



Does Social Protection Cause Informality?

A Critical Review of the Literature on
the Relationship between Social Protection,
Formal and Informal Employment

Mónica Orozco Corona and Roberto Vélez-Grajales

WIEGO Working Papers

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Abstract

Several influential international organizations, academic studies and reports claim that social protection is an important driver of informality. This paper critically reviews the available evidence. On the whole, the literature does not support strong claims about the effect of social protection programmes on labour markets. A number of studies find statistically significant effects of social assistance programmes on formal and informal employment, but the overall literature is mixed. Some studies suggest that social assistance has increased informality, whereas others find just the opposite. Where effects are observed, they mainly relate to specific groups. Choices on data, definitions and assumptions are influential in determining the significance, direction and size of effect, with a number of studies illustrating how sensitive findings are to changes in data and model specifications.

The literature review further reveals a wide gap between theories on the effects of social protection programmes on labour markets and aspects tackled in the studies. Methodological approaches in the reviewed studies restrict the quantitative analysis to the available data and the scope of the models, thus reducing the complexity of theories considerably. The absence of integrated analyses of social assistance, social security and taxes reduces the ability of studies to make recommendations on the design of *systems*. Studies mainly describe social assistance policies and measure the impact of a specific programme on a partial indicator of the labour market, i.e., formality or informality. Studies that analyze changes in taxes and increases in the subsidies for social security do so separately from the effects of social assistance. As studies do not explore the design of schemes, they reveal little about the mechanisms of observed or theorized effects, nor do they provide much guidance for potential reforms. Few studies explore transitions in the labour market, and most lack considerations on the gendered nature of formal and informal work and care. Studies generally do not attempt to identify whether informality growth comes from formality reductions or the labour market's overall behaviour. Similarly, studies generally do not explore whether the effects occur in specific sectors of the economy.

1. Introduction

The Social Protection Floors¹ and Universal Social Protection (USP) frameworks – grounded in human rights principles, International Labour Standards, and Sustainable Development Goals (SDGs) – provide a crucial set of principles and actions that should underpin the extension of social protection. These frameworks call for developing social protection systems that protect throughout the lifecycle, are based on a mixture of equitably financed social assistance, social security and other measures that provide income protection, and are rights-based, gender-sensitive, inclusive, and representative (ILO, 2012).

Although the framework of USP has gained support at national and international levels as a critical instrument to reduce inequality and promote social mobility, well-being and resilience, certain principles remain contested. Much of the contestation over the desirability and role of social protection has its roots in implicit assumptions underpinned by neo-classical economic theory. These result in powerful policy ideas that counteract USP's fundamental principles and ultimately undermine the extension of fair, equitable and sustainable provision of social protection, including to workers in informal employment.

The assumption that certain forms of social protection boost informality limits the extension of equitably financed social insurance to workers in informal employment. The main argument of the so-called “Perverse Incentive Thesis” (PIT) is that social protection systems that combine employment-linked social insurance with tax-financed social assistance for low-income informal workers boost informality. Therefore, such informality causes low productivity, which impacts growth negatively.

The argument goes that such mixed social protection systems induce higher informality because social security schemes financed through payroll contributions increase the total labour cost of formal labour. Because non-wage labour costs are not required for informal employment, it becomes relatively cheaper than formal employment. This difference may provide a sufficiently effective incentive for firms/employers to evade labour and social security laws and generate informal employment.

According to this view, the mixed organization and financing of social protection systems cause a misallocation of productivity and investment costs.

The social protection policy splits resources into social security (contributory) and social assistance (non-contributory). The central argument is that providing social assistance to workers in informal employment reduces the costs of informality relative to formal work, which requires the payment of social contributions. The implicit subsidy to informal employment thereby decreases the relative benefits of formal employment. It drives the growth of informality, mainly through self-employment and the proliferation of small and informal firms (Levy, 2008).

From the workers' perspective, another hypothesis is that non-contributory social assistance reduces the cost of accepting informal employment. That happens because now they will have access to social protection or at least some social assistance benefits outside of formal employment. Furthermore, self-employed informal workers – one-person firms – may also choose informality to reduce taxes and contributions while accessing at least some social protection benefits.

This argument motivated several empirical studies, mainly from Latin America and many evaluating the impacts on labour markets of Mexico's Seguro Popular universal health coverage programme. Recognizing the importance of these studies in discussions on the labour market impacts of social protection programmes, we set out to critically review them.

The core questions addressed in this review are:

- How many studies attempt to empirically assess the impacts of social protection on formal and informal work? What is the geographic and thematic focus of the literature?
- What are the studies' methods, data and definitions? How rigorous and credible are they?
- Are studies reporting consistent or mixed findings? Are effects comparable across studies? What is the magnitude of the observed effects across papers? Do studies report effects, including statistically non-significant effects, for different subgroups of the labour market?

In responding to these main questions, this review summarizes methodological challenges, definitions and operationalization of informality. It also discusses how different social assistance programmes and social security schemes, their characteristics, and other factors conceptually linked to informality are accounted for in models and analysis. The review also summarizes the economic

¹ Social protection floors are nationally defined sets of basic social security guarantees that secure protection aimed at preventing or alleviating poverty, vulnerability and social exclusion (ILO, 2012).

rationale of the literature, and whether authors link economic and social perspectives and include a gender perspective.

The authors identified 27 academic articles, reports and books that attempt to estimate the effects of social assistance and social security schemes on formal and informal employment by assessing changes in employers, firms or employees. Most focus on Latin American countries, but the literature also includes other contexts, such as Thailand and Turkey.

Of the identified literature, 11 studies use credible impact estimation methodologies. We consider these studies credible, as they use treatment and control groups, difference-in-difference models and, in some cases, robustness tests using quasi-experimental analysis. They are the core of the detailed review presented in this paper. Of those 11 studies, seven show significant impact estimates, suggesting increases in informality or reductions in formality as a result of social protection interventions. Most report impacts only on specific groups of the population (Aterido et al., 2011; Bérigolo and Cruces, 2020; Bosch and Campos-Vázquez, 2014; Camacho et al., 2009; Galiani et al., 2014; Juárez, 2008; Wagstaff and Manachotphong, 2012) and, in some cases with caveats, as will be explained in section 3. On the other hand, four studies report decreases in informality or increases in formality (Aşık et al., 2022; Bérigolo and Cruces, 2011; Fernández and Villar, 2016; Seira et al., 2023).

The remaining papers are theoretical, summarize existing evidence or provide descriptive analysis. Two studies are relevant equilibrium analyses that contribute empirically to the discussions (Alonso-Ortiz and Leal, 2018; Antón et al., 2012).

The review is organized as follows. Section 2 describes the methodology used to analyze the selected studies. Section 3 provides an overall summary of the compendium of studies and their results based on the strength and credibility of the literature. The section also highlights data and methodological challenges in reviewed papers, as well as the size and distribution of observed impacts. Section 4 concludes with an assessment of the extent to which studies report on the impact of policies beyond social protection. The section also suggests some issues for further exploration. Section 5 concludes with reflections to consider in future research on the PIT. Reviewed studies are described in detail in an annex.

2. Methodology of the Literature Review

Considering the contexts where contributory social insurance exists for formal workers, we identify the impacts on labour markets of social assistance (tax-financed) and subsidized social security in each study. We summarize each using the following structure:

- The issue of concern, rationale and argument in the country's contexts. This includes the specific conception of PIT and whether social assistance is a central or a single contributor in a broader framework.
- Data sources and type (cross-sectional or panel) and analyzed period, definitions of informality² and other central concepts.
- Methodology, including the time of exposure to the programme, effects on informality, formality and other relevant areas of concern.
- Results and conclusions, potentially by population groups and statistical significance.

The literature identifies different mechanisms by which informality is increased or reduced. The review considers how each study analyzes the scenarios displayed in table 1, considering that a person can be in one of the following states: formality, informality, unemployment or inactivity.

The literature assumes that growth in the labour market is desirable as long as formal jobs grow. However, there is a realistic possibility that a growth in the labour market occurs if informality grows, a non-optimal scenario according to this literature, but a positive result in the sense that people are receiving earnings. Several scenarios may occur further than changes in the size of the labour market; the final result will depend upon mixed combinations of labour market growth and transitions. Only a few studies explicitly identify some of these mechanisms; they at most analyze two mechanisms and rarely do so along with the effects of social protection programmes on informality and formality.

