

Essays on informality and social protection in developing countries

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Residue is the memory, the enduring presence of the insuppressible continuum. Whatever kind of order is established, in whatever context and of whatever kind, that order will leave something outside itself—and will have to leave that thing outside if it purports to be an order. That something outside order is residue, but also surplus. Residue is what is left out, surplus is the part left out which is offered up. The meaning of order lies, first and foremost, not in the way the order itself is arranged but in what that order determines to do with the part that does not belong to it.

ROBERTO CALASSO

Introduction

Labor informality is a widespread and persistent phenomenon, particularly in the Global South. According to the International Labour Organization (ILO, 2023), almost 2 billion people, the 60% of total employment worldwide, worked informally in 2019, a number that has surely risen ever since due to the pandemic and the several unfolding crises. Informality, understood as the forms of work and production outside of regulations, is associated with low standards of living, vulnerability, precariousness, economic insecurity, and deprivation. It is thus at the center of several entangled social problems.

There are various self-reinforcing mechanisms that link informality with lack of social protection. When entitlements of social protection are determined by the formal employment status, informal workers are excluded by definition from those entitlements; on the other hand, informality hinders the establishment of tax-funded and citizenship-based social protection systems, because raising taxes from the informal sector is difficult. In this way, informality allows formal firms and the state to withdraw from their responsibility in guaranteeing the provisioning and economic security of the whole population. Meanwhile, the low and unstable incomes of informal workers make them unable to finance their own social protection. Therefore, reducing informality and extending social protection to informal workers is a priority challenge for developing countries, to which these have responded by expanding social assistance programs of subsidies, monetary transfers, in-kind benefits, and other types of support for informal workers and the poor.

However, what governments can achieve in that way is limited, given the sizable scale of informality and the low levels of income and institutional capacity in these countries. Consequently, there is still a large deficit in access to social protection worldwide, which in any case means low-quality social services and small benefits for most people. In the meantime, a double fragmentation has emerged: labor markets and social protection systems are divided in various segregated tiers. It is likely that the two types of fragmentation might be reinforcing each other, but the explanations and possible solutions to this phenomenon depend on the particular worldviews and understandings of informality, social protection, and their interrelations.

Therefore, my purpose along these essays is twofold. First, to explore the theoretical underpinnings of analyses of the double fragmentation in economics, and to analyze how they condition the design of social policies in relation with informality. And second, to propose an alternative theoretical framework that allows for a better understanding of the problem, and to show that it can lead to alternative policy designs, capable of providing sufficient and comprehensive social protection for all in developing countries, irrespective of their employment status.

The thesis is divided in five chapters. In the first one I make a brief overview of the recent

evolution of social conditions in Latin America, to illustrate the connections between social problems, informality, and social protection, and the issue of double fragmentation. It is conceived as a motivation for the rest of the thesis, and a way to situate my analysis in the particular context that I have experienced, where informality and double fragmentation are used as arguments to advance political agendas for the reduction of formal workers' benefits, the flexibilization of labor markets, and the transformation of social policy into a set of small and limited poverty alleviation schemes. This thesis is a response to such agendas.

In the second chapter I review how the concepts of informality and social protection have evolved in economic thought, in which I identify two main theoretical approaches: the dominant view, founded on neoclassical economics, and an alternative view, that I call structuralist for the different traditions that inspire it and for its emphasis on structural factors. I show that in the neoclassical view double fragmentation is a problem of bad regulations that distort labor markets and configure a system of perverse incentives. This comes from viewing informality as resulting from optimal behavioral responses and/or individual characteristics that prevent people from entering the formal sector (Maloney, 2004; Perry et al., 2007; Ulyssea, 2020), and viewing social protection as a system of incentives for risk-pooling and consumption-smoothing that must be guided by principles of austerity and efficiency (Barr, 1992; Jorgensen & Siegel, 2019). Accordingly, the solution proposed is a regulatory re-engineering to reduce the attractiveness of informality and the likelihood of being locked in it, while giving small and transitory support only to those who “really” need it. From this perspective, “well-functioning” labor markets would gradually reduce “voluntary” informality, and social assistance should play a residual role of poverty alleviation.

While this approach might be useful in the design of particular programs and policies, its excessively individualistic slant overlooks crucial aspects of the problem, in particular, the macro-structural determinants and the systemic roles played by informality and social protection in the economy. The strength of these systemic forces makes the neoclassical approach inadequate to understand and guide solutions to the double fragmentation.

The structuralists traditions in economic thought might provide better theoretical foundations, due to their emphasis on the macro-structural factors behind the fragmented character of developing economies. Latin American structuralism stresses how the peripheral position creates structural heterogeneity in developing countries (Polanyi Levitt, 2005; Prebisch, 1950), while structuralist macroeconomics, inspired in the dual-economy model by Lewis (1954), stresses how intersectoral exchange relations and differences in production processes can perpetuate dualism (Ros, 2013). From another perspective, the debates on marginalization, stemming from Latin American structuralism a neo-Marxist sociology, led to a recognition of the functional role played by informality in the economies of developing countries (Nun, 2001). Finally, the “structuralist approach” to informality also stresses its systemic functional role in guaranteeing the economic viability and political stability of developing countries (Chen, 2012; Portes & Haller, 2005). However, in structuralism informality is conceived mainly in functional terms—with regards to the productive activities undertaken and the role they play in the functioning of the whole economy—without a deep consideration of institutional and regulatory factors—including social protection.

In the third chapter I build a schematic conceptualization of the relation between informality and social protection, conceived as structural and fundamental elements of capitalist societies, traversed by complex social and political conflicts. I will argue that the classical tradition in political

economy provides a solid theoretical foundation, that complements structuralism, for an understanding of the double fragmentation in a systemic rather than individualistic sense. In particular, the Theory of Social Reproduction by Mezzadri (2019) and Picchio (1992) allows to understand both informality and social protection as twin mechanisms that provide social stability by regulating the conflict around who bears the costs of social reproduction. I analyze these relations by adapting the schematic representation of National Systems of Social Protection by Théret (2006), from the French Regulation school, and show how the maximalist universalist approach to social policy by Fischer (2016) might provide a more stable social configuration.

In the fourth chapter I build a theoretical dual-economy model to explore the possibilities of designing a program of social pensions guided by targets of full coverage and sufficiency, rather than austerity. In the model I incorporate insights from the structuralist approach, the Theory of Social Reproduction, and post-Keynesian economics, to show that, with a demand-led formal sector, full coverage and sufficient benefits in social pensions are possible, and that such a program can increase the well-being of informal workers by granting them the right to not work in old-age while providing income support.

Finally, in the fifth chapter I make an empirical analysis of the double fragmentation for a wide group of developing countries. I build some indices of social protection fragmentation, with particular emphasis in the social insurance-social assistance dualism, and explore their relation with informality rates. I find that the relation is positive but generally weak, which suggests that perverse incentives coming from social protection systems play at best a marginal role in the overall dynamics of informality, that other dimensions of social protection fragmentation might be more important, and that alternative social protection designs where multiple regimes coexist in a non-fragmented way might be desirable.

There are several limitations throughout these pages, and the broad character of the topics discussed makes my coverage of them necessarily partial and incomplete. However, I hope to yield support with my analysis for three important points. First, that economic theories condition policy choices regarding the double fragmentation, and that the dominant neoclassical view, with its excessively individualistic slant, not only provides incomplete explanations, but also leads to malfunctioning policy designs. Second, that an alternative theoretical approach, inspired in the structuralist and classical traditions, is better suited for the analysis of double fragmentation, and provides the foundations for building social protection systems guided by principles of maximalist universalism. And third, that in a context of high informality, political agendas that promote a conflict between formal and informal workers lead to social policies incapable of protecting the interests of workers in general; hence, alternative class-based political agendas are also necessary for better social policy outcomes.

Chapter 1

The social problem in Latin America

Progress, the general and persistent improvement in the conditions of existence, seems to be the main purpose of contemporary societies and the economic order. Economic theories, too, are mainly concerned with progress and improvement, either in the form of growth of the national income, for classical-Keynesian approaches, or in terms of efficiency, for marginalism. In practice, although standards of living have greatly improved in the last centuries, such progress is still elusive for millions of people worldwide. Along with progress, then, a persistent feature across contemporary societies is the fragmentation between those who can experience such improvements and those who cannot.

The Latin American experience illustrates very well the contradictions and difficulties of fragmentation. Several times in history, the region has been deemed to be approaching the goals of progress and development, but it also has repeatedly failed, experiencing periods of stagnation. At the same time, it is still one of the most unequal and fragmented regions in the world, despite the relative improvement of the last decades. For these reasons, I analyze in this chapter the evolution of the *social problem* in Latin America, to give a picture of its dimensions, and to illustrate how closely related it is to the problem of *fragmentation* in labor markets and social protection systems.¹

1.1 Recent evolution and current situation

Poverty, inequality, and vulnerability are the preferred concepts to talk of the social problem. Poverty denotes the deprivation of the means and resources necessary to meet human needs, and is associated with hunger and undernourishment, sickness, lack of shelter, low levels of education and skills, unsanitary conditions, insecurity, and powerlessness. In a moral dimension, it is associated with humiliation and lack of positive freedom, the “[in]ability to live as a free and dignified human being with the full potential to achieve one’s desired goals in life” (United Nations, 2009, p. 8).

It is usually measured by the poverty line, a threshold of income or consumption below which

¹By social problem I refer to the sizable and pervasive phenomena of poverty, inequality and vulnerability, as inherently linked to the realms of work and social policy. In this sense, it is close to the “social question” of Tellmann (2017), inspired by Robert Castel, but I prefer to use “social problem” because of the descriptive—rather than conceptual or analytical—approach of this chapter.

available material resources are deemed insufficient for the satisfaction of basic human needs. It can be measured in *absolute* terms, through an invariant threshold, or in *relative* terms, when it is “sensitive to changes in the general living standard” (Foster, 1998, p. 335). Poverty is a problematic concept,

Regarding absolute poverty, Latin America improved in the last decades according to the \$1.90 line². During the 1980s and 1990s the headcount ratio—percentage of the population living in extreme poverty—fluctuated around an average of 14.5%, and then decreased to 3.75% in 2019; the number of people living in poverty fluctuated around 62 millions from 1980 to 2005 and then decreased to 24 millions in 2019; both indicators are relatively stagnant since 2014. The pattern is similar for the \$3.20 and \$5.50 poverty lines. According to last one, there were 144.6 millions of people in poverty in 2019, the first year since the early 2000s when poverty rates increased.

The Economic Commission for Latin America and the Caribbean (ECLAC) computes poverty lines that reflect better the situation of the region³: between 2002 and 2019 extreme poverty fell from 12.2% to 11.3% and total poverty fell from 45.4% to 30.5%. In turn, the number of extremely poor increased in the same period, from 62 to 70 millions, while the number of poor fell from 229 to 187 millions (ECLAC, 2021b). All these indicators show an increasing trend since 2014 for the regional average, though with large disparities between countries, both in poverty levels and their recent variations. In any case, data for the region shows that the biggest reductions in poverty were achieved during the 2000s, but since around 2014 such trend started to slow-down and then reverted, even before the pandemic.

As for relative poverty, the headcount ratio for the Societal Poverty Line (SPL)⁴ decreased steadily from 35.9% in 1990 to 28.87% in 2018, but in absolute terms it has been more or less stable, fluctuating around a mean of 177 millions of people in poverty since 1997, and rising to 182.5 millions in 2019, the highest number ever.

However, the concept of poverty is problematic, and its measure depends on the chosen threshold. For people very close to the threshold, a few cents can determine whether they are poor or not, without significant differences in the standards of living, and it cannot capture the severity of

²Poverty data represent daily consumption per-capita in 2011 dollars at purchasing power parity (PPP). The \$1.90 threshold is the rounded mean of the poverty lines for 15 of the poorest countries, mainly in Africa and South-Asia, but given that the percentage of the world population living in low-income countries has decreased, the World Bank also estimates poverty lines at US\$3.20 and US\$5.50, based on the median of poverty lines in 2011 for low-middle-income and upper-middle-income countries, which include most of Latin America. All data on poverty lines in this section is taken from PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the World Bank, at <http://iresearch.worldbank.org/PovcalNet/>.

³ECLAC data on poverty comes from different household surveys across the region and is designed to harmonize and make them comparable. It is based on income—unlike World Bank’s consumption-based—but poverty lines consider expenditure and physical activity patterns, food availability, and local prices. Extreme poverty relates to basic nutritional needs while total poverty considers other non-alimentary basic needs. Poverty lines for the whole region are a population-weighted average of 18 Latin American countries, so they are not comparable with World Bank’s regional numbers that include 7 Caribbean countries.

⁴The Societal Poverty Line varies with the median of consumption or income, capturing the expansion in basic needs as an economy grows (Bank, 2020). The SPL was stable in the 1990s around an average of \$4, but is rising uninterruptedly since 2004—though with a slight slow-down since 2014—up to \$6.5 a day in 2019; thus, the absolute poverty threshold of \$5.50 might better approach the regional situation. Indeed, the ECLAC’s total poverty rate and World Bank’s \$5.50 headcount ratio are very close and follow a similar trend, although after 2013 ECLAC’s numbers show a stronger stagnation than World Bank’s.

the deprivation for those under the threshold, nor the fragility for those slightly above, nor mobility into and out of poverty, itself a reason for concern (United Nations, 2009). Moreover, the concept of poverty masks the complex effects that processes of structural change may have in terms of standards of living and satisfaction of needs, and it conceals the complex political and social dynamics behind the social problem (Fischer, 2018).

Another concept to illustrate the social problem is vulnerability. It is generally defined as the degree of exposure to risks or hazards; in relation to poverty, it denotes a state of “economic insecurity”, or “the likelihood that people will fall into poverty owing to shocks to the economic system or personal mishaps” (United Nations, 2009, p. 9).⁵ The ECLAC (2019) measures vulnerability by classifying the population in strata of income per-capita.⁶ It shows, for the period 2002-2017, a shrinkage of low-income strata (from 71% to 56%) and a rapid expansion of middle-income strata (from 27% to 41%), especially in the period 2002-2008. The study revealed a strong dependence of Latin American households on labor income, which represents around 65% of total income for all strata, with the exception of the extremely poor (47%), who rely also on social protection transfers and remittances from abroad. Labor status is important, too, with higher rates of formal employment in top strata, and higher rates of informality in bottom strata.⁷ With this information, the probabilities of falling into poverty in different scenarios of loss of income are very high for the low-income-non-poor, and moderately high for the lower-middle-income strata⁸. This means that, in 2019, around 45.6% of the population, or 280 millions of people, were highly vulnerable to falling into poverty. It is worth noting that poverty and vulnerability are related to labor income, labor position, and the dependence ratio within households.

On the other hand, López-Calva and Ortiz-Juarez (2014) define the vulnerable class as including households with more than a 10% probability of falling into poverty, which is observed to correspond to per-capita daily incomes between \$4 and \$10⁹. Based on this methodology, Stampini et al. (2016) build synthetic panels for 12 Latin American countries for the period 2003-2013, and classified

⁵Vulnerability has some drawbacks too, however: first, the inescapable circularity issue by which vulnerability can lead to poverty while poverty increases vulnerability (Makoka & Kaplan, 2005); second, the analytical and empirical difficulties to estimate “the expectation of being poor in the future” (Jorgensen & Siegel, 2019, p. 33)

⁶The classification is based on absolute thresholds, as it relies on the extreme and total poverty lines (EPL and PL in this note). There are 7 strata, grouped in turn in 3 groups. The low-income strata are: 1) extremely poor (under EPL), 2) non-extremely poor (between EPL and PL), 3) low-income-non-poor (from 1 to 1.8 PL); then, the middle-income strata are: 4) lower-middle income (from 1.8 to 3 PL), 5) middle-middle income (from 3 to 6 PL), and 6) middle-upper income (from 6 to 10 PL); lastly, 7) high-income (more than 10 PL).

⁷The percentage of formal workers is 73.4% in high-income strata, 58.5% in middle-income strata, and 35.6% in low-income strata, while turn, informality represents the 10.7%, 36.6% and 60.6% of the same strata respectively. Here I call formal workers those in the following categories: waged workers for public administration; waged workers in small, middle and big firms, or in micro ones but professionally qualified; and professionally qualified own-account workers. Informal workers belong to the following categories: unqualified own-account workers; domestic service workers; unqualified waged workers in micro firms. Employers are excluded from this categorization, though those of micro firms are usually included in the informal sector. A broader discussion around informality will be held below.

⁸In the first scenario, with only one income receiver per household, the probabilities of falling into poverty are 37.3% for the low-income-non-poor, 6.5% for the lower-middle-income, and 0.2% for the middle-middle-income strata. The second scenario assumes that the main receiver loses their income, which increases the probabilities to 82.4%, 35.1% and 15.4% respectively. Finally, the total loss of labor income increases further the probabilities: 89.8%, 75.1% and 59.3%

⁹The authors use longitudinal data for the early 2000s in Chile, Mexico and Peru, to compute the probabilities for households of falling into poverty (under \$4 a day, based on the 2005 methodology), and then use regressions to compute the income levels corresponding to different values of such probabilities.

households according to the depth and duration of poverty¹⁰. They found that, first, despite being highly heterogeneous regarding the size of moderate and extreme poverty, countries in the region are relatively homogeneous in the size of the vulnerable class, which ranges from 30% to 40% of the population; second, chronic poverty affects 91% of households in extreme poverty and 50% of those in moderate poverty; third, the 65% of the vulnerable class and 14% of the middle class in 2003 experienced poverty in at least one of the next 10 years; and fourth, the chronic poor tend to be less educated and to live in rural areas.

Thus, absolute poverty reduction and upward mobility in Latin America were accompanied by high levels of chronic poverty and vulnerability; on the other hand, in relative terms, the number of poor people remains more or less stable. All this points to inequality, another dimension that makes the region globally infamous. On average, in 2019 the Gini index was 0.46 (ECLAC, 2021b) and the Kuznets ratio (relative income of the top 10% to the bottom 10%) was 22; after correcting for the shortcomings of survey-based inequality measures, Gini arrives at 0.74¹¹. The trend is like the one observed in previous indicators: high and stable levels in the 1990s, a rapid reduction in the 2010s—indeed, faster than in other comparable regions—and a slowing down since around 2012. Inequality reduction came mainly from higher labor incomes, social protection policies, the reduction in wage inequality driven by a lower skill-premium, due to improvements in education, and a context of growing demand for labor (Cornia, 2014). However, such advances found a floor when favorable external conditions ended.

