crucial elements in dealing with robotization and technological change in general.

 Considering public opinion does not dictate following it. The obtained information is offered in addition to the core of our argument which is guided by the analysis of technical and ethical factors. The survey took place *after* most of the theoretical elements of our model were in place. The survey data can indicate which elements receive support, and which elements might need to be adjusted or marketed differently. We must consider that the results are limited by the fact that both the topic of robotization and unemployment insurance are relatively new to audiences in Nuevo León. Perhaps surprisingly no large conflicts between our general analysis and the survey results were found.

**6.1. Methodology**

The survey took the form of a structured questionnaire that was applied in person on the street. While using Google Forms technically qualifies it as an online survey, it was exclusively applied as if it was a written street survey. The surveys were collected in Monterrey, the capital of Nuevo León. While this city is the place of residence of the majority of inhabitants, it is thus limited to an urban audience. Our survey did not include questions regarding social class, but we explicitly aimed to collect the surveys in locations that would give us the best opportunity of encountering citizens of all socio-economic classes and represent the general electorate. Such areas are rare in a stratified society, so our polling focused to public spaces of recreational value that have sufficient prestige to appeal to all citizens. The bulk of the surveys were performed on the central square of Macroplaza: a large public square with parks and street vendors that borders on both a nightlife district, popular shopping streets, museums and the local congress. In addition a small amount of surveys were performed near other common spaces such as Fundidora Park.

In total **366** surveys were collected from residents of Nuevo León between July and December 2019. For questions that all 366 surveys were valid, this gives a confidence interval of 5.12% at a 95% confidence level. The survey consisted of fourteen questions, included both closed and open questions. A full list of questions can be found in **Appendix A**. Notice that in the English version of this report the questions are translated to English, while the original can be found in the aforementioned Appendix. The collected data was cleaned and analyzed via SPSS statistics. Given our use of this data within the context of this report is explorative, only key conclusions are shared in this document.

**6.2. Survey results**

We start with general concerns. The survey *opened* (thus before reflecting on this issue during other questions) with the question if people are right now worried that robots and artificial intelligence will cause an increase in unemployment. A small majority of **58.7%** responded affirmative to this question (N366), indicating this is a concern of a sizable part of the electorate.

 When asked if they considered that a robot could do their job, either fully or partially, **13.9%** answered completely, **55,2%** partially and **30.9%** deemed their job to be irreplaceable (N366). **See graphic 8**.

Taking both questions together, we can thus conclude that sizable majority acknowledges that replacement is possible for them, although not everyone sees this as an immediate danger.

Moving to the question of responsibility, we asked citizens who they consider most responsible for preventing an increase in poverty if robotization does lead to increases in unemployment. As **graphic 9** indicates, people mainly hold companies as the prime responsible (47,9%), followed by the government (38,8%) and in last instance individuals (13,7%). Conversely, almost seventy percent (69,1%) of respondents think that individuals carry the least responsibility, followed by 16.9% absolving the government and 13.9% companies. From this we can conclude that voters expect companies and to a lesser extend the government to take responsibility in protecting people from social decline. In contrast to the common conservative imaginaries of those same Nuevo León citizens surrounding poverty and social mobility (Inzunza, 2018), individuals are seen as the least responsible.

One of the most important questions in the survey concerns the principle of unemployment insurance itself, and asks if respondents considered that if individuals lost their work due to robotization, they should receive some kind of temporal replacement income. *Support for such measures turns out to be broad with Nuevo León citizens, as* ***86,9%*** *answered positive to this question (N366)*. It must be added that although their current occupation won’t be systematically analyzed in this report, our respondents had a wide variety of professional occupations.

 Interestingly, when asked at the end of the survey if this unemployment insurance should also be given to people who lost their job due to other causes than robotization, and even larger part agreed. Out of our sample of N366, ***91,5%*** *of respondents thought that all workers should be protected*, while only 8.5% objected to this.

 Some reflections on this important finding. First, the counterintuitive fact that the number is slightly higher than those who initially agreed to compensation for robotization might be explained by the fact that this question came at the end of the survey. Even if the difference is less than our margin of error (5.12%), some individuals could have changed their mind after better understanding what unemployment insurance was. Second, regardless of the latter, the fact that an overwhelming support for extending UI to all formal economy workers might also indicate that citizens appreciate the general benefits of such projection beyond the context of robotization. In terms of public support and solidarity, this favors a more general approach.

 Although our surveys has its limitations, this clear result should indicate that at a minimum lawmakers should not fear introducing such measures. Although robotization is an interesting angle to market such policy, its more general application could also find broad public support.

Next we will address the questions of the amount and duration of the compensation, discussed as main variables in unemployment insurance design in part five of this report. First is the question on if an temporal support existed, how much money would be sufficient *for them*. Notice that the question is intentionally framed in a personal sense, in order to avoid stereotypes about other groups, so people would give an actual estimate of what they think is sufficient and reasonable to receive. All answers were converted during data cleaning to a month amount (assuming four weeks and 30 days per month). Given this was an open question, the number of valid survey was N319[[5]](#footnote-5).

 The survey showed a wide range of responses, from 1.200 to 150.000 Mexican pesos per month. We can confirm that the latter was not a mistake, given the person indicated they thought this is what one needed to prepare for a jobless life. *The mean response was* ***9506*** *pesos would be sufficient, while the median was* ***7000*** *pesos*. The most frequent answer was **5000** pesos, with 17,2% of respondents giving this estimation. Other relevant (but not computable) answers included people who answered their current wage or a certain percentage of it.