Table 1 categorizes six potential scenarios that by themselves might not be desirable or not fully desirable, hypothesizing the pre-intervention or origin states and post-intervention or destiny states. Informality may grow in time $t+1$ relative to time t , absolutely or relative to total employment, as described in table 1. The Mechanism A, a reduction in the rate of transition from informality to formality, is not desirable since it would mean

² Whether it follows the international definitions of informality agreed by the International Conference of Labour Statisticians (ICLS) and best methodological practices.

that fewer people have the possibility to transit from informal to formal jobs. Mechanism B, a reduction in the rate of transition from inactivity to formality, is not desirable because fewer people have the opportunity of formal employment, which implies that fewer people receive an income and social security. Mechanism C, an increase in the rate of transition from formality to informality, is not desirable since formal jobs are not growing, which means that people give up their contributory social security and the benefits that come with it. Mechanism D, an increase in the rate of transition from inactivity to informality, reflects that people earning an income after not earning an income is at least partly a good thing; however, transitioning from inactivity to informality is not desirable in comparison to transitioning from informality to formality. Mechanism E, an increase in the rate of transition from formality to inactivity, is not desirable because it implies people giving up receiving an income and their job benefits, which is undesirable. However, even in scenario E, informality may decrease if reversed changes occur in A to E. Mechanism F, an increase in the rate of transition from informality to inactivity, implies people giving up receiving income; it seems undesirable, too.

When possible, the review identifies the mechanisms addressed in the literature to contextualize their results.

3. General Summary and Critical Assessment of the Literature

Before going through the impacts and credibility assessment, it is worth clarifying language used indistinctly in different studies and exploring in some detail the original formulation of the PIT as formulated in Santiago Levy's 2008 book "Good Intentions, Bad Outcomes: Social Policy, Informality, and Economic Growth in Mexico" (Levy, 2008).

Levy's seminal work defines "social protection" as a synonym of what WIEGO and this document call "social assistance" – tax-financed social protection (Levy, 2008). Furthermore, following WIEGO's definitions, this paper refers to "social protection" as the whole set of policies that include social assistance and social security, which is referred to as "social policy" in Levy's work and the studies that follow his theory. There is coherence in the definition of social security as a system of contribution-based health, pension, unemployment protection and other benefits such as childcare. All reviewed studies define informal employment as labour not registered with the social security agency. Depending on the study, informal employment may or may not include self-employment, but it always includes salaried work. The cost of formality (social security) relative to the paid salaries is relevant for the context. For Mexico, Heckman and Pagés (2004) report the total social security cost at 34.7 per cent of the formal wages. The studies rarely put in perspective this relative cost and the budget for social assistance benefits in analyzing their effects on formality.

The central argument made by Levy is that informality increases because workers and employers compare the relative costs and benefits of formal and informal employment. In this calculation, social assistance increases the benefits of informal employment, while social security increases the cost of formal employment. Introducing or expanding social assistance therefore alters the cost structure and cost-benefit analysis: social assistance programmes benefit informal workers by expanding benefits with no need for contributions or working formally. Formal work, which does come with mandatory contributions, then becomes more expensive and less attractive (Levy, 2008). In more recent work, Levy (2018) argues that workers value social security benefits less than the cost of contributions due to the perceived poor

Table 1. Changes in the Labour Market's Composition

	Mechanism	Origin (t)	Destination (t+1)
A	A reduction in the rate of transition from informality to formality	Informality	Formality
B	A reduction in the rate of transition from inactivity to formality	Inactivity	Formality
C	An increase in the rate of transition from formality to informality	Formality	Informality
D	An increase in the rate of transition from inactivity to informality	Inactivity	Informality
E	An increase in the rate of transition from formality to inactivity	Formality	Inactivity
F	An increase in the rate of transition from informality to inactivity	Informality	Inactivity

performance of the institutions responsible for providing those benefits.

An important part of this argument is the assumption that informal employment is less productive. Therefore, if it increases, growth is negatively affected. (Levy, 2018). The negative impact of informality on productivity and growth is considered to occur regardless of whether or not informal workers pay indirect taxes (Levy 2018:247-253, Alonso-Ortíz and Leal 2018; Aterido et al., 2011, p. 2). Small informal firms are similarly considered unproductive (Levy, 2018).

To reinforce the argument, Levy (2008, 2018) uses a partial equilibrium labour demand and supply framework to show stylized facts and estimate the efficiency costs associated with a suboptimal labour allocation between formal and informal sectors. He uses data from the Censo Económico (1999, 2004, 2009 and 2014) and the social security registry from the Mexican Social Security Institute (Instituto Mexicano del Seguro Social, IMSS). By using this approach, Levy attempts to show how informal-illegal firms (those with salaried workers not registered at IMSS, the mandatory social security for salaried jobs) represent a form of informality that is particularly pernicious to productivity. He states that there is not a problem of wage rigidity (i.e., that wages cannot be adjusted downwards) but that workers have employment alternatives and, given their limited valuation of social security, will not take formal jobs at lower wages if they can get higher wages and social assistance (Levy, 2008, p. 222). His analysis departs from comparisons of Mexico's productive structure and that of the United States. From our perspective, it is worth mentioning that the design and governance of tax revenues and social protection systems, as well as sectors of the economy, are significantly different in both countries, particularly in benefits such as unemployment insurance, but especially in their enforcement mechanisms. Those facts should be considered when interpreting equilibrium results.

Following in Levy's footsteps are the studies of Antón et al. (2012) and Alonso-Ortiz and Leal (2018), which similarly rely on equilibrium approaches. Antón and his co-authors attempt to illustrate expected changes simulating a reallocation of the total expenditures in social assistance programmes to social security and vice versa, using data from the Censo Económico and the IMSS, both for 2008 (four years after Seguro Popular started). Alonso-Ortiz and Leal (2018) use a friction model (a model that considers impediments of matching between employers and employment seekers) estimated with data from the national occupation and employment household survey for 2012-2013, after the complete

rollout of the Seguro Popular. They predict a slight increase in the share of informality in response to the increase in the expenditure on social assistance motivated by the rollout of Seguro Popular. They explain the mechanism that can lead to increases in informality by two opposing forces: higher taxes that reduce the value of a formal job versus higher transfers that increase the value of an informal job, where the result is the worker's valuation of benefits and contributions to social security. They conclude that the informal sector is inflexible to tax rates and transfer changes. No conclusions are shown regarding the elasticity of the formal sector. Both studies use a single year for their estimations, and the results are not validated in different cross-sections or by using synthetic panels, as Levy (2018:118) does. As a general point, results of these models should be interpreted with caveats, since the significance of their findings relies on model specifications, particularly omitted variable bias.

Some studies investigate if the distribution of taxes and transfers of resources between formal and informal workers affect the size of the informal sector to the extent that they can reduce the benefits of working formally. Altogether, the studies provide different and interesting arguments. Bosch and Campos-Vázquez (2014) argue that because some benefits of the formal sector, such as pensions or disability insurance, are uncertain or expected to be received in the future, workers value them less, making formality less attractive. Seira and co-authors remark on a critical issue – that informal and formal workers are different in their characteristics, i.e., they have different costs and expectations from the labour market (Gammage and Orozco, 2008). Those who argue that Seguro Popular causes informality often assume that workers in both sectors are perfect substitutes. Other authors are concerned about reductions in total labour besides the formal and informal sectors (Aterido et al., 2011; Galiani et al., 2014), suggesting that shocks and economic cycles also are relevant to understanding formality and informality in the labour markets.

More recent studies expand the framework of analysis beyond Levy's pioneering argument by pointing to other factors affecting productivity, including social and gender-based violence, discrimination, monopolistic practices of large firms and the concentration of economic and political power. They highlight that monopolistic concentration and power cause productivity to fall. Without competition, there is less incentive to innovate, create technologies or reduce costs to offer better prices to the consumer. Also, unions' scope extends only to workers in the union rather than those in the rest of the economy (UNDP, 2021).