Regarding functional distribution, wage share estimates by the International Labor Organization (ILO, 2020) show a very modest average increase in the region, from 50.48% in 2010 to 50.93% in 2017, but these numbers hide a strong heterogeneity across countries: some experienced high increases—mainly those with leftist governments in the period—others high reductions, and other countries show very small variations in either direction¹².

After the deceleration of social improvements since mid 2010s, the COVID-19 crisis worsen the situation, with a 6.8% fall in the regional GDP, a 10.5% of unemployment in 2020, and a stronger effect of jobs and income losses on the most vulnerable groups: women, young, and informal workers (ECLAC, 2021a). From this brief picture of the social problem in Latin America one can derive (at least) four big conclusions. First, there was an important, historical improvement in the early 2000s, which coincided with a growth upsurge, favorable external conditions, a macroeconomic regime that avoided the strong imbalances of previous decades, and a novel set of social protection

¹⁰Regarding depth, a static notion, households can be: extremely poor (under \$2.5 a day), moderately poor (from \$2.5 to 4\$), vulnerable (from \$4 to \$10), middle class (from \$10 to \$50), and high-income (more than \$50). Regarding duration, households can be: chronic poor (poor in the first and at least in five later years), transient poor (poor in the first and in less than five later years), future poor (non-poor in the first year but poor in at least one of the next years), and never poor.

¹¹Data based on household surveys underestimate inequality: first, the very rich and property income are not properly included; second, they are not consistent with the total, aggregate household income (ECLAC, 2021b). The World Inequality Lab combines harmonized household surveys, income tax records, social security registers, and national accounts to solve this shortcomings; data is available at <https://wid.world/>. Their findings are striking: income shares of 31.7% for the top 1% and 65.1% for the top 10%, while the middle 40% takes the 27.7% and the bottom 50% a sheer 7.2% of total income. Compared to the survey-based indicators, these numbers are much higher; however, recent trends do not differ greatly for the regional average, though for certain countries they do.

¹²The International Labour Office includes self-employment labor income in the labor share, which is important for the regional context. They impute to self-employed persons the wage of salaried persons with similar characteristics, and found it leads better results than other, more arbitrary methods of imputing labor income of the self-employed.

strategies amid a rise in public spending. Second, the improvement was short-lived and reached a floor in mid 2010s, when the commodity prices boom ended and the region felt the effects of the international financial crisis. Third, despite the improvement, a large part of the population remains in poverty and vulnerability, the region is still one of the most unequal in the world, and the COVID-19 emergency has reverted past improvements. Fourth, labor markets and social protection seem to be determinant for the dynamics of the social problem, especially regarding poverty reduction and persistent vulnerability.

1.2 Growth, informality, and structural heterogeneity

Growth is the first element that mainly explains improvements in standards of living, as higher levels of income and economic activity guarantee greater access to goods and services. The recent Latin American experience is not the exception, as the better years of improvement in social indicators (around 2002-2008) coincided with a growth upsurge. However, Ocampo et al. (2018) study several indicators and concluded that, despite there being an improvement regarding the situation of the 1980s and 1990s, when compared to other developing regions Latin America “under-performed in almost all indicators, particularly experiencing the worst performance in terms of both GDP growth and external sector variables.” (p. 249). The region outperformed the developing world only in terms of unemployment reduction, and showed good results also in poverty reduction and inflation. Good trends were mostly seen during the 2003-2007 period, driven by external conditions—the boom in commodity prices and abundant global liquidity with the consequent rise in capital inflows—but started to slowdown since the global financial crisis in 2008.

Growth affects social indicators mainly through employment, since labor is the main source of income for households (ECLAC, 2021b), and it has a high impact in their social position as shown above. The connection between growth, employment and poverty was studied by Cruces et al. (2017) for a group of sixteen Latin American countries in the period 2000-2012: “GDP per capita grew in the Latin American region as a whole during the 2000s, all employment and earnings indicators improved, and poverty and inequality indicators fell” (p. 52). Although there is a high heterogeneity across countries, the authors document a general improvement in labor markets in the region for a large set of indicators.¹³ After 2008, labor market adjustments generally took the form of higher unemployment, lower share of waged/salaried workers, and increases in self-employment, although such effects were short lived and the crisis had small effects on poverty. Most important, they found “a generally strong and consistent cross-country pattern of association between reductions in poverty and extreme poverty on the one hand, and improvements in earnings and employment indicators on the other” (p. 102). However, the link between growth and labor market indicators is relatively weak, with other macroeconomic factors being more determinant.¹⁴

Such results confirm the conclusions of Banerjee and Duflo (2007, 2008), who found that the main difference between the poor and the middle class has to do with work¹⁵: “[h]aving a regular,

¹³They consider a total of sixteen indicators comprising unemployment, educational level of workers, shares low- and high-earnings sectors and occupations, the occupational position of workers (waged/salaried, self-employed and unpaid family workers), registration in the social security systems, and labor earnings.

¹⁴For example, they find that exports, terms of trade, natural resource revenues, and the share of industry in GDP are welfare improving, while public debt, domestic consumption, and the share of services are welfare-reducing.

¹⁵The authors consider two groups of poor and middle class households in thirteen developing countries: those with a daily consumption per capita under \$1.08 and \$2.16 for the poor; those in the ranges from \$2 to \$4 and from \$6 to \$10

well-paying, salaried job may thus be the most important difference between the poor and the middle class” (p. 19). As documented by Fields (2012), the poor face harsh working conditions—long hours, low earnings, irregular and uncertain income flows—and depend mainly on themselves and their relatives for the generation of income and labor opportunities—most are self-employed or unpaid family workers. These conditions constitute what is known as *informality*, which comprised the 53.1% of workers in Latin America and the Caribbean in 2019 (ILO, 2020)¹⁶.

The different notions and measures of informality make it difficult to have a clear-cut picture of its evolution in Latin America, but available data suggest a recent worsening, or modest improvements at best: the share of self-employment was on average 35% in 1990-99, 37% in 2000-09, and 36% in 2010-18 (Ohnsorge & Yu, 2021); regarding the share of total informal employment, according to data by the ILO, most countries experienced reductions up to 10% in informality (except for Chile and Uruguay, with reductions of more than 40%) in the last decade, while levels of informality in the last available year show a great variability, from 24% in Uruguay to 85% in Bolivia, with most countries lying between 40% and 70% approximately. Despite the cross-country heterogeneity, it can be said in general that the region exhibits large levels of informality, and that the reduction has not been so strong as the one experienced in poverty or inequality.

That is why Abramo et al. (2019, p. 28) declare that “[w]ork is no guarantee of a way out of poverty”, noting also that, in Latin America, “the heterogeneity of the production structure is what creates and sustains the informal sector, given the higher-productivity sectors’ weak labour force absorption capacity and their tendency to shed workers, thereby pushing them back towards lower-productivity sectors” (pp. 40-41). Keifman and Maurizio (2012) arrive at similar conclusions, linking informality to structural features of the region, mainly income inequality, productive heterogeneity, low competitiveness and productivity, and the low coverage of social protection. They show that informality is generally not a choice for workers and that labor markets are segmented in the sense that “the formal-informal wage differential cannot be fully explained by worker attributes” (p. 30).

Structural heterogeneity, the unequal and segmented character of these economies, has been stressed by the tradition of Latin American structuralism as a powerful hindrance for development. The concept refers mainly to the productive structure and the pattern of trade specialization, based on sectors with low productivity and/or without strong linkages with the rest of the economy, in the context of a strong external constraint through the balance of payments (Cimoli & Porcile, 2016). As a result, the region is characterized by low growth, high volatility and low competitiveness, which translates into weak domestic markets and a low capacity to create good quality jobs, reinforcing poverty and inequality, and generating social conflicts (Weller & Kaldewi, 2014). This pattern of development contributed to labor market segmentation in the 20th century, because the import substitution industrialization strengthened landed and industrial elites and created a new but restricted class of professional workers (UNRISD, 2010); in the 1980s and 1990s, Washington Consensus policies, besides increasing volatility and blocking structural change (United Nations, 2009), worsened workers position through labor market flexibility.

In short, social and economic improvements in the 2000s were a combination of favorable

for the middle class.

¹⁶Here informality is used in the sense *Informal Employment* by the ILO (2018): unpaid family workers, employers and own-account workers in informal productive units, and employees without contributions to social security by the employer nor paid leave.

external conditions and a new macroeconomic regime that avoided the destabilizing effects of external shocks (Cruces et al., 2017). However, the region did not experience a structural change, significant improvements in productivity, nor a strong reduction in informality, which limited the reach and persistence of the observed improvements. Another important factor behind the better social indicators was the implementation of novel social policies in a context of changing political regimes (Abramo et al., 2019; Boyer, 2016; Damill & Frenkel, 2012).

1.3 Social protection systems

Social protection is the set of practices and policies intended to guarantee a certain standard of living and provide support in adverse situations through a system of transfers in cash or in kind (Fiszbein et al., 2014; United Nations, 2018); it is a key institutional device for managing the social problem. In Latin America, the evolution of social protection systems have been at the center of crises and reforms, reflecting the unstable and segmented pattern of development in the region. In the last decades they played a leading role in the policy response to the social problem and are partly responsible for the improvements of the early 2000s.

Before delving into the matter, it is important to note that social protection systems in the region diverge greatly across countries, so it is not possible to talk about a canonical Latin American model. Mesa-Lago (1985) and Ocampo and Gómez-Arteaga (2016) analyze such heterogeneity and provide a classification of social protection systems in the region, based on a historical perspective and on the construction of synthetic indicators respectively. However, a prevalent feature that is found—at different degrees—in most countries is the fragmentation of social protection systems, the coexistence of multiple and poorly integrated programs and regimes, with the notable exception of Costa Rica and in some extent Uruguay (Martinez Franzoni & Sanchez-Ancochea, 2018).

Cecchini and Martínez (2013) divide the history of social protection in three periods: first, before the crisis of 1929, social insurance was restricted to certain powerful groups, social assistance operated as charity, and state regulation was scarce; second, in the industrializing period between the 1930s and 1970s, social insurance systems for formal workers were set up and social assistance took the form of consumer subsidies; third, in the period of market economy and globalization since the 1980s, pro-market and austerity reforms restricted social insurance benefits and approached assistance as poverty alleviation through targeting, although since the 2000s more reforms and transformations have occurred.

Mesa-Lago (1985) explained 20th century segmentation as a result of the political interplay of two leading forces: pressure groups with varying degrees of power, who used it to gain concessions and privileges, and the state, who used social policies to gain the favor of certain groups and maintain social order. Two different models evolved: the pioneer countries, also the most developed ones, set up from the 1920s highly fragmented systems by which different schemes were created for the relatively powerful pressure groups (the military, public servants, teachers, workers of public services and banking, etc.), and were later gradually extended to the rest of the population as development and industrialization unfolded; a second group of countries set up relatively unified systems in the period from the 1940s to the 1960s, with a general managing body but with low coverage because of their link to formal employment, so that they are referred as “‘fragmented’ or ‘stratified’ universalism” by Duhau (1997) (cited by Cecchini and Martínez (2013, p. 25)).

Fragmentation came by design as the region adopted a Bismarckian approach to social security that linked protection to (formal-waged) employment. According to Kaplan and Levy (2014), such system was chosen because of the successful experience of European countries, the unfeasibility of a Beveredgian universalist system with limited tax base and administrative capacities, the perception that it would help to redistribute wealth, and the expectation that low coverage would correct itself as the informal sector shrinks with the process of development, something that did not happen. The Bismarckian system restricted coverage to urban waged workers of the most developed and industrialized areas, while rural, own-account and family workers, besides of the unemployed, were uncovered and obtained protection from assistance, charity, or deficient public services. Coverage was also correlated with income, skill levels, and the belonging to powerful pressure groups, which enforced existing inequalities. In the pioneer countries, the systems were pyramidal, with a minority at the top covered against several risks, though benefits were gradually extended to the lower strata generating serious financial disequilibria; the other countries exhibited very low levels of coverage, contributions, and social spending, in accordance with the growing shares of informal employment, and unlike the pioneer's their systems were distributively regressive although financially balanced (Mesa-Lago, 1985).

The 1980s were a lost decade for the region in terms of growth, amid a series of debt, exchange, banking and inflationary crises that contributed to the dismantling of the model of import-substitution industrialization (ISI) and the adoption of an export-led strategy in the context of liberalization and structural adjustment reforms. This broke down the political alliances that supported the previous social security architecture, which had already ceased to expand because of the ISI's exhaustion and the financial fragility in some countries (Barrientos, 2019). In such a context, social protection changed, starting with the paradigmatic Chilean pension reform that implemented a fully-funded, defined-contributions scheme in privately administered pension funds Mesa-Lago (2020). The new systems prioritized efficiency and austerity, promoted the privatization of social services, along the participation of private fund managers in pensions and insurance companies in healthcare, favored demand-side subsidies to spur competition among private providers, transformed the role of the state, from provision to monitoring and evaluation, and increased the flexibility of labor markets, thus reducing benefits and protection for workers (Cecchini & Martínez, 2013).

Nevertheless, the effect of Washington Consensus policies was adverse (United Nations, 2009). Pensions and health privatization worsened the social problem (Cruz-Martínez, 2019), and in the 1990s financial and balance of payments crises continued to proliferate in the region as trade and financial liberalization deepened. In that context, processes of democratization and political change gave a strong mandate to governments for reducing poverty and inequality (Boyer, 2016). Social policy response took the form of parallel non-contributory schemes, expanded since the early 2000s in several countries. These are mainly programs of Conditional Cash Transfers (CCTs), which provide a stable and regular income to poor households provided that they meet some goals, mainly in terms educational and health outcomes for children. Other countries like Bolivia and Brazil would later implement non-contributory pension schemes for the elderly poor, known as social pensions (Abramo et al., 2019; Mesa-Lago, 2020).

With respect to the truncated social protection systems of the 20th century, non-contributory schemes helped to improve some social indicators, but they maintained fragmentation in the form of "social insurance provision for workers in formal employment and social assistance provision

for informal and low-income groups” (Barrientos, 2019, p. 63). In such dual systems, the social insurance segment is usually financed by payroll contributions, follows the Bismarckian contributory principle that links entitlements to the wage relation, and covers employment and life-cycle risks; the social assistance segment, in turn, is tax-financed, follows a targeting principle that links benefits to some socioeconomic characteristic, and is conceived as a poverty-alleviating tool. This configures hybrid systems of social protection that mix “targeting, universal cover, access to social rights and policies of social inclusion” (Barrientos, 2019, p .59), and where social goals are confounded with the promotion of competitiveness and human capital (Cecchini & Martínez, 2013).¹⁷ These systems tend to reinforce existent social stratification, since targeted programs for poverty alleviation require strategies of identification that induce segregation (Fischer, 2018).

Abramo et al. (2019) document the evolution of non-contributory systems showing that the number of CCT programs rose in the early 2000s but then stagnated from 2012; social pensions, in turn, have grown more slowly and steadily. There is an analogous trend regarding coverage and spending: for CCTs, the percentage of population covered increased from 3.6% in 2002 to a peak of 22.6% in 2010, and then decreased to 20.7% in 2017, while spending in such programs represented the 0.06%, 0.30% and 0.37% of GDP in the same three years. In terms of the population living in poverty, CCT programs covered a 26.9% in 2002, 78.2% in 2012 and 71.3% in 2017. The benefits provided are, however, relatively small, as the percentage of the income deficit of covered households goes from 2.9% in Bolivia in 2015 to 38.6% in Uruguay in 2017. For social pensions, the coverage of the population aged 60 or more rose from 11.7% in 2000 to a peak of 27.6% in 2014 and then to 25.1% in 2017, while the spending represented the 0.21%, 0.55% and 0.65% of GDP in the same three years. The size of social pensions tends to be higher than CCTs, but is highly heterogeneous across countries, from a 7.9% of the income deficit of the poor in Dominican Republic, to a 237.4% in Uruguay in 2017. Therefore, the parallel non-contributory systems in Latin America achieved a high but not universal coverage of the poor at a very low fiscal cost, thanks to the relatively small size of benefits. The expansion of such programs stagnated around 2014, like the reductions in poverty and inequality.

This suggests a relation between the new systems of social protection and the evolution of the social problem. Abramo et al. (2019) reviewed more than one hundred impact evaluations of such programs to investigate their observed effects. For CCTs they found that “[t]he greatest achievements occur in countries where programmes are broader in scope and transfer amounts are larger” (p. 57), and there are positive impacts in education (higher enrollment rates, better school attendance, learning outcomes) and health (preventive check-ups, vaccinations, nutritional status), but these depend in a great extent on the quality and coverage of public health and education. They also show that these programs do not constitute disincentives for workforce participation, and though there are few studies that investigate the effects on informality, these seem to be negative: “[f]ormal labour market integration of workers with the characteristics of CCTs target populations is often unstable, short-lived and poorly paid” (p. 96). For long-term effects the evidence “tends to be mixed, since the prevailing structural conditions offer scarce labour and productive opportunities for the population, especially the population living in poverty” (p. 65). In the case of social pensions,

¹⁷In practice, the distinctions between the two types of regimes are more nuanced. Several social insurance programs are not at least partly financed by general fiscal resources; social assistance programs financed by value added or other general and regressive taxes cannot be deemed non-contributory; and cash transfers (conditioned or unconditioned), although presented as following a citizenship-based principle, are at odds with it due to the targeting mechanisms. I am thankful to Andrew Fischer for pointing out these caveats.

there is evidence of higher spending and consumption, positive effects for the entire family, lower old-age poverty and national inequality, and positive effects on mental and physical health, though there are negative effects for labor supply of the elder.

Impact evaluations, however, measure only the effects on beneficiaries of specific programs. A broader picture to assess the recent evolution and impact of social protection systems in Latin America can be obtained from the work of Ocampo and Gómez-Arteaga (2016). They built a score index to classify countries according to the comprehensiveness of their social protection systems¹⁸ and found that most countries, but particularly those in the intermediate group, experienced an improvement of social protection between 2002 and 2015. In general, most comprehensive systems feature higher coverage and affiliation rates, lower gaps between salaried and non-salaried workers, higher access of poor households to social protection, and higher social spending. Only the social assistance coverage for the poorest quintile is similar across groups, which might be caused by the expansion of non-contributory programs. However, segmentation and asymmetries persist: non-salaried workers and lower quintiles still have the lowest coverage rates, despite being the groups that improved the most.