 From the following we can conclude that people consider amounts that are both much higher than the federal (urban) poverty line, minimum wage, or almost any federal cash transfer as sufficient compensation. To illustrate, the federal universal minimum pension is 1275 pesos, while 99,7% of respondents estimated an amount higher than that. Matter of fact, 98,7% (all but four) of respondents wanted an amount higher than the urban extreme poverty line (1561 peso in September 2019), while 88,7% expected a compensation higher than the urban income poverty line (3091 pesos in September 2019).

 Part of this can be explained by the higher income and living standards in Nuevo León. The expectation is in line with a role for unemployment insurance to provide social security (keeping one in position), rather than absolute poverty alleviation. Although there will probably be a difference between what one wants for oneself and what one perceives another deserving of, at least based on these numbers policy makers should not afraid of making this compensation sufficient out of fear for public backlash.

 Besides the amount of compensation, our survey also asked respondents how many months they think one should be able to receive this support. A total of N349 answers were processed, with 17 people either not answering or not answering with a concrete number of months. It must be noted that 12 of those not included in the calculation answered some variant of an indefinite term or ‘until they find a job’, which essentially comes down to the same thing and would increase the average. Of the remaining N349, the average amount of months was **6.97**, while the median was **4** months. This difference comes from some outliners on the high-end, including one person who pleaded for 20 years. The most frequent answer was 3 months (28,1%), closely followed by 6 months (24,6%) and 12 months (14.9%).

 These outcomes were closer to our expectations, and show that people answers is in the range of the six months that for example the Mexico City system applies. While many citizens are cautious about the initial length of the program, over 20% of respondents prefers a longer period than six months.

Two further topics related to policy design were polled: one related to reciprocity and the other to adaptability. For the first, we asked citizens if people using this program should be conditioned to undertake any type of activity while receiving money. Of the N366 responses, **83,1**% prefers that people are required to do some kind of activity while receiving benefits, while **16,9**% don’t think this is necessary. We can conclude for this that citizens on average do care about including some form of reciprocity.

 Lastly, we asked respondents that if a compensation system was in place, should it increase the support if the problem worsens. Notice that the question does not specify if this refers to the benefits, duration (it was asked after introducing both) or whole new components, as it is a probe for the principle of an adaptive design in general. Breaking it down into more specifics questions would have provided better information, but also complicate the survey with design technicalities for the respondents. Of the N366 valid surveys, **69,4**% of respondents indicated that the more should be done, while 30,6% answered no. This indicates that a majority of almost seventy percent of people thinks governments should do more to protect people if the problem of robotization increases should increase. To honor this, the policy implementation would have to change in that moment, or be designed from the start to accommodate such adaptability to changing circumstances.

**6.3. Concluding discussion of survey**

The survey of Nuevo León citizens proved to be an interesting addition to our analysis. The results show that even today when the topic is not strongly politicized in Mexico, a majority of respondents show concern and feel vulnerable to replacement by robots and artificial intelligence. Additionally, they tend to not individualize this problem, but look for larger institutional actors such as companies and governments for compensation. *The most important finding is that there is widespread support amongst voters for compensation systems such as unemployment insurance, as well as for expanding such efforts if the problem worsens*. The responses also validate our concern for effectiveness established in part four, both translated into sufficiency and inclusion. With a median response of 7000 pesos/month respondents expect a compensation that is effective in protecting them, well above the national income poverty line. Additionally, over ninety percent of respondents wants to expand unemployment insurance to all formal workers, adding strength to the arguments regarding public demand on this issue established in part four of this report. While indicating preference for an effective program, in line with expectations we can also detect some caution regarding implementation. For example a large majority demand some kind of reciprocal action from beneficiaries. Estimates regarding duration (average of +- six months) follow the example of Mexico city, which is more conservative than the response about the amount, which (far) exceeds the payments in the capital.

 In retrospect, the results validate our argument for researching instead of assuming public opinion regarding policy design. Nuevo León has the reputation of being a conservative state, with the expectation of hostility towards social policy. Our survey showed clear support for the opposite. One could theorize that this gab with perception is either due to ‘popular opinion’ being confused with the opinion of local elites who have more voice; or that since 2018 political attitudes are indeed shifting in Northern Mexico. A third possible explanation is that even conservative minded citizens are concerned about robots, giving their across the board impact on the labor market.

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**7. Conceptual model of Adaptive Unemployment Insurance**

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In this part we will present a proposal for an adaptive model of unemployment insurance that is adjusted to the context of robotization. It will use the criteria and insights established before, and propose certain answers to the policy questions discussed in the fifth part. *We want to note on forehand that this model is envisioned as implemented on a state (in our case, Nuevo León) level, although this type of social policies would benefit from higher scale federal implementation*. As described in the introduction, this will be a conceptual model, not a fully budgeted simulation or a law proposal. For most numerical values we will work with either abstract values or rough estimates or suggestions; leaving room for politically sensitive decisions (f.e. tax rates) and exact government data. The goal is to explain a mechanism or logic. We will first explain the general logic behind our model of unemployment insurance, before showing how it would actually work, both as a whole and in its individual components.

**7.1. General mechanism**

This model tries to incorporate the four criteria that we established in chapter four: effectiveness (sufficiency + inclusiveness), compatibility with the general policy context, being socially sustainable and being adapted to the unique context of robotization. We will now discuss its main features regarding flexibility and inclusiveness.