Critical Review of the Literature

We review a total of 27 studies that, in one way or another, explore the PIT. We classify them as follows:

- Six studies attempt to measure the effects of non-contributory health insurance (Aterido et al., 2011; Bosch and Campos-Vázquez, 2014; Camacho et al., 2009; Juárez, 2008; Seira et al., 2023; Wagstaff and Manachotphong, 2012).
- Four studies analyze the effect of cash transfers (Bérgolo and Cruces, 2020; Canelas and Niño-Zarazúa, 2022; Galiani et al., 2014; Garganta and Gasparini, 2015).
- Three studies attempt to measure the effects of taxes and security subsidies (Aşık et al., 2022; Bérgolo and Cruces, 2011; Fernández and Villar, 2016).
- Six studies are conceptual or based on models. They are integrated approaches that describe a conceptual framework on the structure of the labour market, spending, taxes, subsidies, regulation, inequality and growth. In two cases, they estimate equilibrium models and undertake simulations (Alonso-Ortiz and Leal, 2018; Antón et al., 2012; Levy 2008, 2018; Levy and Cruces and 2021; UNDP, 2021).
- Eight studies analyze trends in various indicators. In particular, they track contributory and non-contributory spending, labour participation and informality (Alaimo et al., 2018; Alvarado et al., 2021; Alzúa and Pacheco, 2021; Kose et al., 2022; Ñopo, 2021; Ñopo and Barinas, 2021; Ñopo and Peña, 2021; Mera, 2021).

Of those, 13 studies attempt to measure the effects of specific social protection programmes. Those are the core of this review. This excludes studies that rely on models or trend analysis. Two of the 13 studies are excluded from the detailed review for lacking credible impact estimation methodologies due to the use of inappropriate control groups (Canelas and Niño-Zarazúa, 2022; Garganta and Gasparini, 2015; both about cash transfers). Reviewed studies generally measure the effects of informality or

formality but rarely both, together with the total behaviour of labour markets (**table 3**).

The 11 studies subjected to a detailed review report mixed impact estimates on informality or formality as a result of changes to social protection systems (**table 2, grey cells**).

- Seven studies report increases in informality or decreases in formality (Aterido et al., 2011; Bérgolo and Cruces, 2020; Bosch and Campos-Vázquez, 2014; Camacho et al., 2009; Juárez, 2008; Galiani et al., 2014; Wagstaff and Manachotphong, 2012).
- Four studies report decreases in informality or increases in formality (Aşık et al., 2022; Bérgolo and Cruces, 2011; Fernández and Villar, 2016; Seira et al., 2023).

Notably, most studies that report significant formality decreases find those only for specific groups. That is the case of four studies for the following groups:

- Employees and employers in small firms (1–50 formal employees) in Mexico (Bosch and Campos-Vázquez, 2014).
- Women aged 18–60 in Mexico City (Juárez, 2008).
- Men or specific industries in Thailand (Wagstaff and Manachotphong, 2012).
- Older people in Mexico (Galiani et al., 2014).

On the other hand, there are studies that report impacts on total formal or informal employment:

- One study reports a *decrease in total formal employment* in Uruguay (Bérgolo and Cruces, 2020).
- Two studies report increases in total formal employment in Turkey and Mexico (Aşık et al., 2022; Seira et al., 2023).
- Three studies report *increases in total informal employment* in Mexico, Colombia and Thailand (Aterido et al., 2011; Camacho et al., 2009; Wagstaff and Manachotphong, 2012).

Table 2. Summary of Studies Reviewed by Interventions and Impacts

	Increase in informality or decrease in formality	Decrease in informality or increase in formality	Lack of credible methodology
Non-contributory health programmes	5	1	
Cash transfers	2		2
Tax reforms and subsidies to social security		3	
Total	7	4	2

- One study reports a *decrease in total informal employment* in Colombia (Fernández and Villar, 2016).

Except for two studies that use a dependent variable that measures formality from the social security registry (Bosch and Campos-Vázquez, 2014; Seira et al., 2023), all the studies use surveys to model informal or formal employment as dependent variables. Only some analyze transitions of flows from table 1 (see also the last column of table 3). All studies use administrative records to construct the intervention variables.

Results of the 11 relevant studies are organized below according to the type of programme and the sign of their results on formal and informal work.

3.1 Effects of Non-Contributory Health Programmes

Although we find variations in the results by country, depending on model specifications and periods analyzed, the reviewed literature suggests that introducing non-contributory health programmes targeted at people outside of formal employment can increase informality in the short term. In general, the evidence of the effects of non-contributory health programmes suggests that informality increases may be related to expansions of the labour market when women or other specific groups previously out of the labour force, or at the end of working ages, enter the informal labour market (Aterido et al., 2011; Galiani et al., 2014; Wagstaff and Manachotphong, 2012). That is due to economically inactive persons entering the labour market (**transition D, table 1**), which in some cases means overall employment gains with no reduction in formal employment. In contrast, reductions in formal employment due to newly introduced non-contributory health programmes are significant only in specific population groups but not for the total population.

In the short to medium term, two studies for Mexico analyzed the effect of Seguro Popular (Bosch and Campos-Vázquez, 2014; Seira et al., 2023) on firms and employees, showing mixed results. The work by Seira et al. (2023) replicates and expands the results of Bosch and Campos-Vázquez (2014). When they replicate Bosch and Campos-Vázquez's estimations with similar data, they get estimates of the same sign but different magnitudes. Then they apply robustness tests, including time-varying proxies for economic activity, a dummy variable for the quarter of implementation of Seguro Popular in

the municipality and 18 additional municipalities not included in the original study because of a lack of information from the Seguro Popular in those areas. Besides, Seira and co-authors also include 300 additional municipalities with data from IMSS.³

Seira and co-authors conclude that formal employment grows, especially in big firms. Nonetheless, they also state that only some of the effect on formal employment should be attributed to the non-contributory health programme, since trends in this variable were not parallel before the intervention for the treated and control areas. There are no significant effects on the number of formal employees in any studied years. By adding 18 additional municipalities, Seira and co-authors find positive and significant effects on total formal employment, starting in the first year of implementation of the Seguro Popular, corresponding to 2.4 per cent in the first year and 2.7 per cent in the second. When controlling for economic activity (luminosity variable) at the municipal level, they confirm a positive effect of 2.3 per cent in the first year. When they add 300 municipalities (increasing the sample from 1,392 to 1,692), the effect in the first year is 3.5 per cent and 5.1 per cent in the second. These positive effects on formal employment with a complete dataset and control variables are significant in the third year by 5.4 per cent (4.8 per cent when they do not include luminosity) and 6.1 per cent in the fourth year.

When using the number of formal employers, there is a negative effect on formality after one year of the intervention (-1.4 per cent) (Bosch and Campos-Vázquez, 2014) and -0.9 per cent with the 18 additional municipalities (Seira et al., 2023). In the fourth year, the effect decreases by 4.4 per cent (Bosch and Campos-Vázquez, 2014) but only 1.5 per cent using a complete sample with 300 additional municipalities (a total of 1,692) and the variable of luminosity as a proxy to the economic activity in the study of Seira and co-authors. All the model specifications in both studies report that the number of formal employers significantly decreases in small- and medium-size firms, but there is no reduction in big firms. These studies do not provide information to support the idea that very small firms get involved in informality. Their information says that Seguro Popular does not affect very small firms (based only on the number of formal workers, not on the total number of workers). As Bosch and Campos-Vázquez (2014) highlight, the firm size variable is endogenous since it only measures the number of formal employees, not the total number of employees or firm size. In other words,

³ Bosch and Campos-Vázquez (2014) say they removed 340 municipalities where Seguro Popular was piloted in 2002 and 2003. It is not clear whether Seira et al. (2023) included or did not include those in their additional 300.

Table 3. Effects on Total Informal and Formal Employment and on Population Groups

Study		Informal employment		Formal employment		Transition (Table 1)
		Total	Group specific	Total	Group specific	
Increase in informality or decrease in formality	Aterido et al. 2011	Increase		Not significant		D
	Bosch and Campos-Vázquez 2014 (1)			Decrease for employers	Decrease for small firms	
	Camacho et al. 2009	Increase				
	Juárez 2009				Decrease for women 18–60	
	Wagstaff and Manachotphong 2012	Increase		Not significant	Decrease in specific industry and for men	B, D
	Bérgolo and Cruces 2020			Decrease		D
	Galiani et al. 2014		Increase, older people		Decrease for older people	C, E, F
Decrease in informality or increase in formality	Aşık et al. 2022			Increase		A
	Bérgolo and Cruces 2011		Decrease for salaried workers with 1+ child			
	Fernández and Villar 2016	Decrease				
	Seira et al. 2023 (1)			Decrease for employers; Increase in employment	Increase in employment by big firms; Decrease for employers in small firms	

Note: Some studies that show effects on total informality or formality may also show results for specific groups.