The authors found positive effects of social protection on poverty and inequality reduction. Indeed, poverty reduction correlates more strongly with the social protection index than with economic growth, and countries with more comprehensive systems, or with faster improvements in social protection, tend to have lower poverty rates and exhibit higher impacts of such systems on poverty and inequality reduction. According to Ocampo and Gómez-Arteaga (2016, p. 8), “the redistributive impact of social policy depends on the levels of social spending, the level of coverage, and to a lesser extent on the targeting of benefits to the poor” (p. 26). However, though direct non-contributory transfers are highly progressive, their budget share is very low, while bigger contributory programs are less progressive or even regressive. Considering also the tax structure, fiscal policy is poorly progressive in the region when compared to developed countries; the same occurs for levels of social spending, despite the rapid increases. Interestingly, the inequality-reduction effect is stronger for in-kind rather than for direct transfers, showing the importance of the direct provision of social services.

Finally, it is important to note that despite the recent improvements, social protection systems are still imperfect and face huge challenges (Ocampo & Gómez-Arteaga, 2016; Ribe et al., 2012): coverage is low and stagnated; there is an unprotected “missing middle”, those not poor enough to be eligible for social assistance, but still unable to access social insurance; contributory systems are fragmented and uncoordinated in several countries; CCTs are inflexible and do not act as proper shock absorbers; and informality is still high and persistent.

¹⁸The index is based on nine indicators that measure the degrees of universality, solidarity, and social spending. Countries are classified in three groups: comprehensive, intermediate, and limited social protection systems. Interestingly, the three groups almost correspond to those named high, middle, and low by Mesa-Lago (1985) according to the development of social security in the 20th century, showing a certain degree of path-dependence or, at least, high correlation with economic development. The comprehensive group includes Uruguay, Chile, Costa Rica, Argentina and Brazil; the intermediate group includes Venezuela, Colombia, Peru, Mexico, Dominican Republic and Panama; and the limited group includes El Salvador, Paraguay, Bolivia, Nicaragua, Guatemala and Honduras.

1.4 A fragmented reality and two stories

Latin America achieved historical reductions in poverty and inequality in the early 2000s, that decelerated in the mid 2010s, and then were reverted by the pandemic. Despite the improvements, the region still features a sizeable social problem, with around one third of the population in poverty, and two fifths being vulnerable to falling into poverty. This seems to be a structural feature of these economies, linked to the formal-informal divide in labor markets, which imply precarious and unstable working conditions for most of the population. Growth and prosperity do not translate automatically into a better social situation, and part of the improvement in social indicators responds to the expansion of social protection.

However, the floor reached by social indicators, plus the persistent structural heterogeneity of the productive structure and labor markets, indicate that such a model is unable to unleash a stable and sustained process of “inclusive growth” (OECD, 2019). Although the role played by social protection cannot be overlooked, it is necessary to recognize that the social policy regime in the region looks weird and ill-devised, as it replicates the enduring inequalities of these countries along the social insurance/social assistance divide. Their poverty reduction effects, according to Ocampo and Gómez-Arteaga (2016), are stronger the more comprehensive the social protection system is, and the larger the share of salaried workers. Regarding inequality, the whole taxes and transfers mix is barely progressive in the region, and non-contributory social assistance programs are a small part of social spending. On the other hand, social protection systems as a whole still generate regressive redistribution, as their pyramidal, fragmented and uncoordinated structure imply implicit subsidies and generous benefits to a well-off minority in contributory systems (Ribe et al., 2012). Finally, coverage is low and stagnant since around the mid 2010s too, as the old problem of a wholly uncovered informal sector mutated into the problem of the vulnerable and unprotected “missing middle” (United Nations, 2018).

Informality and social protection thus appear as key determinant factors in the evolution of the social problem, and their interrelation and effects are among the main concerns for practitioners and scholars in the Global South. The problems arise from the apparent inadequacy of both Bismarckian and Beveridgian approaches to social protection in such contexts.¹⁹ There are several problems that informality poses to social protection systems. First, the wage relation cannot constitute the base of social protection on a massive scale; second, the necessary tax base to finance universalist schemes is small;²⁰ third, there is a large population to in need of coverage by non-contributory schemes, so that social assistance becomes a large and constituent part of the system, instead of a residual, emergency mechanism; and fourth, that non-contributory schemes may stimulate informality. In

¹⁹The Bismarckian system relies heavily in the wage-nexus, conceives social protection benefits as an earned right from the participation in productive activities through labor, and supposes a tripartite responsibility of workers, employers and the state, reflected in the financing mechanisms of payroll taxes; the Beveridgian system, in turn, conceives benefits as a right coming from citizenship to be financed by a common pool of fiscal resources based on progressive taxation. Bismarckian systems tend to be associated with productivist approaches, social insurance, and contributory schemes; Beveridgian systems are associated with universalist, right-based approaches, social assistance, and non-contributory schemes. However, Théret (2006) shows that such categories cannot be so neatly overlapped, as any system is ultimately the result of particular political struggles and agreements, and the precise configurations can be interpreted and defined in different ways according to one’s point of view.

²⁰Although some might suggest that monetary sovereignty makes this point irrelevant, the external constraint imposes real limits to developing countries (Skott et al., 2012), which reduce the ability of government to run demand policies through deficit spending.

consequence, there seems to be a consensus around the need to overcome the dualism of social protection in Latin America, and embrace some form of universalism, although what the meaning of “universal” is itself ambiguous, disputed, and sometimes misleading (Fischer, 2018).

However, it is important to note that the current dual systems—as opposed to the 20th century truncated ones—were born from the market-oriented reforms of the 1980s and 1990s that condemned universality as unfeasible, inefficient, and fiscally irresponsible; it was proposed instead a split between, on the one hand, tax-financed targeting and demand-side subsidies for poverty alleviation, and on the other hand, private provision of social insurance (Sojo, 2017). This vision relied on the assumption that liberalization would foster growth and development, thus reducing poverty and informality so that targeted schemes were ultimately thought to be small and residual. As such, it was a delusion, just like the one by which ISI promoters thought that industrialization, by shrinking informality, would eventually lead to an automatic expansion of Bismarckian coverage. Further, in some cases the market-oriented reforms result in expensive and inefficient social protection systems, either in the form of user fees, administrative costs, or fiscal transfers (United Nations, 2018). This in part led to the set up of the novel non-contributory systems and the reversal of privatization in some countries (Mesa-Lago, 2020).

The hybrid and dual character of social protection systems is the result, on the one hand, of political struggles and covenants, and on the other hand, of visions of the economic process that expect informality to disappear with growth and development. This depends, however, on the application of different policies linked to particular ideologies and worldviews. For example, the current mainstream position is based on the idea that social protection segmentation stimulates informality, reduces the overall productivity of the economy, and hinders growth, so that it is necessary to flexibilize labor markets and reduce non-wage labor costs, while social protection must adopt a “limited universalist” approach, mostly financed by consumer taxes (Kaplan & Levy, 2014). In this vision, informality is a policy-induced inefficiency with negative externalities, and social protection is a mechanism to deal with market failures. On the contrary, the structuralist-Cepalist position sees structural heterogeneity and duality in labor markets as the results of insufficient industrial capacity and the external constraint (Cimoli & Porcile, 2016), while social protection is a political agreement in constant evolution, but constrained by the stage of development (Sojo, 2017). Therefore, economic theories shape the narratives about social protection and informality, and influenced the design of social policies as well. Such influence merits a closer look at the theoretical analysis of the two phenomena, and to the evolution of such concepts across different schools of thought. Such is the objective of the next chapter.

Chapter 2

Social protection and informality in economic theory

2.1 Introduction

Informality and social protection fragmentation are so pervasive in the Global South, that one is pushed to think of such double fragmentation as an essential feature of capitalist economies, driven by some fundamental underlying mechanism. However, it does not seem to play such a central role in economic theory. The study of these phenomena is usually undertaken in more applied or specialized fields of economics—like development and labor economics—or from other social sciences. Or, when it is addressed theoretically, it is presented as an extension of canonical models where such double fragmentation does not exist. This may be related to it being mainly a Global South problem, in a setting where the general understanding of capitalism is shaped by the historical experience of European countries, while other trajectories are considered as deviations or very particular and atypical cases. Interestingly, such tension between being a fundamental and central part of some ordering, or being accessory and residual, is the defining feature of informality in practice, so the same problem is present at both epistemological and ontological levels.

In this chapter I review how both informality and social protection have been addressed in economic theory, with two purposes. First, to identifying the underlying mechanisms that link them together and reproduce the double fragmentation, and second, to explore how those mechanisms have been incorporated into analytical theoretical models. Besides this brief introduction and the last concluding section, the chapter is divided in two sections, one for informality and the other for social protection. In each of these sections I start by exploring and defining each concept, and then I review their place in economic theory from three perspectives. First, from the History of Economic Thought, I review their common origin in classical political economy and show the profound implications that such common origin and the corresponding economic theories have for their understanding. Then, I analyze how heterodox approaches in the structuralist tradition have dealt with the two phenomena theoretically and in their analytical models. Lastly, I do the same analysis for the neoclassical approach. In the conclusions I compare the two approaches and propose some directions for the analysis of this problems in the next chapters.

2.2 Informality

Informality comprises a wide and heterogeneous set of activities like trash picking, street vending, operating and working in a small family enterprise, domestic work, seasonal and occasional work in sectors like agriculture or construction, manual piecework for manufacturing industries, and also, more recently, autonomous work in the gig economy and tech platforms.

In current definitions, informality denotes forms of work and production that lay outside of labor and businesses' regulations, of which the ILO (2018, p.7) distinguishes two different types. First, the jobs-based concept of *informal employment*, which refers to “the employment relationship and protections associated with the job of the worker,” and second, the enterprise-based concept of *informal sector*, which considers “the characteristics of the place of work.” A third concept is the *informal economy*, also called shadow economy, that denotes the overall size of production or value added that is unregistered, underreported, or produced by informal workers and firms (Dell’Anno, 2021; Perry et al., 2007).¹

This concept of informality is *regulatory*, defined negatively in opposition to formality. In words of Chen (2012, p. 4), “those who work informally have one thing in common: they lack legal and social protection,” which is not merely a matter of *form*, but the juridical expression of the “downgraded labor” characteristic of informality (Castells & Portes, 1989, p. 26). Generally, informal workers tend to live in poverty or vulnerability, have low, irregular and unstable incomes, face harsh and insecure working conditions, and confront the prosecution of authorities at different degrees (Fields, 2011b). On the other hand, informal productive activities tend to exhibit low productivity, small scale, low capital intensities (La Porta & Shleifer, 2014; Ohnsorge & Yu, 2021), and usually their “aim is rather survival than accumulation” (Maurizio & Vásquez, 2019, p. 3).

By looking at these characteristics, informality can be alternatively defined as the set of low-scale and low-productivity economic activities, exhibiting downgraded and vulnerable forms of work, and driven by subsistence rather than for-profit motives. This concept of informality is *functional* because it considers the activities performed, the role they play in the whole economic structure, and their objectives and organizational models as defining criteria.²

The different defining criteria make of informality a difficult phenomenon to approach theoretically, because it is an evolving concept linked to changes in real-world phenomena: regulatory frameworks, measurement methodologies, forms of work, and the sheer process of structural transformation with its social and political implications. However, by referring to the forms of work of those excluded, marginalized, and vulnerable, it has always been present somehow in economic thought. In the next subsections I will trace the theoretical evolution of the concept of informality. I set its origins in classical political economy and development theories, where the concepts of surplus labor and subsistence sector anticipated some features of functional informality. Then, I

¹See Dell’Anno (2021) for a presentation and discussion of different classifications of informality and how they overlap. Although not compliant with regulations, informality is not necessarily illegal, and criminal activities are not considered part of informality. On the other hand, formal firms may hire workers informally, and it is also possible for informal firms to have formal workers. Hence, informal sector and informal employment do not coincide but may overlap.

²Gibson and Flaherty (2017) also differentiate conceptually between *juridical* and *functional* informality, the latter characterized by capital limitations and by operating productive processes that the formal sector would not operate due to their low profitability. My definition here is less technically precise, but I keep the term *functional* to stress, first, how informal and formal activities differ in their functioning, and second, how informality is functional for the whole economic structure, which I will discuss below deeply.

analyze how structuralist and neoclassical theories have focused more in the functional and regulatory aspects of informality respectively, and the different attempts they have made to arrive at a more holistic or unified concept. I focus on the theoretical devices that explain the existence and persistence of informality, mainly regarding *informal employment*, although it is hard to distinguish from the firms-based *informal sector* in some theories.

2.2.1 Surplus population

The concept of *population*, and the *principle of population* by Malthus (1798), comprise many of the features of informality. Though *population* seems to encompass everyone, the principle of population applies only to the poor since it is a force that “constantly tends to subject the lower classes of the society to distress and to prevent any great permanent amelioration of their condition” (p. 9). As shown by Tellmann (2017), Malthus’ principle of population—and liberal economic thought—relied on a racial and colonial worldview that divided people into the *civilized* and the *savages*, the latter characterized as shortsighted and subject to scarcity and abjection. In words of Malthus (1798, p. 27), “[t]he labouring poor, to use a vulgar expression, seem always to live from hand to mouth. Their present wants employ their whole attention, and they seldom think of the future. Even when they have an opportunity of saving they seldom exercise it.” Banerjee and Duflo (2007, p. 165) draw a similar conclusion, though in much more gentle terms: “one senses a reluctance of poor people to commit themselves psychologically to a project of making more money. Perhaps at some level this avoidance is emotionally wise: thinking about the economic problems of life must make it harder to avoid confronting the sheer inadequacy of the standard of living faced by the extremely poor.” In any case, note that a key feature of present-day informality is foundational for economic theory: the social stratification based on the dichotomy between survival and accumulation motives, on having or not the ability to save and anticipate for the future.

The implications of the principle of population should not be taken too far in this respect, however. On the one hand, the relevant social division for classical political economy along these lines was between workers and capitalists as social classes, rather than between different types of workers or productive sectors, as in the current definitions of informality. On the other hand, the views of most authors in these tradition were far more nuanced and complex than Malthus’, who depicted workers as a passive and homogeneous group of hapless people subject to the natural laws of population and living at subsistence levels. On the contrary, in classical political economy workers were a relevant political actor, and wages were determined by historical, social, and institutional factors (Stirati, 1994). In this respect, the social and labor rights that came to define formal labor are totally compatible with the classical framework, as argued by Cesaratto (2008) when discussing the role of the welfare state in the determination of real wages.

For the analysis of informality it is rather relevant that, in the classical framework, “unemployment is regarded as a non-transitory phenomenon, and has a role in determining the normal rate of wages” (Stirati, 1994, p. 84). This implies that for workers, as a class, being employed by capital is no guarantee to secure a living, and though they can struggle to get better conditions, they must also find alternative ways to meet their needs. Informality is nowadays used as a generic term to denote such alternative forms of work and production, but it was Marx who identified such forms, and analyzed them as integrated with the underlying phenomenon of generalized insecurity under capitalism. The key concept for Marx is broader and richer than unemployment, and better suited for a characterization of informality: relative surplus population.

Chapter 25 of *Capital* (Marx, 1887, ch. 25) is devoted to the analysis of surplus population. It is both prerequisite and result of capital accumulation, because it allows capital to expand and employ more workers without imposing an upward pressure on wages and, hence, a downward pressure on profits; at the same time, the rising organic composition of capital means that a higher amount of capital needs a proportionately lower amount of workers, of which a superfluous population is the logical consequence. This particularly *capitalistic law of population* translates itself in harsh working conditions for both waged and superfluous workers: it imposes “the constant transformation of a part of the labouring population into unemployed or half-employed hands” (p. 444) and simultaneously forces non-superfluous workers “to submit to overwork and to subjugation under the dictates of capital” (p. 446).

Marx identifies four types of surplus population: the *floating* form arises from competition and employment dynamics in centers of industry, in which workers are laid-off when deemed unfitted to work because of age or skills; the *latent* form arises from the introduction of capitalist techniques into agriculture, the well-known processes of development-led urbanization; the *stagnant* form resembles modern forms of waged informality, as “it forms a part of the active labour army, but with extremely irregular employment [...] characterised by maximum of working-time, and minimum of wages”; finally, “[t]he lowest sediment of the relative surplus population [...] Exclusive of vagabonds, criminals, prostitutes, in a word, the ‘dangerous’ classes” is in turn divided in three categories: first, those able to work but made superfluous by the downward turns of the business cycle; second, “orphans and pauper children”; and third, “the demoralised and ragged, and those unable to work, chiefly people who succumb to their incapacity for adaptation, due to the division of labour; people who have passed the normal age of the labourer; the victims of industry, whose number increases with the increase of dangerous machinery, of mines, chemical works, etc., the mutilated, the sickly, the widows, etc.” (p. 450).

There are other two related categories in Marxian thought. The “nomad population” (p. 462) moves behind capital, settling down temporarily around production centers where they are exploited, not only as workers but also as tenants and consumers, through the disadvantageous acquisition of basic goods as in-kind wages, or even through debt-bondage relations. It resembles the forms of work in the colonies of capitalist empires, in some sectors of current Global South economies, and the situation of (poor) immigrants everywhere. The other category, “domestic industry”, is a distorted echo of the putting-out system: it refers to industrial work outside the factory where exploitation is higher because of the irregularity of work, the presence of multiple intermediaries, the lower capacity for struggle, and the fierce competition with other workers in the same conditions. It makes part of what Marx calls in Chapter 16 (p. 360) “certain intermediate forms, in which surplus labour is not extorted by direct compulsion from the producer, nor the producer himself yet formally subjected to capital.”

Marx’s surplus population, and the intermediate forms of labor exploitation by capital, resemble what is currently called informality. From a Marxian approach informality is better understood as a “dynamic continuum of work types and employment arrangements rather than a distinct ‘sector’” (Barnes, 2012, p. 162), each type constituting a *form of exploitation*. In this view, the multiple forms of work of the surplus population are “different means of connecting commodity production to the production and distribution of value [...] different ways of organising the production process in order to extract surplus value from the labour time of workers” (Barnes, 2012, p. 151). The formal sector is just a more *benevolent* form of exploitation that guarantees certain rights and protections to these

workers, hence linked to institutional arrangements, including social protection. The persistence of such forms has led to a critical reassessment of Marxist thought regarding the failure of the *Communist Manifesto*'s prediction of a neat social divide between capitalists and proletarians.³

On the other hand, it is clear in Marx that surplus population and intermediate forms of work are not totally *outside* the circuits of capital and exploitation: domestic industry has stronger, though less direct, links with capital accumulation, mediated by the presence of “a whole series of plundering parasites” (p. 305). Indeed, the proliferation of middlemen is characteristic of current informality (Altmann, 2011), which is also functional for the circuits of accumulation, since it benefits from the activities of informal workers, while keeping them at the bottom of production and market chains under very adverse conditions (Sobhan, 2014, p. 17).