We cannot predict the exact trajectory and impact of robotization in Mexico, which could range from a period of adaptation to societal breakdown. It is thus hard to design an optimal policy configuration that will work in all scenarios, including a continuation of the present situation. Thinking about the duration of being eligible for a replacement income for instance: one can argue that a short duration is best to keep the work incentive if opportunities are available, while a much longer duration would be needed to protect people in a scenario were there simply are not sufficient jobs.

 The main innovative design feature will thus be flexibility. ***We propose a model of unemployment insurance that is adaptable in its design structure to different labor market scenarios. It will consist of different ‘tiers’ in which the program can function, which each consist of a certain configuration of key parameters. The core variable that decides the ‘tier’ is the level of unemployment caused by robotization, which in turn will impact the income compensation, duration, requirements and funding.*** This allows unemployment insurance to adapt its role, moving from an additional temporary protection layer (and consumption smoothing) focused on labor market reactivation in the present economy, to a societal survival mechanism in crisis scenarios of persistent unemployment. Given the gaps between the four tiers are quite large, it will still provide a relatively stable and predictable structure. This mechanism will be explained and visualized in **Table 11** in the next section.

Our proposed model tries to be inclusive within the boundaries of what is feasible in terms of administrative capacity and popular support. The core proposal is to organize a mandatory unemployment insurance scheme for all formal economic workers, and organize a separate unemployment assistance net for those in the informal sector.

 The unemployment insurance will be a mandatory and contributory scheme that covers all adults from age twenty one to age sixty seven and eleven months. We propose this can be claimable after a minimum of two years of formal work *cumulated over the career* (not in one contract, which would exclude millions), although both shorter or longer durations can be found internationally. We propose the age of twenty one instead of eighteen, because the federal government provides employment and training programs for people age 18 to 29, which first could be exhausted before turning to state-level resources. Furthermore, given one should have first worked a minimum of (for example) two years, this would naturally push the requirement to a later age. The insurance will stop right before the individual turns sixty eight in order to allow transition into federal minimum pensions (in line with how the UI works for Mexico City). In the context of robotization the transition to retirement is *encouraged* to free up space on the labor market for younger generations (see Ghys et al, 2019).

 The insurance will cover *all* formally employed individuals meeting these requirements, and access to compensations will be granted to *all* individuals who involuntarily lost their employment. Although this measure is **primarily intended as a buffer against the impact of robotization**, it will also offer – in line with all known international examples - protection to a broad spectrum of sources of involuntary job loss (restructuring, bankruptcy, non-robot efficiency gains, etc.). We explained the bulk of our argument for this choice in part five of this report. We recall: a) the considerable administrative and legal complexities involved in singling out one particular group; b) the broad effect of robotization on the labor market, which goes far beyond being directly physically replaced by a robot; c) the advantages that unemployment insurance has for society in general; d) the advantages in terms of popular support of schemes that provide benefits to large parts of the population. In regards to the latter we want to point to the survey data in chapter six. Our surveys indicates that there is **strong support (over 90%) from the local population from offering temporal financial protection against unemployment for workers in general**.

 For informal sector workers we proposed the development of an alternative social assistance net (which will be detailed in the next part). Including informal workers into the unemployment insurance would require bureaucratic innovation and might be hard to politically defend. Yet we established there is an ethical requirement to do something for this group, since they will also be affected by robotization. Therefore we propose two things: first, to not use a track record of past informal work as an exclusionary principle for formal workers; second, to establish a separate parallel social assistance program. This program will be significantly stricter and more limited than the UI model we propose, and should be funded through general state resources. As indicated in chapter four, due to the relative superiority of the new federal social programs, it could be worth researching if it is possible to free up state-level resources from now semi-obsolete state social programs.

**7.2. Positioning unemployment insurance**

We will start by orientating Unemployment Insurance within the chain of events that leads from the process of robotization towards situations of crisis. **Figure 10** shows the role of the Unemployment Insurance within the larger picture of responding to the challenge of automatization (see also Ghys et al, 2019).

 As discussed in part two, the fourth industrial revolution and the wave of automation due to robotics and artificial intelligence that comes with it can have a severe impact on the labor market. In an ideal scenario, general policy measures are taken to contain this evolution (f.e. taxes on robots, investment in ‘human’ sectors, etc.). If this fails, technological advances will translate in a new and more permanent round of replacement of human by non-human labor. This could either directly lead to increases in the unemployed population, or be mediated by various public and private measures. Amongst the public measures we discussed options like facilitating retirement with dignified pensions, or reducing the length of the workday to divide the existing jobs over more people. Within companies there is the ethical expectation that they first try to re-absorb the replaced workers to other positions within the company, or alternatively offer on-the-job retraining opportunities. Yet even in this scenario, robotization is likely to lead to an increase in unemployment. This vulnerable situation can lead to poverty, but here unemployment insurance is installed to compensate and soften the loss of formal work. While separate policies, our unemployment insurance model is envisaged to work closely with retraining and reemployment initiatives by the government, to keep opening opportunities for reintegration into the labor market. Since unemployment insurance is limited in time and doesn’t cover all citizens, it itself will also fall short in the long run in preventing robotization from increasing poverty (and feelings of lack of purpose). As we shall see next, in cases of (total) escalation the financial compensation of UI can also drop below relative poverty lines, **making it a survival and activation mechanism rather than poverty prevention**. In conclusion, the role and limits of this social policy cannot be seen in isolation from a necessary mix of larger efforts to protect employment by public and private actors.