(1) These studies use the social security registry to measure effects on formal employment.

the data from the IMSS do not reflect the size of the firms, but only the number of formal employees. Therefore, comparing firm size over time may be misleading, as firms that change the status of their employees from formal to informal would appear to reduce their size (from time t to time $t+1$), whereas, in reality, they maintain the same size but no longer provide IMSS cover for their employees.

Neither of these two studies (Bosch and Campos-Vázquez 2014 or Seira et al. 2023) report formal, informal and total firm composition trends. It would be necessary to have this information to understand where the decrease in small formal firms is going, to the very small or medium-big firms, and whether to formal or informal sectors. An essential contribution of Seira et al. (2023) is controlling with a territorial variable to proxy economic activity, since it allows capturing that the programme's rollout was not random but intended to prioritize the poor. Still, they miss describing in the dataset the additional municipalities' characteristics, which would be helpful to explain the mixed results better.

Aterido and co-authors find that Seguro Popular significantly increases informality by 0.7 percentage points using national occupational surveys, but formal employment remains unaltered (Aterido et al., 2011). This is explained as a lower transition from

the informal to the formal salaried sector in the short run (**transition A, table 1**). Bosch and Campos-Vázquez's (2014) study based on the analysis of the registry of formal employment confirms this same unaltered effect on formal work. However, formality shows statistically significant reductions for firms sized 1–50 (number of formal employees or employers). Nevertheless, as explained above, these authors point out that firm size is endogenous, since their data do not have the total firm size but only the size based on formal employees registered with IMSS (Bosch and Campos-Vázquez, 2014). The thesis about the proliferation of small informal firms must be addressed with something other than this type of data. Furthermore, the study from Seira et al. (2023), based on the same data set, shows that a significant increase in the number of big formal firms accompanies those decreases in small formal firms.

Juárez (2008) finds that after three years of the implementation of the Free Medical Care and Prescription Drugs programme in Mexico City, the probability of having a formal job significantly declined by 9.6 percentage points for highly educated women, compared to the labour participation of salaried women workers with lower education levels, as well as residents of Mexico. The method, however, is based on surveys exploiting the

fact that the programme only operated in Mexico City. No administrative registries were used, nor did the author make adjustments to account for differences in local health infrastructure. However, the author applied sophisticated techniques to control for endogeneity and other issues.

Bérgolo and Cruces (2011) similarly report partial impacts. The increase in health-care coverage for dependents of salaried workers in the private sector in Uruguay decreased informality. Incentives to families where heads (-10.0 percentage points) and spouses work informally (-4.2 percentage points) are higher since they had no benefits before the programme rolled out. However, the treatment and control groups chosen for this study are not fully comparable in demographics and preferences since the intervention is only to benefit workers with children. In this case, the control group is households with no children, which may have different behaviours, so the results must be taken cautiously. The authors, however, include statistics suggesting similar pre-treatment behaviours.

A study by Camacho et al. (2009) highlights the influence of model specifications. The effect on informality of the reform of the Régimen Subsidiado, a subsidy for health access that started in 1994 in Colombia, may vary depending on the controls for households and sectors included in the models. The model without control variables suggests a significant 3.2 percentage points increase in informality, whereas the inclusion of appropriate controls reports a non-significant increase of 1.9 percentage points. The authors clearly show that poor specifications can lead to reporting significant estimates. When they omit control variables or assume that the intervention variable absorbs only the variations due to the beginning of the reform, they find significant increases in informality. The identification assumes that the characteristics of the municipalities that implemented the census interviews later are similar to those that implemented it earlier, which is usually unrealistic in this kind of study, since governments tend to target the poorest or marginalized areas first. That may be one of the reasons why significance changes when adding controls to the models.

Furthermore, they highlight that significant results can be confused with a tax increase that coincided in some cities and that the effects are higher for households with a more significant number of potential beneficiaries (large extended families). That may suggest self-selected take-ups. The approach of this study using the SISBEN⁴ poverty database eligibility index and an alternative data

set of a panel constructed from people interviewed in the first and second SISBEN is problematic, as attrition occurs in this type of data, which can induce a selection problem.

Wagstaff and Manachotphong (2012) find the number of people employed informally increased as universal health coverage was achieved in Thailand through the Universal Coverage scheme. In the year the scheme was introduced, 2001, informal employment grew by 2.1 percentage points and, three years later, informality grew by 9.7 percentage points. The probability of being employed in the informal sector for single and married women increased by 8.2 percentage points and 12.5 percentage points, respectively. However, decreases in total formal employment were not significant, consistent with Mexico's Seguro Popular effect from Bosch and Campos-Vázquez (2014). There is a small significant effect of 1.2 percentage points only after three years in the manufacturing industry. Besides, some not-persistent significant changes in formal employment occur for single men after three years (3.0 percentage points) and for married men two years after the introduction of the programme (3.3 percentage points). The programme's effects three years after implementation on the probability of being employed (formal or informal) for single women increased by 7.5 percentage points and for married women by 11.6 percentage points (**transitions B and D, table 1**). For single men, it increased the probability of being employed by 7.0 percentage points, but not for married men.

Interestingly, while Thailand's Universal Coverage scheme appears to have increased informal employment, especially for women and single men, it does not seem to have affected formal employment, except for some isolated effects. This could suggest that increases in informal employment were not the result of decreases in formal employment but from people entering the labour market after inactivity (**transition D, table 1**). This result is also consistent with Bosch and Campos-Vázquez (2014), whose estimates confirm no effects on total formal employment. Although Bosch and Campos-Vázquez estimated a negative effect on expected employers and employees registered in the formal sector, they did not report this effect among firms of different sizes (employers by the number of formal employees). However, the recent study from Seira et al. (2023) breaks down the effect by firm size, showing that a reduction in formal employers' registration occurs in small-sized firms (1–50 formal employees), as well as an increase in formal employees in large firms (250 or more formal workers). These results suggest a reversed

⁴ Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales (SISBÉN).

effect of the PIT of expected increases in small unproductive firms. They are aligned with the higher rate of disappearance of small firms found by Levy (2018:148). In 2008, 57 per cent of small firms (1–5 employees) survived in the market, compared with only 50 per cent survivors by 2013.

While some results suggest the importance of studying the effects of non-contributory programmes in other dimensions than labour market participation, such as mental health benefits, reviewed studies generally do not quantify these effects or perform cost-benefit analyses. Although annex 1 summarizes some of the results obtained in each study, this approach goes beyond the scope of the present review.

3.2 Effects of Cash Transfers

Four studies examined the effects of cash transfers on specific population groups in the labour market structure. As noted earlier, two lack credible methodologies (Canelas and Niño-Zarazúa, 2022; Garganta and Gasparini, 2015). They set out to explore the potential for disincentives to formal employment as a result of social assistance programmes in Bolivia and Argentina, respectively. We detect methodological problems in their approaches. Canelas and Niño-Zarazúa (2022) do not use an appropriate control group (age discontinuity comparing older vs working ages). Garganta and Gasparini (2015) show design-related biases that are not considered when selecting the control groups.

Galiani et al. (2014) find that Mexico's non-contributory old-age pension "70 y más" for adults over 70 years of age in small communities (fewer than 2,500 inhabitants) decreased paid work by 20 per cent for adults 70 and older, with most switching from paid work to working in the family. The high eligibility age of the pension suggests that the decrease in formal employment outside the home in favour of informal work within the household was at least partially driven by the likely lower and more flexible workload of the latter. The share of beneficiaries in formal paid work fell from 23 per cent to 18 per cent. Those working in family enterprises without pay rose from 13 per cent to 19 per cent (**transitions C, E, F, table 1**). Hours in salaried work fell by 2.6 per week, and hours in unpaid work increased by 2.2 per week. The programme does not affect the total labour participation or hours worked of people age 70 or older; these remain stable at around 0.37 per participation and 14 hours worked per week. Household labour income fell, indicating that 38 per cent of the pension was used to offset reductions in labour income. There is no empirical support for anticipation effects regarding household total labour

earnings or savings (i.e., consumption anticipation), contrary to the studies from Canelas and Niño-Zarazúa (2022) and Garganta and Gasparini (2015), which lack adequate controls. Besides, it has positive effects beyond the economic ones, reducing depression in older adults by 12 per cent and increasing household spending by 23 per cent.