According to Marx, surplus population helps to somehow detach standards of living from wages: “[p]auperism is the hospital of the active labour-army and the dead weight of the industrial reserve army,” which allows capital to throw pauperism “from its own shoulders on to those of the working class and the lower middle class.” The myriad of forms of exploitation that constitute informality are thus an expression of the “systematic externalisation of costs of social reproduction” (Mezzadri, 2019). Exploitation is not a micro phenomenon, linked to a canonical labor relation, but a macro-structural one, comprising the whole processes of work and provisioning. This is a central idea of the Theory of Social Reproduction (Picchio, 1992), that I will explore deeply in the next chapter.

By now, it suffices to note that classical political economy provides a conceptual framework for the analysis of informality. The Malthusian principle of population is a simplistic and naturalistic depiction of the fundamental inability of capitalist labor relations to secure the provisioning of the working classes. Authors in the classical tradition were well aware of this, and of the inability of capitalism to create full-employment (Stirati, 1994). These are the foundations of the Marxian concept of surplus labor, which comprises most forms of work and production currently characteristic of informality in the functional sense.

It would be mistaken, though, to trace a strict parallelism between surplus labor and informality, because it leaves outside the whole regulatory aspect, and overlooks the social and institutional transformations in the historical process that led to the conquest of labor rights and social protection. Nevertheless, the concept of surplus labor is useful to understand formalization as a historical process, and to stress that precarious, downgraded and survivalist forms of work are a structural phenomenon of capitalism. A deeper analysis of their functional role in the capitalist development process was carried on by Lewis (1954) in his classical model of a dual-economy with unlimited supplies of labor.

³In this line of work, some scholars trace a parallel between Marxian and current labor categories to obtain measurements of the Industrial Reserve Army (Neilson & Stubbs, 2011), or to actualize Marx's analysis of class formation (Barnes, 2012). It is a difficult and controversial task because the concept of IRA is not totally translatable into current labor statistics: in Marx the divide is based on the employment of labor by capital to produce surplus value—*productive labor* (Gough, 1972), a controversial notion itself—which means that current forms of informal waged labor and some criminal activities can be considered part of the active army; the choice/necessity criteria, crucial for the Marxian definition of the proletariat, could lead to include wealthy rentiers into the surplus population (Barnes, 2012); current labor statistics rely heavily on the availability/unavailability criteria, whose role in the theoretical IRA concept is unclear. Other dividing criteria can be proposed, for example, by Neilson (2009).

2.2.2 Dualism

For Lewis (1954), the “classical tradition” is the adequate framework to analyze the development process because, in contrast to neoclassical and Keynesian approaches, it considers labor supply as unlimited. Lewis characterizes developing countries as dual economies, split between, on the one hand, a capitalist sector that uses capital and hires labor up to its needs, and on the other hand, a subsistence sector where the rest of the population earns a living, and that constitutes a reservoir of labor for the expansion of the capitalist sector.⁴ In such an economy, then, labor is unlimited with respect to the endowments of capital and natural resources.

The dividing criterion for Lewis was capital intensity, as he defined the subsistence sector as “all that part of the economy which is not using reproducible capital. Output per head is lower in this sector than in the capitalist sector, because it is not fructified by capital” (p. 147). The average product of labor in the subsistence sector determines the level of wages in that sector and in the capitalist sector too, where it is higher—but proportional—to subsistence only by a margin sufficient to cover transition costs and the higher cost of living in urban, industrialized areas. In this context, labor supply is unlimited for the capitalist sector because it can hire any amount of workers at the prevailing level of wages. Employment in the capitalist sector is given by labor demand, coming from capital being “applied only up to the point where the marginal productivity of labour equals the current wage” (p. 146), and employment in the subsistence sector is determined as a residuum.

Growth is driven by capital accumulation in the capitalist sector, and for Lewis, this requires an expansion of the profit share because “the major source of savings is profits” (p. 157)⁵. With constant wages, capital accumulation and profits expansion feed each other and stimulate growth, while the capitalist sector attracts workers from the subsistence sector at a wage “only somewhat higher than subsistence levels” (Fields, 2004, p. 727); eventually, capital is no longer scarce and the economy reaches a turning point, when further capital accumulation requires a rise in wages and labor ceases to be unlimited in supply.

Lewis (1954) was well aware that this simplistic and deterministic depiction of the development process cannot be taken for granted, and, indeed, most of his article is devoted to analyze how changes in the factorial terms of trade might interrupt the process (Fischer, 2015). Factorial terms of trade refer to “the real cost of providing the subsistence basket of food for workers in the capitalist sector” (p. 204), which is related to wage determination, an important topic for subsequent analysis that is worthwhile to explore in some detail.

Wage determination in the Lewis’ model is highly contested (Fields, 2004; Gollin, 2014) because Lewis (1954) made different assumptions in such respect. First, that marginal productivity of labor in the subsistence sector is “negligible, zero, or even negative” (p. 141); second, that “[t]he subsistence level [of wages] is only a conventional idea, and conventions change” (p. 172); and third, that subsistence wages are determined by “the average product of the farmer” (p. 148). However, he also stressed that “[w]hether marginal productivity is zero or negligible is not, however, of

⁴For Lewis, the sources of unlimited labor supply echo the working categories of present-day informality: “the farmers, the casuals, the petty traders, the retainers (domestic and commercial), women in the household, and population growth” (p. 145).

⁵Lewis (1954) recognizes that capital accumulation can be financed by credit instead of savings, but for him this is only a solution for the initial phase of the industrialization process. Eventually, the profit share must rise to allow the self-financing of subsequent investment; otherwise, redistribution and inflation can interrupt the process of development.

fundamental importance to our analysis” (p. 142), the key messages being that wage determination is non-neoclassical—not given by the marginal productivity of labor—and that labor can be withdrawn from the subsistence sector without altering greatly the level of output, which corresponds more to underemployment in the sense of Razmi et al. (2012). Regarding subsistence wages, he argued similarly that “[i]t is not, however, of great importance to the argument whether earnings in the subsistence sector are determined objectively by the level of peasant productivity, or subjectively in terms of a conventional standard of living” (p. 149). Here the crucial element is that “[t]he wage which the expanding capitalist sector has to pay is determined by what people can earn outside that sector” (p. 148) or “[t]he fact that the wage level in the capitalist sector depends upon earnings in the subsistence sector” (p. 149). Hence, for Lewis (1954) subsistence wages are determined by the average product of labor in the subsistence sector, and wages in the capitalist sector are proportional to them.

In this case, changes in the factoral terms of trade between the two sectors may affect the process of development, because if productivity does not increase in the subsistence sector, the withdrawal of workers from it would increase subsistence wages and hinder capital accumulation in the capitalist sector: “the expansion of the capitalist sector may be stopped because the price of subsistence goods rises, or because the price is not falling as fast as subsistence productivity per head is rising, or because capitalist workers raise their standard of what they need for subsistence” (p. 175). Hence, Lewis advocated for policies that increase productivity in the subsistence sector (Fischer, 2015): “Solutions are to be found not in reform of trade relations but in transformations of domestic structures, particularly in the increase in productivity of the domestic food sector” (Polanyi Levitt, 2005).

(Ros, 2013) shows two necessary conditions for the (short-run) coexistence of the two sectors: first, an average product of labor higher in the capitalist than in the subsistence sector; second, an average product of labor in the subsistence sector higher than the marginal product of labor should the whole population be employed in the capitalist sector. The first condition guarantees that the capitalist sector produces a surplus; the second one assures that some workers find it convenient to work in the subsistence sector, and can be assumed to hold for countries with relatively low capital-labor ratios. Both conditions seem in accordance with reality, but the relevant question is what makes the capitalist/subsistence divide persistent. This requires an analysis of steady-state positions, as done extensively by Ros (2013).

The (capitalist sector) wage rate that stabilizes the capital-labor ratio, though varying with technical conditions, is a function of the rates of profits, savings and population growth (a supply-led economy). Steady state positions depend of the relation between the steady state wage and the short-run one, given by the average product of labor in the subsistence sector (plus the wage premium). The known dynamics of a gradually shrinking subsistence sector that eventually disappears in the turning point, followed by a mature phase of rising wages, requires a relatively lower average product of labor that for some time allows capitalists to hire more workers with no need of rising wages (unlimited supplies of labor). The opposite condition leads to a fully subsistence economy, as the capitalist sector is never able to pay wages higher than subsistence. But another possibility, when both wages coincide, is an indefinite coexistence of the two sectors at the turning point.

This extreme scenario changes with more complex models. For example, the withdrawal of subsistence workers may require rising wages in the capitalist sector before the turning point if the

subsistence sector exhibits diminishing returns to labor and/or the two goods are not perfect substitutes, resulting in a steady-state coexistence of the two sectors. More interesting is the possibility of multiple equilibria given by the interaction between surplus labor and aggregate increasing returns to scale in the capitalist sector:⁶ since productivity depends on the capital stock, the steady-state wage rises with the capital-labor ratio, which creates a threshold below which the profit rate is so small that the economy collapses into a full-subsistence situation, a development trap. A non-corner solution may arise, with the two sectors coexisting in a low-level equilibrium, if consumption patterns and relative prices of the two goods oblige capitalist to attract workers with rising wages at low levels of the capital-labor ratio. In an open economy with international mobility of capital, in turn, institutional factors can affect the equilibrium positions through variables like the propensity to invest and the country risk premium. Though models can get even more complicated, the main message for Ros (2013) is that “the interactions between increasing returns to scale and elastic labor supplies” allows for better explanations of the development process and international asymmetries in growth and income levels, than standard neoclassical models of exogenous or endogenous growth.

Though the Lewis model is fully supply-led, aggregate demand effects can be incorporated. It can be traced back to socialist and Third-World debates on development and industrialization, but the main reference are the works of Kalecki (1979) on developing economies. He envisaged duality from a different perspective, based on the Marxian reproduction schemes: a competitive consumption-goods sectors and a non-competitive, mark-up pricing industrial-goods sector. As in Lewis, the problem of developing countries is a shortage of capital, a supply constraint that makes Keynesian solutions unfeasible. The problem is how to expand capital accumulation without lowering the standards of living, which requires a delicate balance between the gathering of resources to finance investment, the import of advanced industrial goods not produced in the country, and a rise in the domestic production of necessities. The interaction of aggregate demand effects with capital shortages in dual economies points to structural change as key for development, though its attainment is a complex political problem (Skott, 2019), aggravated by the long-run effects of aggregate demand shocks (Dutt & Ros, 2007). Insights from both Lewis and Kalecki inspired a class of models that now constitute the cornerstone of structuralist analysis of growth and distribution for developing countries (Taylor, 1983).

Aggregate demand effects, supply-side bottlenecks, and the international position of developing countries imply complex and potentially destabilizing dynamics of the savings-investment nexus, in which a domestic balance at full-employment is at conflict with the external constraint. This was firstly analyzed from the structuralist tradition through Two-Gaps models (Ros, 2013, Ch. 12), but now the main analytical framework is the Balance of Payments Constrained Growth (BoPCG) model by Thirlwall (2011), which shows how foreign markets ultimately embody supply-side and demand-side restrictions, since they are a source of both autonomous demand and financial resources to finance capital accumulation. The influence of the productive structure works through relative income-elasticities of imports and exports, which depend on the productive capacity, following the insights of Latin American structuralism (Cimoli & Porcile, 2016). The class of structuralist models that combine Lewis-Kalecki types of duality with Thirlwall’s BoPCG is growing in size and complexity, incorporating new elements, mechanisms and interactions to explain an increasing

⁶Aggregate increasing returns to scale echoes the classical Smithian dynamics of economic growth and the Kaldor-Verdoorn law. They can arise from different features of the capitalist sector: external and internal economies of scale, technological and demand spillovers, industrial training and learning by doing, etc.

range of phenomena.

Regarding labor markets and informality there are several applications. For example, Chaudhuri and Mukhopadhyay (2010) make a detailed analytical presentation of general equilibrium dual-economy models focused on informality⁷, considering several elements relevant for developing countries. They show how the presence of informality makes incompatible some standard market-oriented policies, like trade liberalization and labor flexibilization, and how they interact with a more Keynesian management of aggregate demand. Along the same lines, Razmi (2006) considers the embeddedness of the informal sector into international production networks, and shows that formal wage suppression tends to have adverse effects for both formal and informal workers.

Therefore, the approaches of Lewis (1954) and Kalecki (1979), among others, set the ground for the study of macroeconomics in developing countries, through a family of analytical models of dual economies. However, these models are focused on growth and distribution, while informality, labor markets, and social policies are rarely the main object of study. Moreover, there is still a view, tacit of explicit, that overcoming informality or backwardness is desirable or necessary for development. In this respect, it is worthwhile to analyze the insights of Latin American Structuralism, another big influence of structuralist macroeconomics. This approach paid greater attention to labor and social issues, and established a dialogue with other social sciences that led to a richer understanding of the phenomenon of informality.

2.2.3 Marginalization

Latin American structuralism evolved in the Economic Commission for Latin America and the Caribbean (CEPAL, from the acronym in Spanish), and its foundations were laid down by Prebisch (1950). A key tenet of this approach is the center-periphery depiction of the global economy, with peripheral countries characterized by technological backwardness and dependence on central countries, and by *structural heterogeneity*: a disarticulated productive structure with “islands of high productivity in a sea of low productivity activities” (Polanyi Levitt, 2005). These features make peripheral countries highly vulnerable to external volatility and global business cycles and creates perverse patterns that enforce their peripheral condition, in particular the worsening of the terms of trade with central countries.⁸ In such a context, the challenge for Latin American countries was to increase productivity and deepen the industrialization process started in the inter-war period, while reducing its external dependency, which required a combination of industrial, anti-cyclical, and external policies Prebisch (1950).

Though close to Lewis’, structuralist analysis is different because it deals with countries that are already industrialized at some degree, and the emphasis is not on the capitalism-subsistence

⁷Here *general equilibrium* refers to the macroeconomic balance between sectors, aggregate demand and supply, savings and investment.

⁸The worsening of the terms of trade could take three forms (Fischer, 2015; Polanyi Levitt, 2005). First, analogously to the analysis of the movement of factoral terms of trade by Lewis (1954), the relatively slow productivity growth of peripheral countries with respect to central countries would lead to a worsening in the relative standards of living. Second, due to the diverging organizational structures of production and labor in central and peripheral countries—monopolistic and unionized in the former, competitive in the latter—productivity gains in peripheral countries are translated to central ones in the form of lower prices. And third, known as the Prebisch-Singer hypothesis, the commodity terms of trade of peripheral versus central countries tend to deteriorate, because the former produce income-elastic primary commodities, while the latter produce income-inelastic industrial goods.

duality, but on the high differences in productivity across different sectors and activities in the economy; here, nothing prevents low-productivity sectors from being capitalist and/or industrial. In this sense, the view of the development process is more complex than the transition from subsistence to capitalism through industrialization.⁹ The more nuances and complexities of the structuralist approach led to a recognition and discussion of the phenomenon currently known as informality.

For Prebisch (1950), Latin American countries are characterized by the presence of “ill-employed manpower,” whose transition to high-productivity sectors through import-substitution industrialization could have positive effects for development. However, cepalist policies were early criticized because they tended to “intensify both polarization and dependence” (Fischer, 2015, p. 706) and, despite industrialization and growth, urban poverty and misery started to rise across the region, the so-called phenomenon of *marginalization*.

A group of Latin American social scientists coined the term “marginalization with reference to the import-substituting industrialization’s inability to absorb the growing contingent of the labor force and to its tendency to expel labour” (Kay, 1990, p. 10). It was a critique of the modernization approach to development, which viewed in marginality a vestige of the past, coming from a somehow inherent inability of pre-capitalist social groups to fully participate and integrate into the modern economy. On the other hand, it was also a critique to the application of Marxist categories in the study of mid-20th century Latin America, to stress the particularities and differences of these countries with respect to the experience of developed countries in their early phases of industrialization.

According to the authors in this tradition, the marginalization process in Latin America was being driven by two elements: first, the dependent pattern of insertion into international markets,¹⁰ and second, the hegemonic position of a monopoly capitalist sector. In this respect, since surplus population in Marx’s analysis responds to the internal dynamics of a competitive capitalist economy, it is deemed inadequate to describe the phenomenon of marginalization in Latin American countries (Godfrey, 1977; Quijano Obregón, 1974).

But the main argument of Nun (2001) and Quijano Obregón (1974) is that, contrary to Marxian surplus population, the *marginal pole* or *marginal mass* is not *functional* for capital accumulation. Surplus population fluctuates countercyclically with capital accumulation and is eventually absorbed by the hegemonic sectors, while the urban poor in developing countries are a relatively large, stable, and excluded mass.¹¹ On the other hand, since marginal workers cannot compete with other workers in terms of skills and education, this group plays no role in the regulation of wages. Thus, “the manpower available in the market no longer constitutes a ‘reserve’ for those hegemonic levels of industrial production, but an excluded labour force, which as changes in the technical composition of capital progress, loses in a permanent and not a transitory way the possibility of being absorbed into those hegemonic levels of production” (Quijano Obregón, 1974, p. 418). Hence, the marginal

⁹In strict sense, neither Lewis (1954) considered industrialization an automatic door to development, since he stressed how the mechanism of factorial terms of trade can make manufacturing exports of developing countries “function in a manner similar to their previous agricultural export commodities” (Fischer, 2015, p. 716).

¹⁰This assertion is based in Marxist dependency theory which is similar but not equivalent to the center-periphery framework of Latin American structuralism. See Fischer (2015) for a discussion.

¹¹Nun (2001) argues that there is a difference between surplus population and industrial reserve army, the first referring to the characteristics and causes of a superfluous population regarding the dominant relations of production, and the latter referring to a particular functional role of such population in capitalism, which is to be a reservoir of labor for the expansion of capital accumulation. He also argues that with capitalist development, the latent and stagnant forms of surplus population would tend to disappear, so that the floating form is the predominant one.

mass cannot be expected to support a process of capitalist accumulation and modernization.