**Figure 10: flowchart of unemployment**

**7.2. Operationalization of the Flexible Unemployment Insurance model**

In this part we will visualize the functioning of our proposed model, and detail the involved policy considerations. The structure of this part will resolve around **table 11**, which shows an abstract simulation of how the different tiers of our model would look like and in what direction the different parameters would change. Note that the table is a visual abstraction, and we will subsequentially discuss and complete each aspect of this table, and detail our policy recommendations for each. It can serve as a rough mold for developing an actual mathematical model that simulates how it would function.

7.2.1. Unemployment tiers

The first column reflects the gravity of the situation on the labor market, which determines the tiers in which the model operates, and thus the rest of the policy design. We for the sake of simplicity chose to use the unemployment rate as a proxy for capturing this impact in a single variable. This is of course a limited approach, which assumes that sharp increases in unemployment are directly related to automatization. The scenario is that of an economy that has economic growth and a decrease in jobs at the same time (although unemployment insurance is also useful in other types of crises). Understanding the limits of using the raw unemployment rate as an indicator, it would be interesting to develop a more complex indicator that weighs it against economic growth; or includes more direct data on the replacement of human labor.

 In our proposal, this leads to four tiers. The first reflects the ‘normal’ current situation of unemployment that remains under five percent. The second reflects a situation in which the labor market is strained between five and ten percent unemployment. The third reflects a situation of employment crisis, with unemployment between ten and twenty five percent. And the final tier is an apocalyptic scenario of societal breakdown with structural unemployment over twenty five percent. We chose to include only four tiers in our model that are quite far apart, to give the operation of unemployment insurance a certain stability over time.

7.2.2. Financial compensation

The second column deals with the financial compensation. It should be noted that we propose that the beneficiary receives both a crash transfer *and healthcare coverage*. If the beneficiary is over 65, one could consider including other contributions to social security (pension) into the benefit. The logic of our model is that the benefit decreases in generosity if the unemployment rate goes up. For example in this specific proposal (which is a mere guideline), o

In the first tier the UI starts with the ‘full’ benefit (X). In the second tier we still start from this amount, but becomes regressive in the second tier, which means that each month it pays less until half the original sum is reached by the end of the maximum period. In tier three and four the unemployment insurance starts at this minimum.

 This is primarily done for budgetary reasons, since the system will have to cover more people and thus needs to administer its resources with greater austerity. A secondary consideration is that this forms an incentive to keep attempting entry to the labor market, which balances the increased generosity in time (discussed in next section). Third is that this justifies a higher payment in the ‘normal’ situation, which is in line with our criteria of effectiveness, which includes that UI should ideally be sufficient to be meaningful.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Unemployment** | **Amount paid**Logic:decreases | **Duration**Logic: increases |  **Requirements** Logic: broadens | **Funding**Logic: responsibility |
| **< 5%****Tier 1**: current situation | **Flat amount X** (f.e. 5000 peso) | **Z months**(f.e. 6 months) |  **Job search** | **State:** **informal + extra****Worker:** **minor contribution****Industry:** **Y special taxes** |
| **5 – 10%****Tier 2**: strained situation | **Regressive from** **X to ½ X over time** | **2.(Z) months**(f.e. 12 months) |  **Job search** **Education**  | **State:****informal + extra****Worker:** **minor contribution****Industry:** **>Y special taxes**  |
| **10 – 25%****Tier 3**: employment crisis | **½ X** (≥ extreme poverty) | **4.(Z) months**(f.e. two years) |  **Job search Education** **Care** | **State:** **informal + extra****Worker:** **minor contribution****Industry:** **2.(Y) special taxes** |
| **>25%****Tier 4**: systemic crisis | **½ X** (≥ extreme poverty) | **8. (Z) months** (f.e. four years) |  **Job search** **Education** **Care** **Volunteering** | **State:****informal + extra****Work: minor contribution****Industry:** **3.(Y) special taxes** |

 **Table 11: Model of tiered unemployment insurance.**

How high these cash transfers should be is at its core a political discussion. For the sake of administrative simplicity, we suggest a fixed sum for all beneficiaries instead of a percentage of the previous wage. This follows the example of Mexico City, and seems the most straightforward option in a country with massive income inequality where costs would become very unpredictable if high wages needed to be taken into account. While this is the suggested option, we recognize that other options are also viable, such as a percentage of the last wage with a minimum and maximum range. **While not included in the table for the sake of simplicity, we advise exploring the option of allowing a variation of rate X depending on the family composition of the beneficiary.** For example the UI could allocate a 1,3.(X) benefit rate for people with dependent children. Some countries (such as Belgium) also maintain a difference between people who are single and those with an employed partner.

 As far as the range of the payment is concerned, we propose that the starting value X is above the federal (urban) income poverty line (effectiveness criteria), since this social program is intended to protect from poverty. The minimum value that X regresses to in the other tiers should be above the (urban) absolute poverty line in order to guarantee survival. Notice that the latter rate is not ideal (it is a failed social security protection), but would only come into place in the ‘survival’ scenario where the resources are seriously strained. Regarding the actual value of X, we used 5000 pesos as an example in our model, but this number should depend both on available resources and the expectations of citizens. Since the focus is on Nuevo León, we have to also take into account that the average income and cost of living is higher than the national average. In our survey the average amount was 9506 pesos, while the median was 7000 pesos. The example of our model is thus an under-estimation of what citizens would expect, leaving space for upwards adjustment.

7.2.3. Duration

The logic behind the changes in duration is the that time that people can receive help increases if the labor market situation gets worse. If unemployment increases, so does the duration that people can use unemployment insurance, gradually changing the nature of the system from a short term bridge between jobs to a longer term safety net. This must be seen part of the internal balance of our model, in which payment gradually decreases but the time restriction loosens.