The results of Galiani et al. (2014) on Mexico's old-age pension are similar to those of Canelas and Niño-Zarazúa (2022) in Bolivia. However, the former raises estimation problems in its methodology and addresses them, taking into account differences in the characteristics of the localities by using difference-in-differences. Canelas and Niño-Zarazúa (2022), on the other hand, do not even present a definition of formality and informality. They restrict their sample to the potential beneficiary population (households with at least one member between 55 and 65 years old). By limiting the sample, their results are only for these segments, not the total population.

A study by Bérigolo and Cruces (2020) on a cash transfer for children and pregnant women in Uruguay contributes to the literature by breaking down effects for populations with different propensities (lower, mean and higher) of being formally employed. The authors find virtually no effect on individuals with a low propensity to be formally employed and a greater-than-average negative effect on individuals with a medium propensity to be formally registered employees. They remark that those with a low propensity to be formally employed did not respond much to the program's financial incentives, probably because they had limited opportunities to work as registered employees from the start. With caveats, since data is unavailable for the baseline, authors report that decreases in formality (6.0 percentage points in the total population) correspond to significant increases in unemployment (**transition E, table 1**), not significant increases in informality.

Garganta and Gasparini (2015) analyze that Argentina's programme Asignación Universal por Hijo (AUH), targeted to beneficiaries without social security, explicitly conditions people out of a formal job. The choice of the control group for this result is questionable, comparing people aged 18–70 in households with and without children or children with a disability. This factor may cause a self-selection problem, since the absence of children and people with disabilities creates different conditions in the home that may alter the incentives for formal or informal work beyond the AUH stimulus, including care needs that impede women from participating in the labour market.

3.3 Effects of Tax Reforms and Subsidies to Formal Employment and Social Security

Two studies attempt to measure effects of taxes and subsidies on formal employment via social security contributions. Another study measures the effect of extended benefits and contributions from social security for the families of registered workers. Results of these studies suggest that policies oriented to reducing barriers to formal employment may be more effective in increasing formal employment and reducing informality.

Fernández and Villar (2016) find that Colombia's Income Tax for Equity (*impuesto sobre la renta para la equidad*, CREE), which resulted in a reduction in the payroll tax, decreased the informality rate three years after the reform. Informality decreased from 2.0 to 3.1 percentage points at the national level and 4.3 to 6.8 percentage points in 13 main metropolitan areas. Low-educated workers had the most considerable effects, around 10.4 per cent, whereas workers with a high school education experienced a 6.9 per cent decline in informality. For men aged 25–45, informality rate decreased by 5.1 per cent.

Aşık et al. (2022) find that, in Turkey, a subsidy to social security contributions increased formal employment in the three years following the 2016 implementation of the subsidy by 3 per cent, 6.1 per cent and 7.2 per cent. Also, the study finds a significant effect of 1.9 per cent on the likelihood of being formally salaried. In contrast, the likelihood of being a salaried worker was not affected, indicating that the increase in formal employment comes mainly from converting existing jobs into formal jobs rather than from new job creation by firms (**transition A, table 1**).

Uruguay's 2008 Health Care Reform extended coverage to the children of formal workers. After the reform, employees' contributions grew from 3 per cent to 6 per cent of taxable earnings for individuals with children, while contributions for individuals without children increased from 3 per cent to 4.5 per cent. Bérigolo and Cruces (2011) find that, in the private sector, the reform induced some informal salaried workers with at least one child to transition into formal employment, with a significant decrease of 1.3 percentage points (5 per cent) in the probability of working informally. For women, the decline in informality was higher (2.6 percentage points). The reform reduced the informality of small firms (1 employee) by 4.6 per cent. Furthermore, women married to men working in the informal sector experienced a decrease of 10.0 percentage points in the probability of working informally. In contrast, men married to women working in the

informal sector experienced a decrease of just 5.0 percentage points. The effects of reform if both are informal are a decrease of 4.2 percentage points on the likelihood of informality.

4. Reflections on the Literature and on the Relationships between Social Protection and Labour Markets

This section offers overall reflections on the reviewed literature and on the complex relationships between social protection and labour markets.

The literature does not support strong claims about the effect of social protection programmes on labour markets, and interaction between the two is highly context specific. A number of studies do find statistically significant effects of social assistance programmes, but the overall literature is mixed. Some studies suggest that social assistance has increased informality, while others find just the opposite. Where effects are observed, they mainly relate to specific groups. Some studies do find effects for the total population, but the majority of effects relate only to specific population groups.

Data, definitions and assumptions are influential, with a number of studies illustrating how sensitive findings are to changes in data and model specifications. In the case of Mexico, the effects are mixed due to pre-intervention trends in treatment and control groups that authors could not fully address with the data and methods applied or vary on the data source and period analyzed (Seira et al., 2023). In Colombia, significance vanishes as more complete specifications are used (Camacho et al., 2009). Decreases in total formality are reported in Bérigolo and Cruces (2020) and only for employers in Seira et al. (2023).

There is a wide gap between theories on the effects of social protection programmes on labour markets and aspects tackled in the studies. The methodological approaches in the reviewed studies restrict the quantitative analysis to the available data and the scope of the models, thus considerably reducing the complexity of the theoretical framework. That is relevant because even when studies are rigorous in what they analyze, data might be biased or face omitted variable problems, which implies that the estimates might be inaccurate. The studies based on registries of formal employment in social security capture only the profile of formal employees, assuming that workers in formal and informal employment are equal. That might be imprecise as, for instance, women in part-time jobs are prone to be in informal employment. Another

concern may be that a programme's effect on the labour market may reflect the effect of another set of interventions that target the same population or territory but are not controlled for in the estimates. That may be the case for studies on Seguro Popular in Mexico, which do not account for the coverage of the Progres-Oportunidades-Prospera conditional cash transfer. Since these two interventions converged in territories, Seguro Popular parameters might capture both effects: income transfers and non-contributory health insurance.

The methodologies of reviewed studies are credible and appropriate in 11 out of 13 studies attempting to measure the effects of social assistance programmes. They involve difference-in-difference analysis with appropriate treatment and control groups to credibly estimate causality. However, since most of the literature is from Mexico, a single study unifying all the data sources and validating results still needs to be done, especially considering that we observe mixed results in some of them, for different periods and for partial data sources (for example, IMSS data do not allow seeing the whole market, as surveys and economic census do).

Methodologies could be refined by including omitted variables, especially in studies allowing for spatial correlations, either by matching from other sources at the geographic level or by adding indicators that capture characteristics of the studied areas (see, for example, the fixed effects results in municipal areas documented by Camacho et al. 2009 or the inclusion of the luminosity variable of Seira et al. 2023 as a proxy of economic activity). Omitted variables and controls for correlation in geographic areas are essential issues, since both studies show changes in the significance and magnitude of the effects of non-contributory health insurance in Colombia and Mexico, respectively.

Data used in the studies are generally the best source of available information based on official surveys, economic censuses and administrative registries. However, none of the studies uses the complete set of available data to validate or provide more comprehensive results. Instead, the studies restrict their claims based on the limited data they use, which, although appropriate, does not allow for confirming many of the claims that the PIT posts, or even might show opposing results (see Bosch and Campos-Vázquez 2014 vs Seira et al. 2023). One pending topic is the assessment of the assertions about the proliferation of small and unproductive firms due to social assistance programmes, which is not measured in the reviewed studies.

Although the studies reviewed explore the roll-out of programmes across municipalities, no study

uses a geospatial or territorial approach, which is relevant from the point of view of social assistance analysis, because many programmes have targeting strategies toward rural, marginalized areas, or areas where poverty rates are high and services are scarce, or where labour demand is restricted. Geospatial models allow considering spatial correlations to adjust effect estimates using characteristics shared by households in delimited territories (countries, states or municipalities, for example), such as labour markets, the availability of health or childcare services or even the existence of offices to do paperwork and procedures to be included in the social security registry. Distance to services, for example, is also part of the private monetary and time costs that workers have to bear to access formality. Spatial correlations alter the estimates. An illustrative example of the spatial correlation is shown in the results by Camacho et al. (2009), who clearly show how using data from nested units of analysis can substantially change estimates to the extent of becoming insignificant. Another example is the study by Seira et al. (2023), whose results, controlling a spatial variable of luminosity as a proxy of economic activity, considerably alter the estimation of the effects of the Seguro Popular in Mexico.