According to Kay (1990, p. 13), “the main weakness of marginality analysis is its tendency to underestimate the significance of the ‘marginals’ for the reproduction of the capitalist system,” other weaknesses being its tendency to overestimate the role of external factors and monopoly capitalism. Once conditions changed however—with debt crises and the Washington consensus—the ‘marginals’ became increasingly functional for capitalist accumulation, with internal dynamics and competition playing a determinant role.

Interestingly, this was broadly recognized by the proponents of the concept. Marginality is functional through the provision of cheap inputs for capitalist firms, and as a “source of livelihood to casual labourers, making them available at higher levels at ‘below-subsistence’ wages” (Godfrey, 1977, pp. 67-68). This helps to reduce the costs for capitalist firms and puts a downward pressure on wages, and, in this way, marginality generates transfers of surplus value to capital and constitutes a set of different forms of exploitation. Competition is crucial in this process: “the different [sectors] actually or potentially compete for markets, and small firms (towards the marginal pole) are only allowed to operate in potentially competitive lines as long as the market is too small to be profitable for larger-scale technically innovative production. As soon as small producers have developed a market to the extent that it is of interest, then larger firms move to take it over, with state help if necessary” (Godfrey, 1977, p. 68) This is a common observation in analysis of informality. For Altmann (2011), it is characterized by a “fragmented supply structure”, and Alfars et al. (2017, p. 74) point out that “[t]hrough its networks, which penetrate into urban and rural areas where many formal businesses do not, the informal economy provides goods and services, multiplying the market available to formal firms.”

In the same vein, Jaramillo González (2018) explains that economies of scale in big industries, and the low price of some goods, open the door for low-scale commercial networks in poor areas and for the self provision of some essential goods, activities that are not profitable for big capitalist companies and that can be described as simple-mercantile and non-mercantile forms of production. Depending on market dynamics and business cycles, these activities can be complementary or competitors of big capitalist firms.

Hence, because of its role in containing the increase in wages, and being alternative forms of exploitation by capital, marginality is not at odds with Marx’s surplus population. The size and persistence of informality may contradict the most simplistic historical predictions of Marxism, but is in accordance with Marx’s deeper analysis of capitalist dynamics. The marginality tradition was important for studying and conceptualizing the “mass of impoverished Third World labour” (Kay, 1990, p. 13) and for noticing, paradoxically, the alternative ways in which surplus labor can be functional for capitalism in peripheral countries, rather than an anomaly, a transitory element in the process of capitalist development, or a sheer legacy of pre-capitalist social formations.

However, it was the concept of informality which became predominant to describe this phenomenon worldwide, sparking similar controversies around their functionality for the economy and its integration with formality.¹² These aspects, and the regulatory issues involved, have been ana-

¹²The term *informality* was coined by the anthropologist Keith Hart in 1971, to describe the activities of internal migrant workers in Ghana, and was also applied to describe the Kenyan economy in an employment mission organized by the ILO in 1972 (Chen, 2012). See also Chen (2012) and Dell’Anno (2021) for a discussion of the theoretical and conceptual approaches regarding the functionality and integration of informality, in the early years of the concept.

lyzed from another perspective that Chen (2012) calls the structuralist view of informality. Castells and Portes (1989) stress the universal and heterogeneous character of informality, present in developing, developed, and socialist countries alike, and taking diverse forms, not necessarily coincident with the survivalist strategies of the urban poor, but generally characterized by vulnerable and downgraded forms of labor. They note that the formal and informal sectors are structurally and systematically connected, the latter constituting decentralized networks of production and distribution that are functional for the whole economy.

This approach also integrates the positive and negative dimensions of informality, which “simultaneously encompasses flexibility and exploitation, productivity and abuse, aggressive entrepreneurs and defenseless workers, libertarianism and greediness. And, above all, there is disenfranchisement of the institutionalized power conquered by labor, with much suffering, in a two-century-old struggle” (Castells & Portes, 1989, p. 11). The last element brings to the fore the regulatory and institutional framework, in a broader sense than the neoclassical treatment of the topic as a matter of incentives and behavioral responses.

Regulations and institutions are of utmost importance, not only because they are the main criteria in practical definitions of informality (ILO, 2018), but also because they make a difference for workers in terms of rights, protections, and a dignified standards of living. As stated by Castells and Portes (1989, p. 13), “it is because there is a formal economy (i.e., an institutional framework of economic activity) that we can speak of an ‘informal’ one.” In this respect, the analysis by Portes and Haller (2005) echoes some neoclassical claims, since they argue that enhanced state regulation may increase the opportunities for informality—conceived in terms of violation of rules—but that “the extent to which these opportunities are implemented varies with the scope of attempted official control, the effectiveness of the state apparatus, and the countervailing power of society to resist or bypass official rules” (p. 412). A crucial element here is the role of “social underpinnings” or “social ties” in providing certainty and enforcement of agreements, in a context where state regulations do not apply, and in opposition to criminal activities where it is done through force and violence.

Taking all these elements into consideration allows to see the systemic functionality of informality. It is functional not only for the directly involved workers and enterprises, that find in such relations a way to secure a living and make profits, but also for the state apparatus and the economy at large. It provides a cushion for marginalized groups, and produces low-cost goods and services for workers and enterprises, which assures the viability of economic systems in most developing countries, guarantees political stability, and allows to perpetuate a deficient welfare system thanks to the solidarity networks of informality (Portes & Haller, 2005). The structuralist approach also stresses the role of big capitalist enterprises in the expansion of informality: the reaction against organized labor, the attempts to increase competitiveness through labor-costs reduction and circumvention of taxes and other regulations, the effects of globalized competition, and the process of industrialization in the Global South (Castells & Portes, 1989; Chen, 2012).

These observations are derived from several case-studies in different parts of the world, which are inherently multidisciplinary, combining the insights from other social sciences like sociology and anthropology (Chen & Carré, 2020; Portes et al., 1989). The richness of this approach contrasts with those of economists, mostly concerned with the formal properties of mathematical models and the econometric analysis of an inherently hard-to-measure reality. However, and for the very same reasons, these authors tend to be skeptical of theoretical analysis and generalizations; in words of

Castells and Portes (1989, p. 6), their studies “indicate the impossibility of achieving theoretical ‘closure’ on the subject of informalization at the present time.”

It is true that no theoretical framework is capable of accounting for all the different shades of informality. However, the several elements identified by the structuralist approach can be put together in a coherent theoretical framework inspired by classical political economy, using the Marxian concept of surplus labor and the Theory of Social Reproduction. I call this approach structuralist, because it takes insights from different traditions that use such title: Latin American structuralism and the debates on marginalization that it sparked; the structuralist macroeconomic modeling techniques of Ros (2013), Taylor (1983) and others, inspired in Lewis (1954), Kalecki (1979) and the Latin Americans; and the multidisciplinary structuralist approach to informality of Castells and Portes (1989) and Portes and Haller (2005). I leave this for the next chapter; for now, I discuss the neoclassical.

2.2.4 Segmentation

Neoclassical economics has dealt extensively with informality, maybe due to the challenges it poses to the Walrasian general equilibrium results—full labor market clearing through a unique wage equal to the marginal product of labor—but also because of the leading role played by neoclassical economists in developing countries’ policy design, especially since the period of structural adjustment reforms under the Washington Consensus. Indeed, it is the main theoretical influence behind the research and recommendations of multilateral institutions for developing countries. Further, the attempts at actualizing mainstream models to the realities of developing countries partly overlap with neoclassical analysis of unemployment and labor markets in the Global North.

Interestingly, orthodox and heterodox modeling techniques and insights do not differ greatly, as both have a common origin in the dual economy model by Lewis (Fields, 2011a). However, while heterodox economists focus on growth and macro structural mechanisms, the mainstream started to use dual-economy models to analyze labor markets, which led them to a more direct and deep involvement with informality¹³.

The seminal neoclassical reference on the topic is Harris and Todaro (1970), conceived to account for rural-urban migration and urban unemployment observed in developing countries. The Harris-Todaro model assumes a competitively determined wage in the rural sector, equal to the non-zero marginal product of labor, and a higher, institutionally-determined (minimum) wage in the urban sector that attracts rural workers. Not all migrants find a job so there is (urban) unemployment, a phenomenon not present in the Lewis model. This happens because rural workers base their decisions on the expected wage differential, determined by both the unemployment rate and the urban wage. Another seminal contribution is Fields (1975), who adds an informal urban sector and other elements like job-searching, education effects on hiring, and labor turnover.

Like in heterodoxy, the neoclassical literature grew in models of two or multiple sectors, incorporating increasingly varied mechanisms¹⁴, but with a quite different focus on behavioral trade-offs

¹³Broadly speaking, duality in (mainstream) economics can be conceptually traced back to the Heckscher-Ohlin-Samuelson model of trade. Curiously, this understanding of duality, as the relation between two sectors with different endowments of productive factors, is more influential in the heterodox tradition (Chaudhuri & Mukhopadhyay, 2010), while the Lewisian labor markets dualism is more influential in the mainstream.

¹⁴Fields (2007) provides a good and concise review of the theoretical literature, considering also empirical evaluations

and incentive mechanisms behind workers' and firms' decisions to operate in informality. Neoclassical economists were suspicious of dual-economy models where the informal sector plays a buffering role, absorbing all the workers that cannot find a formal job, as it implies a passive, automatic response at odds with the methodological principle of rational decision making and with the observed heterogeneity within informality. One way to correct this is by adding more sectors—the seminal works of Harris and Todaro (1970) and Fields (1975) are three- and four-sector extensions of the Lewis model—but it does not eliminate the buffering issue: with exogenous population growth, the equality between total labor force and the sum of workers in each sector implies that for one of them the size is determined as a residuum.

Therefore, the discussion initially revolved around the presence or not of *labor market segmentation*: the situation in which “different wages [are] paid in different sectors to *comparable* workers” (Fields, 2007, p. 23, emphasis in the original); in econometric terms it would require a statistically significant non-zero wage gap after controlling for workers' characteristics. In a recent study by the World Bank (Ohnsorge & Yu, 2021, p. 127), it is argued that according to empirical evidence “the wage penalty largely reflects the characteristics of workers who self-select into informal activities.” However, as pointed out by Maloney (2004), wage differentials are not conclusive on the presence of segmentation because there are several elements affecting the attractiveness of different sectors for workers, like the benefits of social protection and its costs for formal workers, the existence of informal support networks, and some non-pecuniary factors by which “the informal option may actually offer a measure of dignity and autonomy that the formal job does not” (p. 1173). Hence, despite the concept of segmentation, neoclassical economists continued to work with models of two or multiple sectors.

An important phenomenon to explain was *voluntary informality* and the “fundamental duality within the informal sector, whereby some people work in a lower tier because they can do no better, while others work in an upper tier into which entry is restricted because of human capital and financial capital requirements” (Fields, 2011a, p. 19, emphasis mine); it is the same duality stressed by Perry et al. (2007) in the opposition between *exit* (workers that opt for informality) and *exclusion* (workers that cannot enter the formal sector). Ohnsorge and Yu (2021) and Perry et al. (2007) suggest that, broadly speaking, the first group corresponds to the self-employed and the second group to the salaried informal workers, confirming the depiction of the self-employed by Maloney (2004, p. 1159) “as the unregulated, developing country analogue of the voluntary entrepreneurial small firm sector found in advanced countries, rather than a residual comprised of disadvantaged, workers rationed out of good jobs.” Nevertheless, the existence of voluntary informal workers “does not imply that they are either happy or well-off” (p. 1164), and it is not easy to measure the size of voluntary informality as it is necessary to know the alternative working options available to determine how voluntary the decision is. Voluntary or not, informality can be a rational decision of workers, because of regulations and incentives, or because of personal characteristics.

Fields (2007) succinctly shows that labor market issues, in particular formal sector wage setting and intersectoral linkages, are the main mechanisms used in neoclassical models to explain the existence and dynamics of informality. Formal wage setting can be seen as subject to institutional frictions, like a mandatory minimum wage, trade unions, public sector pay policies and labor codes, but there are other non-regulatory mechanisms that imply non-market clearing in the formal sector: efficiency wages, matching, job creation and destruction, ranking, and imperfect information.

and an assessment of policy and welfare issues for informality in developing countries.

On the other hand, intersectoral linkages concern the movement of workers between formality and informality, and can be modeled as a crowding mechanism (the standard informality-as-buffer of Lewis), through search behavior (like in Harris-Todaro), or resulting from intertemporal optimization.

Workers' characteristics play an important role in non-regulatory frictions and optimal decision making, the most important being the level of skills or education, and wealth or capital endowments. In general, there seems to be a wide neoclassical consensus about individual characteristics and regulations being the main determinants of segmentation through labor market mechanisms: "Broadly speaking, [wage] differentials can reflect inefficiencies caused by labor market frictions or self selection of workers into their most productive employment" (Ohnsorge & Yu, 2021, p. 128).

However, besides the "labor [market] perspective", another strand of neoclassical literature sees informality as the broader "private sector's response to an overly regulated economy and an inefficient State" (Loayza, 2016). This approach blames regulations on labor codes and social protection benefits, the efficiency in the provision of such benefits and public goods, the tax system, and the capacity to enforce such regulations. According to Maloney (2004, p. 1166), with an inefficient state "workers are able to choose to an important degree which benefits programs or formal institutions they participate in, and the optimal degree is not obviously the full formal sector package." Informality can arise as a negative equilibrium because of excessive regulations, weak rule of law, or both (Bardey & Mejía, 2019; Oviedo et al., 2009).

Loayza (2016) integrates the two approaches, as considers duality in production (modern vs. rudimentary economies) and labor (formal vs. informal), to make projections for a wide range of countries assuming supply-led-exogenous-productivity growth and different paths for distortions (legally mandated labor costs, excess of capital costs for informal firms, cost of living adjustment in the modern sector, and productivity differentials between sectors). The results show that less stringent conditions for informal firms increase informal wages but also expand informality, while streamlining labor regulation (a minimum wage growing below productivity) expands formality but does not eliminate informality. A higher growth of productivity, in turn, eliminates informality in the long-run.

The neoclassical view on informality is summarized by Maloney (2004, p. 1160): "[b]eing in the informal sector is often the optimal decision given their [workers'] preferences, the constraints they face in terms of their level of human capital, and the level of formal sector labor productivity in the country." The last factor, *the level of formal sector labor productivity in the country*, is widely recognized as the ultimate constraint to reduce informality, even in the presence of "well-designed, integrated programs" (Perry et al., 2007, p. 11), because the informal sector—characterized by very small firms, no economies of scale, backward technologies, low capital intensity, unskilled labor, lower need and access to markets, services, and funding (Ohnsorge & Yu, 2021; Oviedo et al., 2009)—is only attractive (competitive) when formal sector productivity is low too. Indeed, Maloney (2004, p. 1173) recognizes this when stating that "[i]ncreasing the size and productivity of the formal sector probably offers the largest hope for raising the standard of living of workers throughout the economy over the longer term", which is confirmed in the results of simulations by Loayza (2016). It is important to stress that the focus here is on *formal sector productivity* rather than on intersectoral differentials or low informal sector productivity, which might not be pathological at all as informality can be a survival strategy for low-scale, low-productivity firms, or a mere feature of

them operating mainly in services provision, whose productivity growth tends to be lower (Maloney, 2004).

In short, the existence of the informal sector and its low productivity can be considered a result of the low formal sector productivity, rather than a cause of it, although perverse feedback can emerge because, as documented by Ohnsorge and Yu (2021), formal firms facing competition from informal ones tend to exhibit lower productivity. However, the mainstream approach has a disappointing record at explaining productivity, which is approached by the dubious concept of Total Factor Productivity (TFP), an unexplained residual from unsound growth accounting. Currently the preferred explanation comes from the literature on endogenous growth and human capital, where productivity growth is considered a result of education and overall improvement of skills. From this perspective, informality comes from workers characteristics and inefficient regulation, so the policy package to face it—equal to the one prescribed against the social problem—is a compound of “streamlining” regulations, labor market flexibilization, and social spending in education, which purports to increase the incentives to formality and the formal employability of workers; it is even suggested that, since formal firms tend to exhibit higher productivity, formalization policies can contribute to increase productivity too Ohnsorge and Yu (2021).

This view, in which the characteristics and decisions of (some) people are to blame for aggregate structural phenomena, recalls the Malthusian dualism that ascribed misery to the short-sighted lower classes. In this respect, it is worth considering the evolution of the second part of Malthus’ argument, the critique of the idea that society is perfectible through social policies. Hence, informality and social stratification are closely linked to debates on social protection in the history of economic thought. I now turn to analyze this second dimension.

2.3 Social protection

I define social protection as the set of practices and policies intended to guarantee a certain standard of living and provide support in adverse situations. It is a *buffering* mechanism, “an economic shock absorber” for both individuals and the collective (Damon, 2016, p. 9), but also a permanent, institutionalized device to prevent “socially unacceptable” conditions of living (Norton et al., 2001, p. 7). The most common forms of social protection are support against income losses, healthcare provision, and some authors also consider labor inclusion policies (Abramo et al., 2019; Bonilla-García & Gruat, 2003; United Nations, 2018).¹⁵ For Fischer (2018, p. 227), social protection, along with schooling and healthcare, is a subset of social policy, which is “the range of publicly or collectively provided, funded and/or regulated forms of services and interventions in a society.” Other authors use different concepts, broader than social protection, that include a wide variety of services: housing subsidies and public education as part of social spending (Lindert, 2004); social services and cash transfers that conform the Public Sector System of Provision (Fine, 2014); comprising social services along cash transfers; and informal support networks beyond state policy and private markets (Altmann, 2011).

Social protection is shaped by social, political and historical forces, as collective norms and

¹⁵The Convention No. 102 by the ILO identifies nine “classical” contingencies that require income support: “medical care, sickness, unemployment, old age, employment injury, family responsibilities, maternity, invalidity, and survivorship” ILO (2017). Labor inclusion policies include training and technical education, direct and indirect job creation, support for entrepreneurial activity and self-employment, and services of labor intermediation (Abramo et al., 2019).

compromises determine the situations to be protected against, and the standards of living to be pursued.¹⁶ Such public actions, in turn, “may be governmental or non-governmental or may involve a combination of institutions from both sectors” (Jorgensen & Siegel, 2019, pp. 21-22). Thus, it is an extensive, economy-wide system of transfers and services for provisioning and support, parallel and overlapped with, but radically different from, market production and transactions, because it is governed by a collective logic pursuing ethical-political imperatives of justice and well-being, instead of the more individual motives of the market. In this sense, it is a buffer for the collective too, because it mediates conflicts and guarantees social cohesion.