 The reasoning behind adopting this evolution is threefold. First, reintegration into the labor market becomes less realistic for all citizens if automatization and unemployment would increase. This reality logically requires that people need to be given more time for finding work in a field with less opportunities. If we reach a point where there are very few opportunities to work or participate in the new economy (the right to work itself is a human right), people should be compensated for this. Second, as the crisis deepens, the concern for work incentive becomes less pressing and relevant. This is also internally compensated by the regression in the payment over time in the second tier. Third, as the chances of a smooth transition to new jobs decrease, more and deeper efforts of retraining are required. If people are required to learn wholly new skills or even switch fields completely, this should be accompanied with sufficient time to engage in meaningful training. Fourth, notice that the logic is to make it *longer but not indefinite*. Making UI not a permanent tool helps preserve the politically crucial notion that this is not an ‘end all’ solution to robotization (in contrast to Universal Basic Income), and implies that the state does not give up on the right to work.

 In our visualization in **table 11**, we propose that the duration Y doubles with each new tier. Accepting this mechanism, the next question becomes what the base duration of Y should be. As mentioned before, if training is supposed to be part of this policy (which we strongly advise), this duration cannot be too short. A trimester (4 months) would be the smaller common educational unit. In our hypothetical proposal we use the duration of 6 months as the basic value of Y, in line with how it works in Mexico City. This means that if the economic situation does not change, the unemployment insurance would only last a relatively short duration. However, in tier two the maximum duration would be 12 months, in tier three 24 (2 year) and in tier four it would last 48 (4 years). If we look at the input from the surveys, we see that the average estimated time is 6.9 months, while the median is around four months. Yet the difference in median is small, as 45,8% of respondents prefer a duration of six months or more. Our proposal is thus still within the range of public opinion, although initially more conservative than many international examples.

 The last related topic is the maximum usage of the UI: when can people reapply to this program after having used it before. Various options are possible here, from implementing a minimum duration in which one must have worked in between claiming UI, to making a rigid time limit. For example in the case of Mexico City this is once every two years. Although we don’t have a specific preference, using a work requirement has the benefit of including notions of merit and contribution, which helps in terms of solidarity.

7.2.4. Activity requirements

The survey in part six indicated that a majority of respondents think people should do ‘something’ in return, echoing the principle of reciprocity. The general logic of the proposed model is that the activities one can do to signal reciprocity or societal value should broaden over time. In our hypothetical example, initially the requirement is to find work, while it broadens in later tiers to training, care and volunteer work. We will first discuss the logic behind this broadening, before discussing the possible list of activities. Notice that how exactly the latter must be organized falls outside the scope of Unemployment Insurance itself.

 Reciprocity and societal value can be displayed in multiple ways, however our model suggest that not all options are initially available in the first tier. The argument behind this is that both the right and obligation to enter the labor market should not be forfeited too soon. Both to not encourage dependency on this measure, but also to not ‘give up’ on actively trying to help the individual find an appropriate job. As discussed in part five, there is also an opportunity in these requirements for institutions to guide people. The argument behind gradually broadening the requirements is that the chance of finding work realistically decreases as the unemployment rate goes up, generating demand for other ways of expressing good will and societal value. A second argument is connected to the increase in duration: when beneficiaries are given more time, they can engage in larger commitments such as the care for a relative or more extensive training programs.

 The minimum requirement is that people search for and are willing to accept work. There is a large spectrum of options in how this can be institutionalized and monitored: from mandatory solicitations, to for example guided trajectories proposed by dedicated social workers. As mentioned earlier, we propose this requirement is not just approached from a punitive or controlling perspective, but also as an opportunity to *help* people find work. An interesting addition to Unemployment Insurance in the later tiers would be the creation or subsidizing of jobs by the state that are adjusted to the capacities of long term unemployed (for two international examples, see Ghys, 2017, and Cools, Oosterlynck, 2015).

 Training is added in the second tier. One could argue form a humanistic perspective that this should be available since the start. Our logic is that the time restraints make this harder, but that argument ultimately depends on how variable Y is chosen. The organization of this aspect goes beyond the boundaries of this paper. We limits ourselves to noting that this will in itself require considerable resources and organization, since it is likely to involve a wide array of private and public partners.

 The care for others is added as an example of a different approach to societal merit and life purpose, but could be interchanged or added with other activities policy makers or citizens estimate of social value. Taking care of an elderly or sick relative follows the logic that these social ‘services’ deserve societal recognition as useful and potentially preventing bigger public costs. Given this is harder to evaluate and might require longer time commitments, it is reserved for a crisis scenario in which labor market integration is harder.

 Finally we have the option of volunteer work. This option often a popular alternative for finding real work in the public imaginary, yet we think there are substantial reasons for not making it available until robotization has made a large impact. Volunteer work is unpaid work; this has two implications. A) if the work is substantial and not charitable, people are doing labor that potentially could be (or worse: was) paid labor. If one for example would dedicated unemployed people to maintaining public parks, this would come at the cost of previously paid jobs contracted by cities. The potential perverse effects on the labor market should be reserved for situations in which human labor in these jobs is largely rendered uncompetitive by robotization. B) people are forced to do real work without being paid, which is ethically inferior to having a job. While volunteer work can have important positive psychological effects compared to idleness, one should not give up to soon on trying to help people *get ahead* through coaching and training. While we encourage a broad approach to what is considered socially valuable, the proposed model suggests a strategic use of these options.