Studies do not analyze the complex context that may induce formality or reduce informality: such as policies to improve firms' creation, growth and consolidation – interventions aimed to increase competitiveness, scale up or support the firm's life cycle, taxes or quality of the benefits from social security, which may have an even more significant influence on the labour market. As a result, they do not provide evidence or proposals to support policy decisions to improve the quality of social security benefits or firms' competitiveness and economic growth.

There needs to be research linking social protection with the policies and practices that should motivate growth, productivity and formalization of the labour market. Future research should centre on the capacity and potential strategies of firms and the formal sector to absorb informal, unemployed and inactive workers, with particular attention to the match of labour demand and supply.

The absence of integrated analyses of social assistance, social security and taxes reduces the ability of studies to make recommendations on the design of systems. Levy's policy recommendations to increase growth and productivity pose reductions in social security contributions from employers as well as reductions in social security benefits, providing workers and their families a more limited package of goods and unifying health services provision, financed with increases to consumption

taxes accompanied with VAT refunds for poor households (Levy, 2018). This attempts to reduce formality costs by reducing benefits instead of increasing their value for the workers by improving their quality and availability. However, the expected results of such a reform are not assessed, even in the studies that estimate partial equilibrium or friction models to simulate different scenarios (Antón et al., 2012; Alonso-Ortiz and Leal, 2018; Levy, 2018). For example, they do not assess the likely result of this kind of reform in the growth of small, medium or big firms or where the reduction of the social security contributions no longer paid by firms is expected to flow, either to the firm's profits, to tax-deductible investments, to wage increases for workers or another destination. That may influence income distribution and inequality, so simulations of its redistributive impact would be desirable.

Similarly, studies reviewed here mainly describe social assistance policies and measure the impact of a specific programme on a partial indicator of the labour market, i.e., formality or informality. Studies that analyze changes in taxes and increases in the subsidies for social security (Aşık et al., 2022; Bérgolo and Cruces, 2011; Fernández and Villar, 2016), do so separately from the effects of social assistance.

As studies do not explore the design of schemes, they reveal little about the mechanisms of observed or theorized effects and do not provide much guidance for potential reforms. By not delving into the design of social assistance programmes, social security schemes and tax policies, studies do not explore in detail how exactly incentives may be generated by these policies. Despite the studies' primary focus on health benefits, we find no data or approach measuring the pertinence, quality or delivery of those services. Also, there is no comparison of benefits provided by contributory, non-contributory and private services.

Few studies explore transitions in the labour market, and most lack considerations on the gendered nature of formal and informal work and care. Few studies attempt to identify whether informality growth comes from formality reductions or the labour market's total behaviour. Similarly, studies generally do not explore whether the effects occur in specific sectors of the economy, i.e., whether effects of informality growth may occur in agricultural, industrial or services sectors. That might be relevant to delineate where and why informality proliferates, as attempted in the studies of Aterido et al. (2011) and Wagstaff and Manachotphong (2012).

As women workers tend to be overrepresented in the services sector, they might find independence and freedom in informal work, which can allow them to allocate working hours, as Camacho et al. (2009) point out. Informality may allow women to make work compatible with gender roles and responsibilities in care and domestic unpaid work. Also, when women are secondary income earners, they might have fewer incentives to formalize if their spouses' jobs already grant the household members access to social security benefits, mainly because women's labour costs differ from men's due to gender roles. Women are often the primary carers for children and sick, disabled, and elderly household members, and the cost of replacement of care and domestic work affects their labour participation (Gammage and Orozco, 2008).

Although this result may be endogenous, a social mobility approach would be helpful to understand the mechanisms of access to social security and a deeper analysis of what constitutes the main barriers to formalization, whether it has to do with insufficient infrastructure, intergenerational inherited occupations or gender needs to make compatible paid and unpaid work. Intra-household behaviour is not analyzed commonly, except in some cases and in a limited way, as in Bérgolo and Cruces (2011) and Galiani et al. (2014).

5. Conclusion

Although the design, spending and impacts of social assistance schemes should remain the subject of careful analysis, this should not replace the research and policy focus on the fundamental challenges of social protection, which is the continued need to improve quality and coverage in ways that are affordable, sustainable and promote development.

Qualitatively, a common denominator is that studies rarely put in perspective the number of social assistance benefits analyzed compared to the costs of formality.

While the research suggests that economic incentives matter and can be influential for some groups, the inconclusive and narrow nature of PIT literature also highlights that a comprehensive framework for the impact of social protection on formalization (or de-formalization) requires additional insights and theorizing, including the role of care responsibilities shouldered mainly by women, barriers to formal employment and the ability of economies to generate sufficient formal jobs in the right places. Moreover, future research needs to analyze the benefits of social assistance relative to the costs of formality.

Annex. Summary Tables of Reviewed Studies

Table 4. Annex 1. Summary of Studies: Effects of Non-Contributory Health Programmes		
Authors/Year	Country/Programme/Period/Definition	Results: Informality, Inactivity, Social Benefits, etc.
Non-contributory health programmes		
Aterido, Reyes, Mary Hallward-Driemeier, Carmen Pagés. 2011. Does Expanding Health Insurance Beyond Formal-Sector Workers Encourage Informality? Measuring the Impact of Mexico's Seguro Popular	<ul style="list-style-type: none"> • Country: Mexico. • Programme: Seguro Popular, 5 years exposure. Period: 2000–2009. • Type of data: Cross section for the whole period and panel (up to 5 quarters in the period). • Method: Regression model, treatment and control. • Data: Encuesta Nacional de Empleo (ENE) 2000–2004; Encuesta Nacional de Ocupación y Empleo (ENOE) 2005–2009. Administrative records of Seguro Popular's coverage 2002–2008, municipality level, quarterly rotative panel. • Definitions: Formality as workers with social security. 	<ul style="list-style-type: none"> • Increases in informality because Seguro Popular slows down the transition from the informal to the formal sector. It increases inactivity of those formerly in formal and informal jobs, the latter with greater intensity. The employed population, especially the informal one, is reduced. • Statistically significant effects: <ul style="list-style-type: none"> • Increases total informality by 0.7 percentage points or 1.5% (article's table 4). • No changes in formality. • Labour flows: <ul style="list-style-type: none"> • -3.1 percentage points from informal salaried workers to formal salaried workers or 20% in this flow. • 0.5 percentage points of salaried workers towards informality from formal employment. • Does not increase informality through self-employment or other forms of work from formal employment. • 0.5 percentage points increase in inactivity from formal salaried workers. • 2.3 percentage points increase in inactivity from informal self-employment. • 1.8 percentage points increase in inactivity from other informal jobs.