Two main modalities of social protection are *social insurance* and *social assistance*¹⁷. Social insurance aims “to protect insured persons and their dependents against a number of life contingencies through contributory mechanisms” (OECD, 2019, p. 17). It is based on the principle of insurance, where individuals exposed to similar risks protect themselves by pooling resources together for consumption smoothing and risk hedging, while financial sustainability is determined by norms of actuarial balance. On the other hand, social assistance (sometimes called *safety nets* (Ribe et al., 2012)) is oriented towards poverty alleviation and support of those in need, based on the principles of vertical solidarity (den Butter & Kock, 2003) and redistribution, where the well-off pay to support the worse-off, so they are usually referred to as non-contributory schemes.¹⁸

However, as Théret (2006, p. 149) points out, it is almost impossible “to trace a precise border between social insurance and redistribution [which evidences] the indissociable economic-political mix of the relations of domestic protection in waged societies”. For example, the compulsory character of certain social insurance schemes and its partial funding with taxes are at odds with them being pure contributory, market mechanisms. On the other hand, social assistance based on a notion of citizens rights, financed through consumer taxes, and comprising carefully designed incentive mechanisms and conditionalities, cannot be accurately depicted as a non-market scheme. Similarly, the Social Risk Management (SRM) approach by the World Bank originally conceived social assistance as an almost residual safety net for the poor, while the notion of a Social Protection Floor (ILO, 2017) suggests that it is social insurance which should be residual.

This multiplicity in the modalities and definitions of social protection contrasts with the relative immutability of debates on the topic, which are practically insolvable because they are guided by self-interested opinions and ethical positions: “the whole history of debate over social programs is just a shifting back and forth between two poles of self-interest. Newly popular arguments in the debate reflect shifts in the balance of power between the two long-fixed poles, not new ideas” (Lindert, 2004, p. 4). The two poles are basically, on the one hand, those who ask for more extensive and generous programs, on the other, those who oppose it. The next subsections show the evolution

¹⁶A shown by Lindert (2004), Blackburn (2002), and Mesa-Lago (1985), the historical evolution of social protection across the world is characterized by the influence of demographic changes, political conflicts, social movements, processes of democratization and state building, strategies to gain support for political and development projects, the involvement of powerful financial and corporate actors, and the effects of business cycles and general economic performance.

¹⁷Universal benefits are sometimes considered a third, separate category—for example by Barr (1998), cited in den Butter and Kock (2003). However, Gentilini et al. (2020) consider them only one among several modalities of social assistance, which are located a “social assistance cube” defined by three coordinates: the degree of targeting (needs based, categorical, or universal), the presence of conditionalities (of work, services, or unconditioned), and the modality of transfers (cash, vouchers, or in-kind).

¹⁸Barrientos (2019) and Fischer (2018) argue against the label of non-contributory for social assistance, since people in those schemes contribute by paying taxes while *contributory* social insurance is usually tax-financed in part. Although I agree with these arguments, I keep using the term *non-contributory* for tax-financed schemes for the sake of simplicity.

of such debates in economic thought.

2.3.1 The “fear of misery” and the autonomization of *the economic*

According to Lindert (2004, p. 39) there is an unsolvable “welfare trilemma” that guides the discussion and functioning of social protection: the “unavoidable trade-off between guaranteeing a bottom income, giving incentives to work more, and protecting the government budget” (p. 39). This reflects the conflict between collective and individualist forces that underlies social protection: public actions to guarantee the well-being of people alter the incentive mechanisms of capitalist economies and generate macroeconomic imbalances, hindering the workings of the market-based provisioning system thus acting against the main objective of promoting well-being. This implies a vision of *the economic* as a separate dimension of social life governed by autonomous rules, a vision that is foundational for economics and for which social protection played a key role.

The main reference is, again, Malthus (1798). His theory is an analytical justification to attack the English Poor Laws—a form of social assistance—and to argue “against the perfectibility of the mass of mankind” (p. 5)—the impossibility to solve the social problem. Although he tends to be depicted as anti-liberal because of his defense of Corn Laws and landlords’ interests in the debates with Ricardo, both authors coincided in their calls for the abolition of Poor Laws, which suggests that the social problem is a more fundamental issue for the liberal worldview and economic order than international trade. Malthus’ principle of population has a triple nature: positive, as a description of the functioning of societies; normative, because of its policy prescriptions; and epistemological, since it traces a line between politics and the economic order (Tellmann, 2017).

The autonomization of *the economic* according to the principle of population is much more fundamental than other more famous attempts—the invisible hand of Adam Smith or the price-species flow mechanism of David Hume—that still conceived the economic as essentially political. Malthus, on the contrary, invoked (human) nature for a mechanism valid in any time and place, independent of political regimes and forms of social organization. According to Tellmann (2017), it was a response to the uncertainty brought about by the French revolution, that threatened to vanish all solid foundations and certainties of society by depicting everything as changeable through the exercise of power. The principle of population reestablished order by taking the social problem—the ultimate reason behind the political turmoil—out of politics and putting it into the natural realm of the economic, where it could be managed by reason and science. It rests on the *conflict* between population and its needs and wants, on the one hand, and the capacity of the land to support and satisfy them, on the other; this opposition is the definition of *scarcity*. Only capital accumulation, embodying the bourgeois virtues of thriftiness and abstinence, offers a promise of abundance, luxury, and civilization (for the few); however, it requires human suffering, because “[i]f no man could hope to rise or fear to fall, in society, if industry did not bring with it its reward and idleness its punishment, the middle parts [of society, the bourgeoisie] would not certainly be what they now are” (Malthus, 1798, p. 115). Alongside the principle of scarcity, these “narrow motives” of fear and hope, transformed into the “pursue of pleasure and avoidance of pain” of utilitarian ethics, came to define modern *economics*, that in terms of the Malthusian principle can be considered the science of “the grinding law of necessity, misery, and the fear of misery” (p. 56).

Henceforth, Malthus’ depiction of population dynamics (the positive dimension) set the basis for a scientific analysis of society (the epistemological dimension) giving rise to the autonomous

realm of *the economic*. The normative dimension, however, rests not on the inevitability but on the *necessity of suffering* as the driving force of bourgeois civilization. The true obstacles for civilization and progress are not the natural and limited resources of the soil but the human institutions that pretend to avoid suffering: the Poor Laws. The Malthusian argument is still prevalent in the analysis of social protection in terms of incentives. Current views are less drastic, though, since human suffering—at least in its most extreme forms—is no longer considered necessary for progress and it is now deemed avoidable—in theory.

2.3.2 The return of politics and hope

As is usual in economics, the autonomous economic reality of the Malthusian principle existed only in theory. In practice, it took 36 years since the publication of the *Essay* for the English Poor Laws to be abolished¹⁹. But not even in theory the Malthusian principle subsisted, because Ricardo used it only to stress the exogenous determination of the natural wage, a minimum for subsistence not in physiological or biological terms, but with regards to social norms and historical tendencies.

Polanyi (2001) theorized this reality with the notion of the “double-movement”: the capitalist order requires the artificial commodification of land, money-capital and, in particular, labor—the first movement—but it is a process so disruptive that generates defensive responses for safeguarding social stability, through institutional mechanisms that put limits to such commodification—the second movement. Interestingly, Polanyi recognized that Malthus was right at some extent, because an important part of his book is devoted to explaining how the Speenhamland system—the form taken by the Poor Laws in some parts of England after the French Revolution—was preventing the emergence of a free labor market, with damaging consequences for workers. However, he also documents how short-lived was the free market experience, as European countries started a reformist turn circa 1870, characterized by protectionist policies, labor codes, and the emergence of the first national systems of social protection. Political and economic motives are intertwined here because protective policies do not respond exclusively to demands by labor movements, and free market mechanisms are not always the result of free market policies. For example, Lindert (2004) explains that Poor Laws were functional to the interests of landed elites, by guaranteeing the availability of cheap labor, and that social protection policies might actually induce a Malthusian iron law of wages, by pushing up the lower strata through benefits and pushing down the middle strata through taxes, hence forcing a larger part of the population to live on subsistence.

In any case, the important messages of Polanyi are, first, that market forces are not *free*, in the sense that they are always conditioned by institutional forms and shaped by political conflicts, and second, that this is due to the destabilizing and disruptive effects they have on society. In words of Galbraith (1994, p. 39), “[a]n economic system which of constitutional necessity was so unfeeling, so intolerant of weakness, was troubling,” so troubling that ordinary people “showed their inclination to press collectively or with the aid of government for measures designed to make their lives more secure.” The double-movement is synchronic rather than diachronic, since social protection institutions are constantly changing, partly to accommodate market forces and enable

¹⁹Poor Laws were abolished only in part in 1834 because a reduced state assistance was maintained for the “non-abled”, a social residuum that was—wrongly—expected to vanish, until a minority report in 1909 recognized that the social problem could not be solved by market forces, suggesting the need for universal policies that anticipated the welfare state (Picchio, 1992)

the unfolding of competition, partly to counteract its disruptive effects. Economic thought evolved to embrace this reality and get rid of the naturalistic principle of Malthus.

Non-mainstream schools were influential on practical issues. The *Verein für Socialpolitik*, founded in 1873 and influenced by the German Historical School of economic thought, opposed both the liberal dictates of classical (British) political economy and the Marxist calls to revolution, but recognized the need, for the development of German capitalism, of overcoming the traditional class structure and providing support for the masses. Therefore, based on data retrieving and analysis oriented to practical problem-solving, they “launched a project for a far-reaching program of social reform” that influenced the social protection policies of Bismarck (Balabkins, 1993, p. 34). The (Old) Institutionalists played a similar role in the United States, especially John Roger Commons, who worked on labor relations and legislation for several programs of social protection (Nugroho, 2018).

On theoretical grounds, classical and Keynesian traditions are the main references for a non-mainstream analysis of social protection. Classical authors—mainly Smith, Ricardo, Marx and Sraffa—shared a view of the economic process as embedded into a broader sociopolitical reality where the central dispute concerns the distribution of the social product and standards of living. “The problem of classical political economy—and of the capitalist system—is the fact that the labouring population, despite the weakness inherent in its dependence for subsistence on waged work, manages to maintain, through resistance and attack, a certain control over the modes of its reproduction” Picchio (1992, p. 29). The standards of living “are given in time and space, by habits, social contract, and historical power relationships” (p. 31) that include social protection institutions. This is at odds with the idea that standards of living have an univocal and automatic relation with the level of economic activity and labor demand, an idea that derives from Malthus’ principle of population and the wages fund theory of wages, but is also present in the neoclassical marginal productivity theory of distribution.²⁰ Such theories transform the capital-labor conflict into an internal one between different sections of the working class that have to struggle for a given fund of scarce capital. Current claims on the unintended effects of minimum wages or social assistance, by which some workers benefit at the expense of others, evidence the pervasiveness of Malthus’ thought. That is why the classical approach offers a way out of the common arguments and conclusions currently used when discussing social protection.

As to Keynes, though he is usually associated with the making of the welfare state, his role and interest in social policy design was minor. However, he had an important impact in other dimension. For Keynes, the economic was not an autonomous reality governed by immutable natural laws; rather, it was a malleable one that *had to* be managed if voluntary unemployment was to be avoided—he showed how downward adjustments in the standards of living do not translate into higher employment, thus refuting the conclusions of wages fund and marginal productivity theories (Keynes, 2018). Moreover, while Malthus considers that the future comes from thriftiness

²⁰The wages fund theory implies a “displacement effect” by which the accounting identity of the labor share is transformed into a causal relationship. For the classicals, the mass of wages (W) is equal to the product of the exogenous wage rate (w) and the size of laboring population (L): $W = \bar{w}L$; in the wages fund theory, on the contrary, W is taken as given by the stock of capital and labor demand, implying that population and standards of living must adjust: $\bar{W} = wL$. Though more mathematically elegant, the neoclassical theory bears the same message, because the wage is determined by the marginal productivity of labor, which to be computed needs to take the stock of capital as given. Despite its elegance, such theory is logically inconsistent because the size of the capital stock depends on the same prices that the marginal productivity theory is supposed to determine Petri (2019).

and abstinence, and neoclassicals and Austrians think of such “virtues” as resulting from the free play of the price system, Keynes saw the future embodied in the social phenomenon of money, but blocked by the individualistic narrow motives of fear and greed. The role of macroeconomic policies is to release this power of money through the management of liquidity and investment, hence coordinating the different individual temporalities into a collective project of futurity building where *abundance*, not scarcity, is the defining characteristic (Tellmann, 2017). Abundance and progress no longer rest on the fear of misery, but on adequate macroeconomic policies. In his exchanges with William Beveridge—the architect of the British welfare state—Keynes was concerned with the short-run affordability of the plan, but was convinced that the country would eventually adapt to bear the financial burden. As stated by Marcuzzo (2010, p. 204), “the intellectual and political legacy of Keynes [is] building the future on confidence.”

Thus, classical and Keynesian approaches allow to consider the standards of living as influenced by political factors, and to detach growth and capital accumulation from the Malthusian imperatives of fear and suffering. From more analytical perspectives, in this tradition social policies have been analyzed in the framework of demand-led growth models. Pension systems, in particular, have been extensively studied, with a focus in the comparison between Pay-As-You-Go (PAYG) and Fully-Funded (FF) schemes (Barba, 2006; Cesaratto, 2007; Pivetti, 2006; Rada, 2012a), the transition between schemes (Cesaratto, 2002, 2006), or the long-run effects where demographic and technological changes play a role (Rada, 2012b, 2017; Stauvermann & Kumar, 2016). The main conclusions on the topic are that FF schemes cannot promote growth nor shield pension systems from demographic changes, because in a demand-led economy savings respond to investment, and long-run effects of demographic changes depend on productivity growth and technological change. Other topics analyzed include the effects of an output-stabilizing policy of public services provision as opposed to a balanced-budget rule (Hannsgen, 2014), labor flexibilization policies in dual labor markets (Dutt et al., 2015), and the effects of a Universal Basic Income (Nikiforos et al., 2017).

This literature shows that the opposition to the expansion of social protection, based on arguments about balanced-budget restrictions, is misguided. By the Keynesian principle of effective demand, such expansions would have positive effects on growth, while the financing of social protection programs depends on income distribution and class struggle.. However, these methods have not been applied to the analysis of social protection in economies with large informal sectors, where the dynamics and consequences might be different.

2.3.3 The tyranny of the economic and the engineering of sacrifice

Against the promises of Keynesianism, the neoliberal project transformed political decisions into technocratic procedures, social relations into economic relations, and imposed the principle of austerity, a “shared sacrifice” to macroeconomic stability and capitalists’ confidence (Brown, 2015; Fischer, 2018). In this context, market competition and discipline are enforced, and social protection is essential for its role in making the punishment bearable while keeping it operative and functional. Such complicated balance was achieved with the technical tools of neoclassical economics, as will be explained below. The Malthusian principle—the rule of scarcity and narrow motives—was reestablished as *social engineering* rather than natural law (Picchio, 1992).

From a macro perspective, the principle of scarcity came back with the neoclassical theory of capital, which justified the idea that economies tend to full-employment thanks to price adjustments

and substitution mechanisms, and which has been shown to be theoretically incorrect (Petri, 2019). In any case, supply-led growth models imply that government spending is not only ineffective but a hindrance to growth because it generates macroeconomic imbalances—particularly inflation and budget deficits—which reduce savings, crowd-out investment, and imperil international competitiveness, among several other evils. Consequently, all state activity, including social protection, had to be primarily restrained to maintain a balanced budget. According to Barr (1992), the first objective of the welfare state is to achieve macro efficiency, the optimal size of social spending that avoids distortions and growth explosions. This quoin of Lindert’s welfare trilemma—“protecting the government budget”—is the constraint that allows the subsequent optimization exercises to take place.

Given that over the life-cycle, all individuals will eventually face periods when they cannot provide a living by themselves, social protection, understood as “the pooling of resources is clearly a mutual concern, where the objective is not mainly to redistribute incomes among individuals but to render more effective the use of each individual’s earnings in society” (Söderström, 2008, p. 1). Hence, mainstream economics starts by recognizing that social protection is inescapable and that it does not occur exclusively nor primarily through state activity. Instead, it takes (at least) four forms (Barr, 1992; Söderström, 2008): first, the wage relation that allows individuals to earn a living by themselves; second, other indirect forms like savings and insurance which imply the participation of private actors like benefit societies, insurance companies, and banks; third, other forms of *private, voluntary* welfare provided by the family (women) and communities; and fourth, the state, with its regulations, price subsidies, direct production of goods and services, and income transfers. The different forms of welfare provision lead to the question of which is the optimal mix among them, the mix that minimizes distortions and provides adequate incentives in terms of labor supply, employment, and savings. These are the second and third efficiency objectives of the welfare state for Barr (1992), and the other quoin of Lindert’s trilemma—promoting self-help, “giving incentives to work more.”

Welfare economics provides both the technical and philosophical foundations for the management of social policy. The technical part, the tools for solving Lindert’s trilemma, comes mainly from the *welfarist* strand concerned with the utilitarian analysis of markets and policy outcomes Backhouse et al. (2020). Such approach gives a theoretical and operative basis to the notions of *efficiency* and *market failures* that underpin the mainstream view of social protection. Indeed, Barr (1992, p. 742) defines his text as “an essay about incentive structures and information”, and the welfare state as “a device for ameliorating what, in effect, is a series of principal-agent problems.” Market failures are widely considered the reason behind state activity; regarding social protection, the most important are: public goods and income externalities, which give rise to problems of free-riding; the failures of the insurance business, where imperfect information generates adverse selection, moral hazard, and sometimes prevent the sheer existence of certain markets; and the problems stressed by public choice theory—government failures—like the influence of electoral dynamics, interest groups, lobbying, and self-interested bureaucrats and politicians. These concepts govern the current design of social protection programs: the size of benefits and social security taxes, eligibility rules, the existence or not of conditionalities, etc. Söderström (2008) expresses very well the purpose of this: “Eventually, the role of the state might be reduced to administrating transfers based on the principle of *quid pro quo*. As in the market model, this means that each person directly pays for his or her own welfare.” The dominant welfarist approach to social protection aims at *simulating*

market processes and results, forcing the collective purposes to accommodate the individualist ones of competition; the inherent political-economic tension of social protection is solved in favor of the economic order.