7.2.4. Funding

Of all major variables, the way the unemployment insurance is funded is probably the most properly political choice. For this reason, we will limit our proposal to a general outline of principles and considerations.

 The model is open to a combination of three sources of funding: the state (general revenue), contributions from workers and a tax on companies. The proposed logic is that while the first two sources stay (proportionally) stable, the tax on companies increases as their efforts in robotization lead to more unemployment. While an example is given in the table, the exact rate of this increase is not prescribed, and mainly depends on the funding needs. This is all in an assumed scenario (which could be controlled for) that growth and profits are realized while simultaneously increasing unemployment. The ethical argument is that those responsible for furthering robotization are increasingly held responsible for the compensation of the effects this has on society. Our survey also indicates that more citizens consider companies to be the prime responsible than the government or individuals for compensating increases in unemployment due to robotization. Given more people would need to be compensated longer, it is logical that more funding is sought. A second argument is that such a forecasted tax increase might also be an incentive to avoid or contain human replacement (acting as a pseudo robot tax), as far collective incentives would have an effect.

 Looking at the individual sources of funding, the part carried by the state should at a minimum cover the social assistance for informal sector workers, and potentially any extra costs not covered by other sources. As mentioned earlier, it is worthwhile investigating if the increased burden carried by federal social policy opens up existing funds within the states social policy budget. Alternatively, it would be possible for the state to fund a much larger part (or all) of the unemployment insurance, as is the case in Mexico City. While this might help to politically hide the cost short term, this does mean that all citizens are contributing regarding of their responsibility for causing the problems.

 Mandatory contributions for formal workers can be integrated to give a sense of ownership and reciprocity, strengthening the status of unemployment insurance as a social right. If this element is to be included, which would make the program a true ‘insurance’, we propose this contribution is small in comparison to the other types of funding. This in order to: a) avoid pressure on wages; b) maintain electoral support; and c) acknowledge that the workers carry the least responsibility for robotization of the three actors. The latter is in line with the findings of our surveys, as described in part six. One could look at the example of other Latin American countries (see part five of this report, or Velásquez, 2016) for how low worker contributions are integrated.

 The funding through companies itself can take different forms. The ‘classic’ form in many Western welfare states is that the employers contribution to unemployment insurance is part of their social security contributions for workers. Essentially this becomes part of the wage cost, mirroring the worker contributions. While this model is proven and tested, other alternatives might be better adapted to our context of robotization. Connecting the tax to labor can be unsustainable long term in an economy where human labor becomes increasingly rare as a productive force (Van Lancker, 2018). Furthermore, the identity of companies as ‘employers’ is relative if labor increasingly takes unstable forms such as pseudo self-employment. A second objection would be that taxing companies as employers might be ethically unfeasible in the context where the main fear is that companies would fail in their societal role as employers. If companies continue to create profit without people, taxing them through employer contributions would place the burden on the least robotized companies.

 It is thus more appreciate to create a special tax that is not directly part of social security contributions (the latter could take the form of the worker contributions, which are still part of the wage cost). A robotization tax on profits would be the most straightforward path, although inventive taxing that are more directly related to robots (either on a company or sectoral level) should be investigated. However, the falls outside the scope of our report, which is limited to the suggestion that this contribution should increase if the problem gets worse in order to cover the increasing costs of this policy.

7.2.6. Social assistance

The model visualized in **table 11** only cover the unemployment insurance for the formal sector, while our proposal also included a call for developing a parallel safety net for the informal sector. Different challenges must be overcome for this to materialize.

 First, there is the problem of reciprocity, given informal workers cannot be part of a mandatory contribution scheme, neither can their demonstrate a work record that *proofs* societal contribution. Our suggested solution is to fund this program exclusively through state funds coming from general revenue, as is typical of social assistance programs in many welfare states (Garland, 2014). As members of society these workers can still claim their right towards the state to be socially protected, and even if they do not pay income tax, they still contribute to the general revenue through other taxes (sales tax, for example).

 Second, there is the problem of trust: informal workers cannot proof (in a standardized way) they unwillingly lost their job, leave alone proving it was due to robotization. One risk is that they would claim benefits while still working. A possible solution is to give this trust in exchange for tighter requirements and closer monitoring. Job or training offers could be made mandatory. If not engaged in full time training, beneficiaries would be required to show physical presence in regular formation and counselling activities, which would hinder full time informal work. Furthermore, the use of this assistance scheme could be rationed, so people are faced with the strategic choice of when to use this assistance (discouraging unnecessary use of it). For example, a citizen that claims to be unemployed without formal proof can chose to use the assistance system for six months every four or five years.

 Lastly, while there is an ethical requirement to *do something*, this does not imply the state should do the same for informal workers. While the reality of vulnerability of millions of informal workers must be recognized, giving better benefits to formal work helps to encourage the transition of our economy towards effective worker rights. Instead of the tiers proposed in **table 11**, the informal program would start with a regressive compensation of amount X to amount ½ X, and already change to a flat ½ X amount in the second (instead of the third). Similarly, the duration would not be able to increase at the same rate (or at all like it would for formal workers); and no broadening of requirements beyond work and training could be permitted.

 While including informal workers into policies that protect against technological employment is difficult, we hoped to have shown that there are options for doing something for this historically ignored group. While benefits don’t need to be the same, paths towards inclusion should be researched even in selective social security systems. Furthermore, unemployment insurance should go hand in hand with broader efforts of governments to formalize the economy and make worker rights effective in Mexico, as well as expanding universal access to key societal services.