Authors/Year	Country/Programme/Period/Definition	Results: Informality, Inactivity, Social Benefits, etc.
<p>Bosch, Mariano, and Raymundo M. Campos-Vázquez. 2014.</p> <p>The trade-offs of social assistance programs in the labor market: The case of the “Seguro Popular” program in Mexico</p>	<ul style="list-style-type: none"> • Country: Mexico • Programme: Seguro Popular, 5 years exposure • Period: 2000–2011 • Type of data: Municipalities panel using administrative records • Method: Difference-in-Difference, regression model • Data: IMSS records 2000–2011; Censo de Población y Vivienda 2000; Conteo de Población y Vivienda 2005; ENE 2000–2004; ENOE 2005–2011; Health records of the Dirección General de Información en Salud 2010 • Definitions: <ul style="list-style-type: none"> • Formal workers: work for firms that are law-abiding and authorized by the government, benefit from health insurance, pension, and comply with workplace security measures. • Informal workers: firm owners that do not follow the rules of governmental institutions and whose employees are not covered by formal labour insurance. 	<ul style="list-style-type: none"> • Non-significant decreases in formal employment. • Total number of formal firms decreased 0.7% after implementation and kept decreasing 1.4%, 2.2%, 2.9% and 4.4% respectively for the four years after implementation. • 36,000 fewer registered formal employers relative to registrations estimated in absence of the programme in firms under 50 formal employees, 4.6%. • Employee records decreased by 171,000 relative to registrations estimated in absence of the programme in firms under 50 formal employees, 4.0%. • Employers increased 5.4% and 15.7% employees, the results suggest that increases should have been 89% and 26% higher, respectively. • Due to the reassignment of workers outside the formal sector, income losses are estimated at between 0.08% and 0.36% of GDP and loss of output in the order of 0.03% to 0.09%, due to the reallocation of formal sector enterprises. • The number of registered employers decreases by 0.7% in the first year of operation of the Seguro Popular, at the end of the four years the effect reaches 4.4%. • Decrease of employees by 3.8%, 5.1%, 3.3% and 3.9% for firms of 1, 2–5, 6–50 and 51–250 employees, respectively. There were no significant effects for firms with more than 250 employees. • Decrease of employers by 3.8%, 4.9%, 4.1% and 3.3% for firms of 1, 2–5, 6–50 and 51–250 employees, respectively. There were no significant effects for firms with more than 250 employers. • The effects appear stronger in rural and small municipalities. The point estimates suggest a decreased number of registered employers for all firm sizes below 50 employees by twice as much in rural municipalities compared to the municipality size distribution.
<p>Camacho, Adriana, Emily Conover, Alejandro Hoyos. 2009.</p> <p>Effects of Colombia's social protection system on workers' choice between formal and informal employment</p>	<ul style="list-style-type: none"> • Country: Colombia • Programme: Subsidized health insurance, exposure 12 years • Period: 1992–2005 • Type of information: Cross-sections • Method: Profit regression model • Data: Encuesta Nacional de Hogares, (ENH) 1986–2000; Encuesta Continua de Hogares (ECH) 2001–2005) at individual level and poverty database (SISBEN) at municipal level • Definitions: Informality – employees 12–65 years old who do not contribute to the health system. 	<ul style="list-style-type: none"> • Informality increases by 3.2 percentage points; however, the effect is reduced to a 1.9 percentage points non-significant increase when the appropriate controls for household and sector are included in the model. • 1.8 to 1.9 percentage points of significant increase in informal employment using discontinuity in eligibility from an incomplete or biased data source (SISBEN after 1998). • Not significant for households with no vulnerable members, an inverted sign for households with vulnerable members.

Authors/Year	Country/Programme/Period/Definition	Results: Informality, Inactivity, Social Benefits, etc.
<p>Juárez, Laura. 2008.</p> <p>Are Informal Workers Compensated for the Lack of Fringe Benefits? Free Health Care as an Instrument for Formality</p>	<ul style="list-style-type: none"> • Country: Mexico • Programme: Free Medical Care and Prescription Drugs, Mexico City, 3 years exposure • Period: 2000–2004 • Type of information: Cross section. • Method: Profit model, Difference-in-Difference • Data: Encuesta Nacional de Empleo Urbano (ENEU) • Definitions: Informality as workers with no health insurance or other statutory employment benefits. 	<ul style="list-style-type: none"> • We suggest caution in the use of these results, since Mexico City concentrates the health infrastructure of all national institutes, whereas control states do not. • Results limited to Mexico City, women salaried workers 18–60 years old. In addition, for a subsample of salaried women with a maximum of secondary education (12 years of schooling) and up to 30 years old. • Effects on formality during the year of initiation of the programme are not significant. • 4.2, 10 and 9.6 percentage points decrease in the probability of being formal in each subsequent year of exposure to the program, 2002, 2003 and 2004 respectively, for salaried women with less than 12 years of education, compared to the control group (states of Guadalajara and Monterrey), ages 18–60. • 6.7, 14.3 and 10.7 percentage points decrease in the probability of being formal in each subsequent year of exposure to the program, 2002, 2003 and 2004 respectively, for salaried women with less than 9 years of education, compared to the control group (states of Guadalajara and Monterrey), ages 18–60. • 4.9, 7.2 and 12.8 percentage points decrease in the probability of being formal in each subsequent year of exposure to the programme, 2002, 2003 and 2004 respectively, for salaried women, compared to the control group (states of Guadalajara and Monterrey), younger than 30. • Non-significant effect on the probability of formal insertion for salaried workers who are already covered as dependants (via spouses or children). • 16% to 23% informal wage premium with respect to formal ones, adjusting for probability of formal labour insertion (it does not specify if it is before or after the intervention, it is suggested that it is before).

Authors/Year	Country/Programme/Period/Definition	Results: Informality, Inactivity, Social Benefits, etc.
<p>Seira, Enrique, Isaac Meza, Eduardo González-Pier, Eduardo Alcaraz Prous. 2023.</p> <p>Did Mexico's Seguro Popular Universal Health Coverage Programme Really Reduce Formal Jobs?</p>	<ul style="list-style-type: none"> Country: Mexico Programme: Seguro Popular health coverage programme Period: 2000–2011 Type of information: Municipal panel Method: Probability model, Difference-in-Difference Data: IMSS registry 2000–2015; Social assistance health registry 2004–2019; ENOE 2000–2015; Censo de Población y Vivienda 2000, 2005, 2010 2015 and 2020; Night luminosity and health services geo-data. Definitions: <ul style="list-style-type: none"> Informality as workers not registered with IMSS. Worker in the private sector as formal if they are registered with IMSS and therefore pay payroll taxes (used to finance social security for workers in the private sector). 	<ul style="list-style-type: none"> There is no evidence of SP decreasing either the number of firms registering workers or the number of registered workers themselves. Adding luminosity variables as proxy for economic activity and a trend dummy, no negative effects are found on formal jobs for any firm size.
<p>Wagstaff, Adam, and Wanwiphang Manachotphong. 2012.</p> <p>Universal Health Care and Informal Labor Markets: The Case of Thailand</p>	<ul style="list-style-type: none"> Country: Thailand Programme: Universal health coverage scheme, exposure 4.8 years Period: 1997–2005 Type of information: Individuals panel Method: Ordinary Least Squares (OLS) regression Data: Labour Force Survey (before 2000 quarterly, 2001–2005 monthly); Administrative data on scheme 1985–2000. Definitions: Formality defined as having health coverage with contributions proportional to income, from employee and employer and subsidized. 	<ul style="list-style-type: none"> Increases in the informal sector by 2.1 percentage points in the year of introduction, and three years later by 9.7 percentage points, mainly from inactivity (transition D, table 1). Decreases in the total formal sector are not significant, with a significant effect of 1.2 percentage points only after three years and in the manufacturing industry. Some not persistent significant changes for single men after three years 3.0 percentage points and married men two years after 3.3 percentage points. No significant effects for women. Increases in the probability of being employed (formal or informal) for single women 7.5 percentage points, and married women 11.6 percentage points. Increases in the probability of being employed in the informal sector for single and married women in 8.2 percentage points and 12.5 percentage points respectively.

Note: Studies are classified as follows. Orange: Significant increase in informality or decrease in formality. Yellow: Increase in informality without significant change. Green: Significant decrease in informality or increase in formality.

Table 5. Annex 2. Summary of Studies: Effects of Cash Transfers

Authors/Year	Country/Programme/Period/Definition	Results: Informality, Inactivity, Social Benefits, etc.
<p>Bérgolo, Marcelo, and Guillermo Cruces. 2020.</p> <p>The Anatomy of Behavioral Responses to Social Assistance when Informal Employment is High</p>	<ul style="list-style-type: none"> • Country: Uruguay • Programme: Cash transfers to households with children under 18 and pregnant women, 5 years exposure. • Period: 2005–2012 • Type of information: Panel data on heads of households 18–57 years old and single mothers 18–57 • Method: Discontinuity regression, Difference-in-Difference • Data: Administrative records from the applications to the programme, programme participation registry, registry of the Social Security Administration of Uruguay, household follow-up survey and Household continuous survey. • Definitions: <ul style="list-style-type: none"> • Formality as being registered in the social security registry and paying payroll taxes. • Informality as not registered with the social security registry and not covered by social security benefits. 	<ul style="list-style-type: none"> • Decreases formal employment by 6.0 percentage points (13%) in the total population and 8.7 percentage points (19%) for single mothers. Decrease in formal employment does not use a baseline. It corresponds to a statistically significant increase in unemployment and a non-significant increase in informality. • For the group of average propensity to be employed in formality the effect is -8.9 percentage points and for single mothers -12.4 percentage points • Virtually no effect on individuals with a low propensity to be formally employed and a greater-than-average negative effect on individuals with a medium propensity to be a registered employee. • Warning in using results on labour flows. Estimates based on a consistent sample (equal information about formality in follow-up survey and social security registry) indicate a statistically significant decrease in registered employment of about 10 percentage points, which might be biased upwards because they are not controlling for baseline difference in the outcome corresponded to a significant increase in non-employment of about 5 percentage points, and a similar non-significant increase in informal employment.
<p>Canelas, Carla, and Miguel Niño-Zarazúa. 2022.</p> <p>Informality and Pension Reforms in Bolivia: The Case of Renta Dignidad</p>	<ul style="list-style-type: none"> • Country: Bolivia • Programme: Non-contributory pension for adults over 60, 3 years exposure • Period: 2005-2011 • Type of information: Panel data • Method: Differences-in-Differences method and matching • Data: Encuesta Nacional de Condiciones de Vida • Definitions: Not available 	<ul style="list-style-type: none"> • We do not recommend using these results. Study does not use an appropriate control group (age discontinuity comparing older vs. working ages). • Results for sample restricted to population of households with at least one member between 55 and 65 years. • There are no effects on total labour participation. • Reduction of 2 hours of work for 12–18 years old living with a beneficiary. • Living with a person with access to the programme in rural areas increases the probability of being informal by 8 percentage points. • The anticipation effect is positive (4.8 percentage points for the entire sample) and statistically significant.