This is not the whole story because the maximand and the objective function must be specified—the third quoin of Lindert’s trilemma. The reach and objectives of social protection were expanded eventually, partly for historical reasons, in another version of the Polanyian double movement, as a response to the failed promises of neoliberalism. Theoretical justifications were provided, too, from non-welfarist approaches that discuss issues of justice and fairness (Backhouse et al., 2020). Both historical and theoretical reasons thus justified the inclusion of other ends in social policy besides efficiency. That is why Barr (1992) also includes support for living standards, inequality reduction, dignity and solidarity as objectives of the welfare state. Ribe et al. (2012), in turn, consider as objectives of social protection—besides the traditional consumption smoothing and poverty prevention—the promotion of human capital accumulation, since it is identified as determinant for the reduction of poverty and vulnerability. Finally, the fight against poverty have emerged as moral guiding principle of social policy, which, despite being presented as an apolitical common project, conceals particular political agendas that use social policies to advance the neoliberal project (Fischer, 2018). In this sense, social protection, in its current fragmented form guided by principles of austerity, efficiency, and targeting, is functional to capital accumulation in an analogous way as informality is.

Poverty alleviation thus became an indispensable and permanent element of social protection, though it deepened rather than altered the social-engineering approach. The aim now is to avoid the “social security trap” where generous benefits perpetuate low standards of living by generating dependence and incentivizing people not to take care of themselves (den Butter & Kock, 2003). However, the social problem is not solvable in such a framework, because the sheer functioning of market forces requires the permanent presence of losers. Social protection thus became a Sisyphus-like ritual, the capitalistic version of the human institution of ritual sacrifice with neoclassical economists as officiants: market forces generate externalities that are tackled by policies that generate their own externalities to be tackled again by more technical and evidenced-based policies and so on.

This is evident in the changing nature of the recommendations for social protection in developing countries, particularly in Latin America. In the 1990s the World Bank developed the Social Risk Management (SRM) approach as a comprehensive framework for social policy. A complete classification of risks, and the diverse strategies to tackle them, depicted social protection as only partially overlapped with the whole set of practices by which societies manage risks Jorgensen and Siegel (2019); poverty, in turn, is a market failure coming from behavioral drawbacks, asymmetric information, inaccessibility to risk management instruments, or sheer bad luck (pp. 27-29). Accordingly, it must be addressed by strategies to minimize the impact of shocks and induce a change in behavior that reduces risk exposure and poverty. The policy proposal is centered on the promotion of risk sharing through financial and insurance markets, and programs that increase households’ access to assets, so that they can diversify their livelihood portfolios, make better location decisions, improve their risk management capacities, and—curiously—increase their risk-taking behavior. On top of this, well-targeted poverty-alleviation programs for the chronic poor.

However, the pervasiveness of poverty, vulnerability and informality, the permanent character

of social assistance, the difficulties and costs of targeting, and the fragmented social protection systems (Ribe et al., 2012), had led mainstream economists to propose, once again, a reform of social protection systems. This time, in the direction of “limited universalism”: a unique plan of (very basic) benefits and services for everyone, funded by consumer taxes, and complemented by (private) insurance for those who can pay (Filgueira et al., 2006; Kaplan & Levy, 2014; Ribe et al., 2012). These reactions and constants call for reforms evidence the failure of the neoclassical approach to social policy. In their attempt to create a fine-tuning process of social engineering, the social and political factors have emerged once and again, pointing to the defective nature of those systems.

2.4 Conclusions

In this chapter I have shown how the contemporary notions of informality and social protection can be traced back to the origins of modern economic thinking, and how they have been always interlinked. On the one hand, informality is related to the classical notions of surplus population, that from a Marxian perspective can be considered an essential part of capitalist economies, which is functional to capital accumulation in a varied range of ways. On the other hand, social policies lie in a incessant struggle between, on the one hand, attempts at using it as a tool for enforcing market discipline, and on the other hand, attempts at using it for tackling the social problem and another way of promoting growth and development through the management of aggregate demand.

This views are reflected in the theoretical and analytical studies of the two phenomena, where two different approaches were identified. The neoclassical approach, on the one hand, considers informality a matter of rational choice, influenced by workers’ characteristics and state regulation, and eventually fixable through adequate mechanisms of incentives. Though it is recognized that the ultimate restriction for informality reduction is overall labor productivity in the formal sector, the mechanisms behind this are not well discussed, and tend to be modeled with the standard but questionable closures of supply-led growth and exogenous productivity, or at best approached through human capital effects. Henceforth, an important macro-structural constraint is overlooked and it tends to be assumed as ultimately solvable through micro-management, changes in workers characteristics, and improved regulatory efficiency.²¹

The role that the neoclassical mainstream recognizes to productivity is a sufficient argument for watching their conclusions with caution, since Ros (2013) shows that the interplay of surplus work and increasing returns to scale—the classical explanation of productivity growth—can explain development traps and informality persistence with no need of complex labor market frictions and regulatory inefficiencies. In this respect, the heterodox approach understands informality as a macro-structural phenomenon, and uses models of dual economies that show the interrelation between informality and macroeconomic dynamics. However, the main concerns of these models

²¹Moreover, the neoclassical approach suffers from serious theoretical weaknesses. First, it relies on general equilibrium analysis, which have been shown to be theoretically inconsistent because of a circularity problem: general equilibrium determines prices, but such prices in turn affect the capital stock, which should instead be determined independently to generate the well-behaved factor demand curves that determine equilibrium (Petri, 2019). On the other hand, the neoclassical authors understand productivity through the notion of Total Factor Productivity (TFP), which is a residual term derived from growth accounting regressions, but is not related to productivity at all (Felipe & McCombie, 2007). Given the importance of productivity and labor market dynamics in the explanation of informality, these weaknesses make the neoclassical arguments generally unsound.

are growth, distribution, and balance of payments issues, and deeper effects of informality, as those suggested by the Marxian tradition, are seldom explored. Moreover, the role of social protection in the context of high informality has not been explored in the context of these models.

With regards to social protection, a similar pattern emerges. It has emerged several times in history, in the form of a double movement in the sense of Polanyi (2001), to counteract the disciplining mechanisms of capitalists economies. In this sense, social protection has been essential in the history of capitalism, and in the history of economic thought, since it constitutes an obstacle for market forces and evidences that the limits of the economic are malleable (Tellmann, 2017). Despite the initial calls of the liberal project to totally eliminate such obstacle (Malthus, 1798), the impossibility of doing so have changed the understanding of social protection by economists.

For the neoclassical approach, social protection is understood as a tool to manage incentives and resolve principal-agent problems, guided by principles of austerity and efficiency. This implies a complex fine-tuning system of social engineering which, first, is hard to apply completely, second, is inherently prone to problems and malfunctioning because of second order effects, and third, deepens the already existent social stratification as argued by Fischer (2018). On the other hand, heterodox approaches, in the structuralist tradition, stress the negative effects of conducting social policy under the principle of austerity, and show that more complete and generous social protection systems may have positive macroeconomic effects through the principle of effective demand.

Hence, the structuralist approach seems more promising in terms of capturing the aggregate, macroeconomic mechanisms, behind the interaction between social protection and informality, since it does not have the theoretical deficiencies of the neoclassical general equilibrium analysis, nor is focused on behavioral microeconomic responses. However, an important dimension that tends to be overlooked in analytical models is the functional role that both, informality and social protection, play in capitalist economies. On the other hand, the relation between social protection and informality has not yet been analyzed in the framework of dual economy models. In the next two chapters, I try to complement the heterodox analyses in these respects.

Chapter 3

Systems of social reproduction: A schematic representation of the double fragmentation of social protection and informality

The forms of work and production characteristic of informality are so heterogeneous and diverse that a theoretical conceptualization of the phenomenon is hard to conceive. Something similar occurs with social protection, with its multiplicity of programs, regimes, models and types. The two realms are closely intertwined in a double fragmentation, by which the most disadvantaged social groups are systematically assigned to the lowest tiers of labor markets and social protection systems.

The regulatory definition of informality—non-compliance with regulations—offers a way out: a unique criterion to characterize informality and a single form of fragmentation. Accordingly, the neoclassical approach offers a coherent theoretical framework, where social protection regulations are labor market frictions, and informality arises from the rational choice to not comply with them. However, in the functional sense, informality is also characterized by vulnerable and precarious forms of work in low-productivity and small-scale productive units. Neoclassical models incorporate this by assuming heterogeneous agents in terms of skills, endowments, and other personal characteristics, while letting optimization choose the sector to place them. Depending on formality being or not a feasible alternative, informality is then classified as voluntary or involuntary. This exit-exclusion view of informality, in the terminology introduced by Perry et al. (2007), is claimed to represent the most holistic approach to the issue (Dell’Anno, 2021), because it recognizes and admits the heterogeneity in forms and drivers of the phenomenon.

However, the individualistic slant of the neoclassical framework—expressed in the voluntary-involuntary dualism—makes it hardly holistic, because it overlooks the structural macroeconomic drivers of informality and exclusion. A structuralist perspective deals better with such issues: the scarcity of capital and technological backwardness of peripheral countries create “islands of high productivity in a sea of low productivity activities” (Polanyi Levitt, 2005, p. 196); these provide low-cost wage goods and inputs, which is functional for capitalist accumulation (Godfrey, 1977; Nun,

2001); and, in this context, the institutional and regulatory frameworks create opportunities for profit and living-making through non-compliance, which make these economies viable and produce political stability (Castells & Portes, 1989). The problem with this approach is that it tends to overlook the regulatory aspect, and its characterization of informality in structuralist macroeconomic models is rather as subsistence, agricultural, or low-productivity sectors in a too broad sense; on the other hand, more complete, interdisciplinary, and insightful analyses of informality based in case-studies (Chen & Carré, 2020; Portes et al., 1989) tend to be skeptical of abstract and general theorizations.

The purpose of this chapter is thus to provide a theoretical conceptualization of the relation between informality and social protection, where the regulatory and functional dimensions of informality are integrated in a macro-structural, rather than individualistic way. The theoretical basis is classical political economy, particularly the concept of surplus population by Marx (1887), and the classical approach to the Theory of Social Reproduction by Picchio (1992), which provides a unified framework to understand the double fragmentation—and hence the link between informality and social protection—as expression of the attempts by capital to externalize the costs of social reproduction (Mezzadri, 2019). Then, I use and expand the schematic representations of National Systems of Social Protection by Théret (2006) to illustrate the interaction between informality and social protection, and their structural role in the economy. Lastly, I use this device to analyze the problems of double fragmentation, and to illustrate the implications of the maximalist approach to social policy universalism (Fischer, 2018).

The chapter is divided as follows: in the second section I present the Theory of Social Reproduction; in the third section I present the schematic representation of Théret (2006); in the third section I expand such representation to include informality and the insights from the theory of social reproduction; the fourth section concludes.

3.1 The Theory of Social Reproduction

The notion of reproduction derives from classical political economy and its conception of the economic process as a circular flow. It refers to the provisioning of the working class and the replenishment of used up materials as necessary processes underpinning the cycle of capital accumulation. Reproduction is characterized by being stationary, in opposition to the “capitalist production on a progressively increasing scale” where part of the surplus value is reconverted into capital to expand the scale of the process. Hence, it is separated but deeply interlinked with the spheres of production and capital accumulation, and it is always present, as “every social process of production is, at the same time, a process of reproduction” (Marx, 1887, p. 401).

Reproduction is important here since it allows to consider other forms of work—apart from the standard wage relation—as essential for the system, rather than anomalies. This derives from the use of the concept of social reproduction by feminist scholars to criticize the orthodox Marxist idea that only wage labor is productive. By noting that the reproduction of the labor force relies largely on the unpaid work of women, they challenged the depiction of a capitalist economy as a system of technical inter-dependencies centered on the wage relation and based on rigid theories of value and prices (Federici, 2019).

For Bakker and Gill (2003), reproduction includes three aspects: biological reproduction (moth-

erhood), labor force reproduction (subsistence, education and training), and practices of provisioning and care that may occur also outside the sphere of the family. In general, it comprises life-making and sustaining processes that allow a society to reproduce itself over time, so it has both material and symbolic forms (Bakker & Gill, 2019). In short, it denotes “the totality of relationships within which life and society themselves are generated and reproduced” (Lombardozzi & Pitts, 2020, p. 4). In this sense, both informality and social protection can arguably be considered parts of social reproduction, since they contribute to practices of subsistence, provisioning and care.

Informality—the set of forms of work outside of regulations that constitute the productive activities undertaken by vulnerable and marginalized groups—contributes to social reproduction by providing alternatives of self-provisioning and allowing capital to deepen its control of labor outside of the working time of the standard wage relation. It helps to further externalize the costs of social reproduction, and to expand the scale of capitalist relations in time and space (Mezzadri, 2019). When considered as part of the Marxian surplus population, the role of informality in reproduction takes a macroeconomic form: it provides a living for those excluded from capitalist production, low-costs inputs and wage goods for capitalist firms, and is a reservoir of labor and demand for the cyclical expansion of capitalist accumulation; in this sense, informality guarantees the viability of the economic system and contributes to political stability too (Castells & Portes, 1989).

On the other hand, social protection is also part of social reproduction, since the latter “involves institutions, processes and social relations associated with the creation and maintenance of communities [...] institutions that provide for socialization of risk, health care, education and other services” (Bakker & Gill, 2003, pp. 17-18). Hence, the Theory of Social Reproduction provides a conceptual basis to put informality and social protection at the same level, as fundamental structural process of capitalist economies.

According to Marx (1887, p. 407) “[c]apitalist production [as] a process of reproduction, produces not only commodities, not only surplus-value, but it also produces and reproduces the capitalist relation; on the one side the capitalist, on the other the wage labourer.” Therefore, social reproduction comprises, on the one hand, practices of provisioning, support, and care, and on the other hand, practices of domination, control, and disciplining. In this framework, social protection and families are also oppression devices, fundamental elements of a “disciplinary process that operates through the education and the social care systems” (Bakker & Gill, 2019, pp. 513-514). There is a dark side of informality, too, in line with the Marxian surplus labor as a continuum of forms of exploitation that are functional to capital accumulation.

Note also that most afflictions of the Marxian surplus population are the same risks and contingencies typically covered by modern social protection systems.¹ Hence, informality and social protection are linked and complementary, in both their negative and positive dimensions, that constitute their disciplining and emancipatory roles: the generosity of social protection and its failure at imposing the “right incentives” resonate with the non-compliance with rules and regulations characteristic of informality. These phenomena are also an expression of the synchronic nature of the Polanyian double movement.

¹For Marx (1887, p. 450), the surplus population includes “the demoralised and ragged, and those unable to work, chiefly people who succumb to their incapacity for adaptation, due to the division of labour; people who have passed the normal age of the labourer; the victims of industry, whose number increases with the increase of dangerous machinery, of mines, chemical works, etc., the mutilated, the sickly, the widows, etc.”

The positive and negative aspects of social reproduction result from its contradiction with capital accumulation, through different but interdependent circuits. The contradiction arises because capital accumulation is based on the commodification of labor to extract a surplus. This means that labor must be disposable and its costs of production minimized, the problem being that, nevertheless, labor is a peculiar commodity that avoids direct control by capitalists, “the only commodity which socializes collectively with its similars, which embodies historical progress and can organize for more,” the only commodity with the “capacity to protect its weak sections and the power of the weak sections to take collective action for their survival” (Picchio, 1992, p. 53-54). Thus, wage labor is not only disruptive in the sense of Polanyi, but is also not enough to guarantee social reproduction, which requires the provisioning and care of the whole population, of which wage workers are only a part.

Therefore, the conflict between the spheres of social reproduction and accumulation must be stated in terms of the general costs of reproduction, and the permanent attempt by capital to reduce and externalize such costs (Mezzadri, 2019). According to Picchio (1992, p. 121), “[t]he capitalists’ problem is to keep the costs of reproduction of labour in step with production so that profits will not be reduced,” which is achieved in three ways: by keeping low standards of living, by lowering the costs of wage goods, and by transferring the costs of social reproduction to the state or to women. Arguably, the different forms of informality can be considered a fourth device in the externalization of the costs of social reproduction, given its functional role in pushing down wages and producing low-cost goods and services for workers and capitalist companies (Godfrey, 1977). Moreover, the immense amount of work, resources and coordination necessary for the process of social reproduction imply that the externalization of its costs must be accompanied by a the strong exertion of social control (Picchio, 1992): the gendered division of labor and power in the family; the disciplining role of social protection; and the different hierarchies inside informality, where the incentives given by competition and misery are tougher.

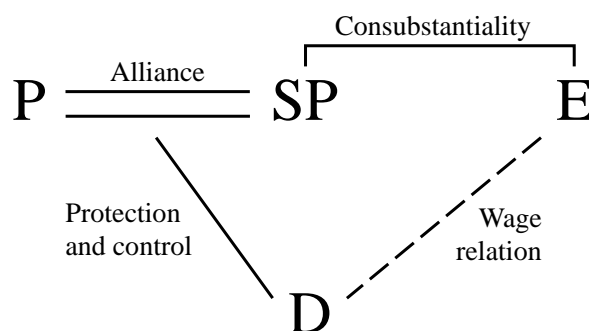
Through the different forms of lowering and externalizing the costs of social reproduction, capital is always trying to approach the ideal world of Malthus and neoclassical economists where standards of living adjust to maximize profits. As a result, “[t]he standards of living of the workers and their families do not fully correspond with costs of production for the employers” (Picchio, 1992, p. 121), and the adjustment operates through institutions, families, and informality by means of “qualitative changes in productive structures and social behaviour which cannot be framed in systematic quantitative functional relationships.” (p. 128). However, such forms of mediation do not eliminate the tensions between social reproduction and capital accumulation, which manifest again when the balance is altered by demographic changes, political processes, and economic crises.

In short, the theory of social reproduction makes evident how social protection and informality are mechanisms to externalize the costs of social reproduction in capitalist societies. In this sense, they play a stabilizing role, since they transform this inherently political and conflictive process into socially agreed practices and structures. They create a space, apparently outside the sphere of capitalist relations, where the conflict can be settled. In the case of social protection, it is a set of rules and institutions to socialize risks and support; in the case of informality, it is a set of economic activities outside of standard regulations that allow different forms of self-provisioning and capital-labor relations. The concept of National Systems of Social Protection by Théret (2006) provides a schematic way to represent those relations.