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**8. Conclusion: An innovative take on an overdue social protection**

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When faced with the concrete risk of societal dislocation, society must react boldly to protect itself. The intend of this report was to outline in a complete and comprehensible manner the considerations that go into applying Unemployment Insurance as a response to the risk of mass unemployment due to robotization in Nuevo León. Consulting both insights from literature and empirical data, it patiently built an argument for an effective and comprehensive social protection, that cumulated into a proposed model for adaptive unemployment insurance.

After the introduction in the first chapter, we explained the general context of advancements in the development and use of robots and artificial intelligence (‘robotization’). We explained a clear need for protecting people from the real risk of potential mass unemployment if these evolutions continue. Our survey of 366 Nuevo León citizens also confirms that robotization is already a concern of the majority. We oriented the concept of unemployment insurance within other alternative policy responses, classifying it as a compensating rather than preventive or mediating response. The important implication of this is that, although meeting a real felt need for protection, these type of policies are far from a complete response to the risks of robotization. Yet it forms a good starting point, both because it is a relatively easy and secure measure to take.

 Implementing Unemployment Insurance would also help Mexico catch up with the social policies of the industrialized world, including Latin America. In the third chapter we further explored this concept of unemployment insurance, which generally refers to a compulsory insurance scheme that pays people a monthly amount in case they unwillingly lose their (formal) work. We explained the general benefits of this policy, which include social protection, macro-economic stabilization and improvements in labor markets. This general appeal was also echoed in our survey, in which both large majorities agree to the need for financial support in case of replacement by robots and to expand unemployment insurance to all cases of involuntary job loss (in other words: its standard implementation). We reviewed the efforts to implement this policy in both the Latin American context and in Mexico itself. The most important conclusion is that given both international and national precedents (often in poorer contexts), it is perfectly possible and feasible to introduce this policy in Nuevo León.

While the first three chapters provided context and introduction, we started building the argument for our model of unemployment insurance in the following chapters. Given the wide range of directions this could be organized, we first established the need for guiding criteria in chapter four, before applying these to a discussion of common policy dilemmas in chapter five. The first criteria was the concern for effectiveness. Social policies, especially in Mexico, often fail because they are too shallow and limited to actually make a structural difference in dealing with social problems. This is especially relevant in our case, given the importance of the role of unemployment insurance as a first (and thus so far sole) measure to protect people from the impact of robotization. This concern is echoed in our survey, where citizens generally requested sufficient compensation and broad coverage.

 A second criteria was compatibility with other social policies, both on a federal and state level. We briefly reviewed the landscape in this fourth chapter, and kept referencing to the general policy framework throughout. The main conclusion is not only that the current policy climate is favorable for such policies, our specific model is compatible with it and would serve to fill some existing holes in social protection.

 Third we discussed the socio-political sustainability of the project. Social policies must not only be financially sustainable, but also electorally in terms of solidarity. We argued that instead of building utopian castles in the sky, the concerns of citizens regarding reciprocity and fairness should be taking into account in the design phase. We conclude that most concerns that we identified through literature and our survey can be sufficiently accommodated in our model. Still, more research is welcome on (local) attitudes towards reciprocity.

 The fourth and last criteria is the adaptation of the program to the context of robotization. Amongst the various implications of this, we recall the need for a correct attribution of responsibility. As the survey also indicates, this predominantly falls on the private sector (and second on the government), rather than on individuals. Furthermore, the unpredictable nature of the labor market impact of robotization requests a flexible design. The latter will be the defining feature of our model.

 In the fifth chapter we added further depth to the report by outlining severable policy dilemma’s. Exploring questions regarding coverage, funding or duration helped demonstrate both the complexity and various options in designing unemployment protection. While this chapter contains many of the arguments justifying our model, in case policy markers object to our suggestions, our discussion of the implications of various alternatives can be a starting point.

 The sixth chapter consists of a survey of 366 Nuevo León citizens to complement the literature review and logical argumentation of the report. While not essential for the development of the model, this exercise proved to be a valuable addition. The survey indicates that voters are *in general* supportive of the rough contours of our model. This should give policy makers confidence that further exploring this proposal is viable.

Chapter seven presents and defends our actual model of adaptable unemployment insurance. The core of the proposal is to make the design of the program flexible depending on the level of unemployment.

 A table with four tiers was proposed. The first tier represents the current situation with unemployment below five percent. In this case, benefits can be relatively high given the limited amount of beneficiaries, but the duration is limited and the work requirement strict to encourage labor market reintegration. The second tier represents a disturbance in the labor market, with unemployment between five and ten percent. In this scenario the benefits are made regressive, but the duration is lengthened and expectations broadened in order to account for the increased vulnerability on the labor market. The third tier represents a scenario in which robotization causes a structural crisis in the labor market, with unemployment going up to twenty five percent. In this scenario, the payments are rationed to a minimum due to the increased number of claimants, while the duration further expands as the prospect of an easy rebound to work becomes unrealistic. In tandem, the activity requirements are further broadened to include non-work related activities such as care. The fourth tier foresees a scenario of societal breakdown in which unemployment rises above twenty five percent, shifting the objective of our program from providing social security to a survival mechanisms. Amounts stay low at survival rates, while the duration of the program is doubled to support people over longer terms. Although our proposal is to use a mix of funding, the model assumes that the part paid by the private sector increases with each tiers as they continue to replace people with robots. We also propose a separate, more strict and limited social assistance program for informal workers. This would be paid by general state resources, and provide protection to excluded groups that would as well suffer from technological replacement.