Authors/Year	Country/Programme/Period/Definition	Results: Informality, Inactivity, Social Benefits, etc.
<p>Galiani, Sebastian, Paul Gertler, Rosangela Bando. 2014.</p> <p>Non-Contributory Pensions</p>	<ul style="list-style-type: none"> Country: Mexico Programme: Non-contributory pension for adults over 70, 1 year exposure Period: 2007–2008 Type of information: Panel locality Method: Regression, Difference-in-Difference Data: Surveys from the National Institute of Public Health for the states of Guerrero, Querétaro, Michoacán, San Luis Potosí, Puebla, Veracruz and Hidalgo. Definitions: Not available. 	<ul style="list-style-type: none"> The proportion of treated individuals doing paid work is reduced by 20%, with most of these people switching from their former activities to work in family businesses. The share of beneficiaries working for pay fell from 23% to 18%. The share working without pay in family enterprises rose from 13% to 19%. Hours in wage work fell by 2.6 per week, and hours in unpaid work increased by 2.2 per week. The programme does not appear to have an effect on the total labour participation or hours worked of people age 70+; these numbers remain stable at around 0.37 per participation and 14 hours worked per week. Household labour income fell, indicating that 38% of the pension was used to offset reductions in labour income. There is no empirical support for the presence of anticipation effects in regard to household total labour earnings or savings (i.e., consumption anticipation). Other effects: <ul style="list-style-type: none"> The mental health of older adults in the programme improves significantly. The score on the Geriatric Depression Scale decreases by 12%. 71% of the pension is spent on shared household consumption, which translates into a 23% increase in household consumption. 28% is taken in the form of greater leisure. Negative effect on household labour income per adult equivalent to 17% of household labour income.
<p>Garganta, Santiago, and Leonardo Gasparini. 2015.</p> <p>The impact of a social program on labour informality: The case of AUH in Argentina</p>	<ul style="list-style-type: none"> Country: Argentina Programme: Child grant conditional on not being in formal employment, 2 years exposure Period: 2005-2011 Type of information: Panel of unemployed and informal workers (18–70 years) Method: Difference-in-Difference Data: Encuesta Permanente de Hogares (EPH); conducted by the Instituto Nacional de Estadística y Censos (INDEC) and the Administración Nacional de Seguridad Social (ANSES) Definitions: Informality as workers not in formal employment relationships, with no statutory employment benefits 	<ul style="list-style-type: none"> We do not recommend using these results. Control group appears to be inappropriate. 8.2 percentage points drop in the probability of being formal, given an initial informal employment condition (5.3 percentage points women and 10.2 percentage points men).

Note: Studies are classified as follows. Orange: Significant increase in informality or decrease in formality. Yellow: Increase in informality without significant change. Green: Significant decrease in informality or increase in formality.

Table 6. Annex 3. Summary of Studies: Effects of Tax Reforms and Subsidies to Formal Employment and Social Security

Authors/Year	Country/Programme/Period/Definition	Results: Informality, Inactivity, Social Benefits, etc.
Aşık, Güneş, Laurent Bossavie, Jochen Kluve, Efsan Nas Özen and Metin Nebiler, Ana Maria Oviedo Silva. 2022. The Effects of Subsidizing Social Security Contributions. Job creation or Informality Reduction?	<ul style="list-style-type: none"> Country: Turkey Programme: 40% reduction of firms' social security contributions, 2 years exposure. Period: 2004–2018. Type of information: Firms panel. Method: Regression, Difference-in-Difference Data: Household Labour Force Survey 2004–2018, 2012–2018; social security registry data. Definitions: Informality as workers not registered in social security. 	<ul style="list-style-type: none"> Increases formal employment by 7.67% attributable to the 6-point subsidy in firms that received the subsidy and 2.4% in all firms of eligible provinces, whether they received or did not receive the subsidy. Increases in formal employment persist over time for all regions; the effect in 2016 was an increase of 3%, 6.1% for 2017 and 7.2% for 2018. The region with the biggest effects shows an increase of 8.4%, 13.6% and 17.1% for the same period. The likelihood of being a formal salaried employee increased 1.9%. Effects were bigger for larger firms (more than 10 employees) with an effect of 2.7%, while smaller firms (10 employees or less) increased 1.5%. The main effect comes from the change of status from informal to formal workers. The elasticity of demand indicates that covering 1% of the employee's labour cost increases formal employment by approximately 0.8%
Bérgolo, Marcelo and Guillermo Cruces. 2011. Labour informality and the incentive effects of social security: Evidence from a health reform in Uruguay	<ul style="list-style-type: none"> Country: Uruguay Programme: Legal reform of the extension of health-care coverage to dependents of formal salaried workers in the private sector, 1 year exposure Period: 2001–2009 Type of information: Household cross sections. Method: Regression, Difference-in-Difference Data: Encuesta Continua de Hogares (ECH) 2001–2009 Definitions: <ul style="list-style-type: none"> Formality as individuals who work for firms registered in the social security system. Informality as salaried workers not registered in the social security system by their employers. 	<ul style="list-style-type: none"> Caution is advised in the use of the results, because the treatment and control groups are not comparable in demographics and preferences, although they show similar trends before the intervention. Decreases total informality by 1.3 percentage points (5%) for salaried workers with at least one child, 2.6 percentage points for women, significant changes. Decreases informality by groups: <ul style="list-style-type: none"> 1.0 percentage points for workers aged 19–29, significant, 1.5 percentage points for workers aged 30–49, significant and 2.2 percentage points for workers aged 30 to 49, significant. 2.0 percentage points for workers with secondary education, significant and 0.6 percentage points for workers with tertiary education, significant. 4.7 percentage points workers in small firms, significant. 0.8 percentage points workers in larger firms, significant. 10.0 percentage points married women with spouses in the informal sector, significant. 4.2 percentage points if both spouses are informal, significant.
Fernández, C., and L. Villar. 2016. The Impact of Lowering the Payroll Tax on Informality in Colombia	<ul style="list-style-type: none"> Country: Colombia Programme: Reduction in payroll taxes from 29.5% to 16.0% and increase in income tax, 1 year exposure. Period: 2012–2014 Type of information: Household cross sections. Method: Matching, Difference-in-Difference Data: Gran Encuesta Integrada de Hogares (GEIH); Encuesta Continua de Hogares (ECV), years 2008–2016, 2012–2014 Definitions: Informality as not contributing to health or pensions insurance. 	<ul style="list-style-type: none"> Decreases in total informality by 2.0 and 3.1 percentage points, excluding self-employment from the control group. Decreases in informality by 4.3 and 6.8 percentage points, excluding self-employment from the control group, in the 13 main metropolitan areas where the tax change was applied, (similar results under two definitions of legal informality and by firm). Decreases in informality by 10.4% for low-educated workers (primary or less), 6.9% for the workers with high school and 5.1% for men ages 25–45 years.

Note: Studies are classified as follows. Orange: Significant increase in informality or decrease in formality. Yellow: Increase in informality without significant change. Green: Significant decrease in informality or increase in formality.

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