 This model has three main merits. First, it is innovative in adapting a classic social policy to both Mexico and the new context of robotization. The state of Nuevo León forms an ideal environment to pioneer such social policy innovations that could ultimately spread to other states or be federalized. Second, instead of having to revise the policy as the uncertain future plays out, the adaptability built into this model allows it to (predictably) shift its role. This allows it to be adjusted to each stage, including the (unlikely) scenario in which no crisis happens, while one-off choices would leave it vulnerable to altering realities on the labor market. Third, this allows unemployment insurance to avoid some of its own pitfalls while retaining its strengths. Unlike Universal Basic Income, it does not give up on labor market integration when this is a realistic prospect, both actively encouraging and helping people to find work (for example through training). Its selectivity in only helping unemployed people also allows for payments above the income poverty line while unemployment is low and resources are available (which is not the case for most implementations of basic income). When the situation escalates, it can morph into providing protection over longer time periods (or indefinite, if policy makers choose so) and broader coverage due to looser requirements.

Yet more work remains to be done. In terms of policy, besides implementing unemployment insurance, parallel policies must be prepared. One requirement is increasing efforts to formalize the Mexican labor market, providing more certainty and access to rights for workers, in addition to a fairer taxation landscape. While not fatal or unresolvable, a large informal sector is a serious complication for the design and limitation to the success of welfare policies. The second task is to develop and strengthen active labor market policies, foremost those connected to (re)training and orientation. If we want unemployment insurance to be more than a mere cash transfer, strong connections to work and educational institutions must be made. As various authors stress (for example Nedelkoska and Quitini, 2018), governments must take an *active* approach to retraining. In addition to this, *it is worth exploring the potential for state and municipal government to participate in direct job creation in a social economy context for those who orbit the furthest from the labor market*. In our case, the long term unemployed.

 In terms of further research, three projects present itself. The first is to investigate the potential impact of robotization on Mexico (or more specifically, Nuevo León). While this is a sensitive topic, relying on international estimates poses limitations. More accurate predictions of where and who is vulnerable to what extend (but also: due to who’s actions) helps to fine-tuning policy responses. The second is to take the conceptual model proposed in this report and work on actual simulations of how it might work in Nuevo León. For the latter, cooperation of the local government would be helpful. The third task is to further investigate, conceptualize, survey and model alternative policy responses, for the one discussed in this reports is limited.

 Lastly, in term of actors in the political and public sphere, the work is to promote and when possible implement measures like these. It is in the interest of society as a whole that ideas of solutions spread faster than the impact of problems.

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**Appendix A: Full list of survey questions in original language**.

1. Año de nacimiento

2. Ocupación

3. ¿Has sentido alguna vez preocupación por la idea de que los robots y/o inteligencia artificial puedan causar un incremento en desempleo?

4. En caso de que trabajes, ¿Consideras que algún robot pudiera realizar total o parcialmente tu trabajo?

5. Si aumentara el desempleo debido a la robotización, ¿quién consideras que sea el mayor responsable en prevenir que esto lleve a un incremento en pobreza?

6. Cuando las personas pierden su trabajo debido a la robotización, ¿Consideras que deberían de recibir algún tipo de apoyo temporal?

7. Imagina que sí existe este apoyo temporal, ¿cuánto dinero considerarías suficiente para ti?

8. ¿Por qué consideras que esta sea una cantidad justa?

9. Imagina que sí existe este apoyo temporal, ¿por cuántos meses estarías de acuerdo en recibir este ingreso?

10. ¿Por qué consideras que este sea un tiempo justo?

11. En caso de que si se ofreciera esta compensación, ¿consideras que debería incrementar conforme el problema crece?

12. ¿Consideras que este ingreso debe estar condicionado a alguna clase de actividad mientras se esté recibiendo?

13. En caso de que hayas respondido sí, ¿Qué tipos de actividades consideras que deberían realizar?

14. ¿Consideras que las personas deberían estar protegidas con alguna clase de seguro de desempleo, aún cuando no sea a causa de la robotización?

1. Nedelkoska, Quintini (2018, p. 52) estimated that the top 20 sectors with the highest risk include; from high to low probability of automation: Agriculture; manufacture of wearing apparel; postal and courier activities; food and beverage service; fishing and aquaculture; mining and quarrying; land transport; manufacture of wood; manufacture of food products; services to buildings and landscape; printing and reproduction of recorded media; manufacture of textiles; waste collection, treatment; manufacture of other non-metallic mineral products; manufacture of paper; manufacture of fabricated metal products; manufacture of tobacco products; forestry and logging; manufacture of motor vehicles; manufacture of electrical equipment. [↑](#footnote-ref-1)
2. Note that the calculation of poverty is here calibrated for comparison (see ECLAC, 2014), and does not represent actual poverty rates (which have been around 50% during the same period) the way they are domestically measured in Mexico. [↑](#footnote-ref-2)
3. For more general information, see <https://www.gob.mx/> [↑](#footnote-ref-3)
4. For more general information, see <http://www.nl.gob.mx/servicios/> [↑](#footnote-ref-4)
5. In some cases people simply did not (‘it depends’ ‘I don’t know’) or refused to answer the question (belonging to the 13% that was against this measure); in others their answers were unclear. For example if one answers ‘50’, both 50 pesos or 50.000 pesos would be equally odd interpretations. While the question was per month, 50 peso per day would be a possible answer, but this would be a large stretch of interpretation during data cleaning. All answers under 200 pesos were deleted from the sample on the basis of being unintelligible. [↑](#footnote-ref-5)