3.2 The molecule of a National System of Social Protection

Bruno Théret (2006), from the French Regulation school, proposes a typology of social protection systems that can be adapted to represent the forms of mediation between capital accumulation, social reproduction, and informality.² It is a response to comparative analysis in the traditions of Esping-Andersen’s typology of welfare states, and the *varieties of capitalism* framework³. It is a top-down conceptualization that starts from general-abstract notions of social relations and then accommodates different institutional forms. Further, it considers social protection as a stabilizing element that mediates between the three fundamental orders of society: the domestic, the political, and the economic orders. The relations between these orders and the role of social protection institutions define a typology of *National Systems of Social Protection* (NSSP) across countries. This approach focuses on the welfare states of Global North countries, but it can be adapted to include the role of informality in the Global South. The analytical representation of NSSP is the *molecule of social protection*, a structure formed by the three societal orders, the social protection institutions, and the relations among them.

Figure 3.1: The molecule of social protection



Source: Adapted from Théret (2006). P: political order, SP: social protection, E: economic order, D: domestic order.

The *domestic order* (D) is the basis of society, the realm of ordinary human life organized in families and communities by the logic of reproduction. Under capitalism, its control and support is split between the *economic order* (E) and the *political order* (P). This is because, in a capitalist economy, provisioning consists mainly of market relations that also impose a disciplining regime to

²The French Regulation school combines elements of Marxian and Keynesian economics with insights from other social sciences like history (particularly the *Annales* school), sociology, and anthropology. It analyzes how modes of production (production and exchange relations), accumulation regimes (regularities that allow accumulation to proceed in time), and institutional forms interact to ensure the stability of a social formation. In this approach, *regulation* is defined “as the conjunction of the mechanisms working together for social reproduction, with attention to the prevalent economic structures and social forms” (Boyer, 1990, p. 20), which is close to what I am analyzing here. The French Regulation school generally uses these conceptual categories to study long-term processes of industrialization and structural transformation, and although it was initially conceived for advanced economies (particularly the U.S. and France), it has also been applied to developing countries like Argentina (Neffa, 1998) and Colombia (Misas Arango, 2019). Here I do not delve into a full *regulationist* analysis, but will only use a schematic representation inspired in this approach to illustrate the roles of informality and social protection in the economy and their interactions.

³Esping-Andersen’s is a bottom-up approach, in which observed patterns and structures of countries are used to build a general typology on the basis of labor organization; varieties of capitalism, in turn, focuses on the organization of production and how it is regulated (Schröder, 2013)

the domestic order; however, as explained above, such provisioning is insufficient because of the attempts of capital to externalize the costs of social reproduction. On the other hand, the political order bases its legitimacy and sovereignty on the protection of the domestic order, but as it does not control the productive process, such protective role is weakened.

The institutions of *social protection* (SP) mediate and articulate the relations between the three orders, thus providing a solution to the incomplete links of the social and economic orders with the domestic one. This is done through a parallel system of provisioning, constituted by the services, transfers, and rules of social protection. Through these institutions, the economic and political orders complement each other to attenuate their own deficiencies with regards to the domestic order. In this sense, there is a relation of *political alliance* between P and E through SP. On the other hand, since the dominant system of provisioning is based on commodities and monetary market relations, social protection institutions cannot but operate under the same logic. Hence, there is a relation of *economic consubstantiality* between SP and E, because SP becomes an essential part of the provisioning system commanded by E.

The third relation, between the political alliance and the domestic order, is referred by Théret (2006) as “domestic protection”, but I prefer to call it *protection and control* to stress its disciplining role. This because, while social protection institutions complement the provisioning system and help to isolate the fates of people from the ruthlessness of the market, they also impose rules and conditions, classify, and segregate people. Finally, there is the relation of mutual but asymmetric dependence between the economic and domestic orders characteristic of capitalism, the “wage relation,” by which people participate in the social product both as producers and consumers, in a decentralized way mediated by money and commanded by capital. It operates in the realm of *capital accumulation*, “both the starting and the arrival point of the capitalist circuit of social protection” (Théret, 2006, p. 154, translation is mine), because in this sphere goods and services (including those of social protection) are produced and consumed.

The relations of the molecule exhibit qualitative properties that define the different types of NSSP and their stability properties. Théret (2006) focuses on the *intensity* of the relations, or the closeness between the respective orders, and represents a higher intensity with a plus sign (+) and a lower intensity with a minus sign (-).

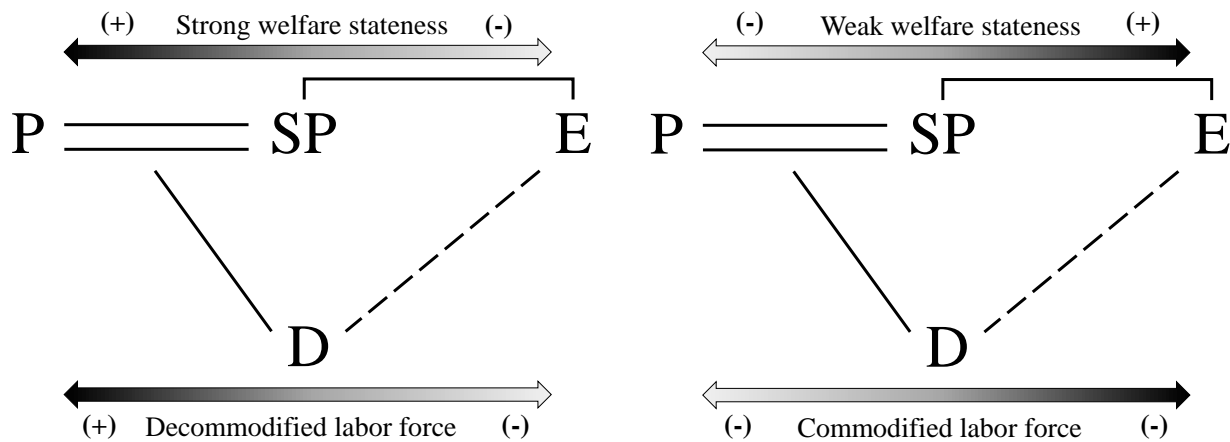
The degree of consubstantiality between SP and E can be high (eg. when social protection operates mainly through private providers and insurance markets), or low (when the role of the public sector is more important). This relation affects the strength and modality of the alliance P-SP: a higher consubstantiality implies a weaker role of P in the alliance and vice versa. This is the first structural opposition in the molecule, called *welfare stateness*. More welfare stateness means, in short, a stronger role of the political order, or state actors, in the organization and operation of social protection institutions: for example, public PAYG pension schemes, publicly administered universal healthcare, public programs of unemployment and work injuries benefits, and social assistance programs.

The relation of protection and control between P-SP and D can vary in intensity too, and is also correlated with the wage relation in a second structural opposition, which is called by Théret (2006) the degree of *decommodification of the labor force*. This, inspired in Esping-Andersen’s typology, reflects the Polanyian double movement: the more commodified the labor force, the more it depends on wages and markets (the first movement), while political factors and social protection institutions

reduce such commodification by providing a cushion for workers outside the market logic (the second movement).

The stability of a specific configuration of NSSP depends on the coherence between the degrees of welfare stateness and decommodification of the labor force. The two structural oppositions are represented in figure 3.2, in the two possible stable configurations. In the left panel there is the stable configuration that combines a strong welfare stateness and a relatively decommodified labor force; if it were otherwise, for example, a stronger role of the state in social protection when the main forms of provisioning rely on markets, social protection may lose legitimacy. Viceversa, the right panel presents the other configuration, of weak welfare stateness and a relatively commodified labor force. Should the labor force be relatively decommodified in this case, the configuration would not be stable, since the weaker welfare stateness would imply weaker public systems of social protection.

Figure 3.2: Structural oppositions



Source: Adapted from Théret (2006). P: political order, SP: social protection, E: economic order, D: domestic order.

The scheme of Théret (2006) can be expanded to include the notion of social reproduction and informality.

3.3 The molecule of social reproduction

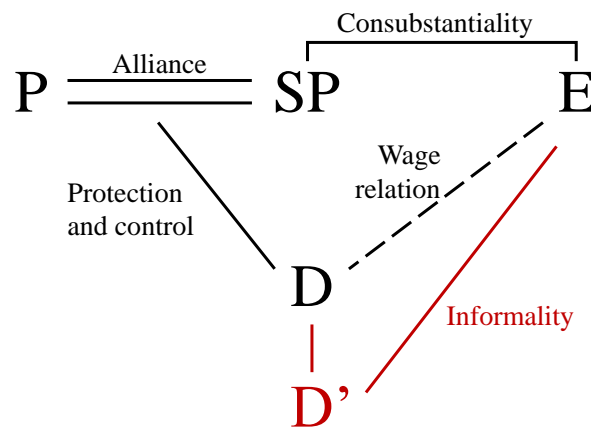
The Theory of Social Reproduction discussed above suggests that the structural opposition around the domestic order is indeed the sphere of social reproduction: it represents the mechanisms of provisioning that support and control the domestic order, that guarantee its material reproduction and the reproduction of the social formation, of which it is the foundation, the end, and purpose. In this sense, the wage relation represents the overlapping between the spheres of social reproduction and capital accumulation.

However, the wage relation is only one among various forms of interdependence between the domestic and economic orders in capitalist economies; informality plays an important role too: as a

set of alternative forms of work, by expanding the market for big capitalist firms, by providing low-cost goods and services for such firms and their workers, and by helping to maintain low wages in the formal sector (Godfrey, 1977). This can be represented as a second layer of the domestic order, not connected to the economic order through the wage relation. If left unconnected from the other orders, this second layer of the domestic order could represent the sphere of the family, dependent on the wage relation of some of its members and on the women who sustain social reproduction through non-remunerated work in the household.

However, here I am interested in informality, so this second layer of the domestic order represents the informal workers. Given that they engage in different forms of work and produce for the market, I represent informality as an *oblique* connection between informal workers and the economic order. This represents, first, the dualism in labor markets and productive structures characteristic of countries in the Global South (there are two, non-parallel links between D and E), and second, the functional role of informality for capital accumulation (being a link between D and E, it is part of the sphere of accumulation in some degree). The extended molecule, which I prefer to call *social reproduction*, is represented in Figure 3.3.

Figure 3.3: The molecule of social reproduction and informality



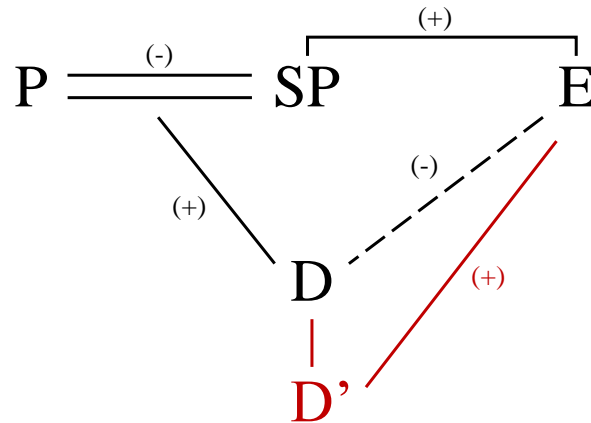
Source: Own construction, based on Théret (2006). P: political order, SP: social protection, E: economic order, D: domestic order, D': informal workers.

Informality is relatively autonomous, it creates its own circuits of production and provisioning, partly overlapped with, but different from those of the sphere of accumulation. This is reflected in its obliqueness with respect to the wage relation in the connection with the economic order, which might represent the exchange of wage goods and means of production between the informal sector and capitalist firms. Another dimension of informality is its connection with the formal domestic order (D), which represents the operation of small family businesses, the presence of both formal and informal members in the same household, the domestic work done predominantly by women in other households, the acquisition by formal households of goods and services produced in the informal sector, or non-market production for subsistence. The relative autonomy from the (capitalist) economic order and the disconnection from the political alliance are crucial for the “problem” with informality—the difficulty of simultaneously pushing it into the capitalist economic order and making it comply with state regulations—but are also sources of its lingering and stabilizing role:

informality provides a space for the excluded from the political and economic orders, and in this way it acts as a cushion, not only for the people in informality, but for the whole system too.

Such stabilizing role is presented in Figure 3.4, for the case of a weak welfare stateness and a relatively decommodified sphere of social reproduction. This might represent the case of Latin American countries after the Washington Consensus reforms. The privatization of basic public services reduces the degree of welfare stateness, but the weakness of the productive structure impedes the commodification of the labor force since the wage relation is not dominant. Hence, some groups of formal workers keep relying on the weakened public systems of social protection, but the whole configuration is unstable according to Théret (2006). In this context, however, informality provides the missing link to secure provisioning in the market, thus increasing the overall commodification of social reproduction through the parallel systems of work and production characteristic of informality. The strength of informality is represented by a positive sign in its link with the economic order.

Figure 3.4: The stabilizing role of informality

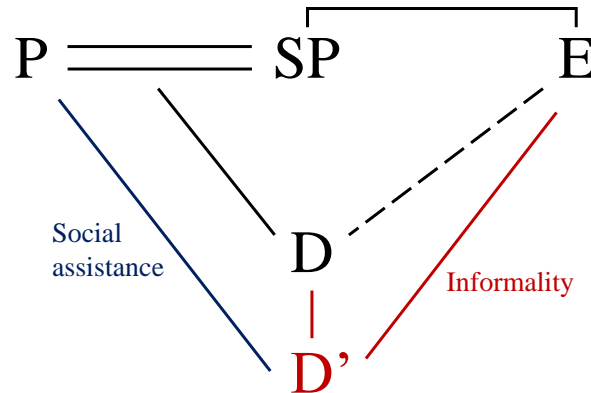


Source: Own construction, based on Théret (2006). P: political order, SP: social protection, E: economic order, D: domestic order, D': informal workers.

However, such configuration is not completely stable. The link between the domestic and economic orders through informality is not able to guarantee an adequate standard of living because of the precarious conditions of informal workers and their unstable incomes, which is a condition for the functional role of informality for capital accumulation. The problem lies in their exclusion from social protection institutions, which means that the relation of consubstantiality between those institutions and the economic order is actually weak in the aggregate, because they do not play the buffering role of attenuating market outcomes for the people in informality. This makes it necessary to develop alternative ways for protecting informal workers. The expansion of social assistance plays a stabilizing role in that scenario, as an attempt to fill the missing link between informal workers and social protection institutions.

The molecule of social reproduction allows to represent that situation with the emergence of a parallel link between the political order and informal workers, as depicted in Figure 3.5. Note that the relation is not with the political alliance but with the political order alone. Social assis-

Figure 3.5: Informality and social protection fragmentation



Source: Own construction, based on Théret (2006). P: political order, SP: social protection, E: economic order, D: domestic order, D': informal workers.

tance, by relying mainly on cash transfers and subsidies, does not imply a complete participation of informal workers in social protection institutions, since their access to public services is also limited. This illustrates the fragmentation of the social protection system, as the coexistence of parallel and segregated schemes for formal and informal workers. The fragmented configuration might be stable under favorable economic conditions, when informal workers can transition into formality, government finances allow to provide greater support through social assistance, and the incomes of informal workers improve and are relatively stable. However, when such conditions change, that ordering reveals insufficient, the social problem reemerges, and informality may grow again in a stabilizing response.

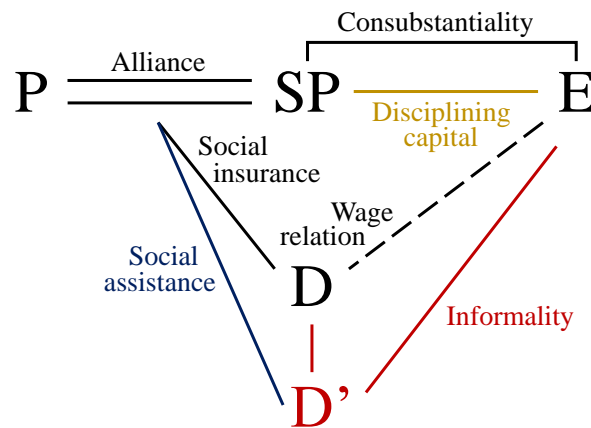
It is apparent that such situation will persist as long as informality does, but there are other elements at play that should be considered. Note that the fundamental missing link in the fragmented configuration is between the political and economic orders, making social protection exclusionary. This is related to monetary transfers being the main modality of social assistance. This strengthens the commodification of social reproduction, without guaranteeing real access to good-quality social services, and is worsened by a stronger consubstantiality between the economic order and social protection, since it means that the provisioning of such services follows a market logic that makes them inaccessible for those who cannot afford it. On the other hand, the absent link between social protection and the economic order, regarding informal workers, also may respond to the low participation of capital in the financing of such services. Since the economic order is driven by the need to externalize the costs of social reproduction, the fragmented scenario appears as highly advantageous for capital: it externalizes such costs partly through informality, partly through social protection systems.

In this respect, the maximalist approach to universalism by Fischer (2018) provides some insights on how to address the lack of protection of informal workers, without waiting for informality to disappear. The guiding principles of maximalist universalism are: first, provisioning modalities, in the sense of an engagement of the state in the supply of good quality social services; second the

regulation of costs and prices, to decommodify social protection, and impede the transfer of costs to the people; and third, the financing mechanisms of social policy, that should rely on progressive taxation.

Following such principles, it seems that the way out to overcome the lack of protection of informal workers is by disciplining capital. First, through the decommodification of social services, and a greater role of the state in their provision and regulation, to guarantee their quality and to make them accessible to informal workers. Second, through progressive taxation on capital, to tackle its externalization of the costs of social reproduction, and strengthen that missing link in the social configuration with regards to informality. Through these mechanisms, a social configuration under the principles of maximal universalism would look as depicted in Figure 3.6.

Figure 3.6: The molecule of social reproduction under maximalist universalism



Source: Own construction, based on Théret (2006). P: political order, SP: social protection, E: economic order, D: domestic order, D': informal workers.

3.4 Conclusions

In this chapter I propose a conceptual framework to analyze the relation between informality and social protection fragmentation from the Theory of Social Reproduction by Picchio (1992), where both phenomena can be understood as different social responses to the attempts by capital at externalizing the costs of social reproduction. This is based on a Marxian understanding of informality as surplus labor, which represents a varied range of different forms of exploitation that are functional to capital accumulation, through the downward pressure on wages and the production of low-cost goods and services both for workers and for capitalist firms as inputs (Godfrey, 1977). Social protection, instead, is part of the social reproduction dynamics through which society protects itself from the aversive effects of capital accumulation.

Then, I expand the schematic molecule of social protection by Théret (2006), to include social reproduction and informality, and show that it is possible to represent the stabilizing role that both of them play society. It is also possible to represent the fragmentation of social protection through parallel systems of social assistance, which are other stabilizing social response to informality. Nev-

ertheless, such configuration is shown to be unstable and problematic as well, because of the missing link between the economic order and social protection with regards to informal workers. I use the maximalist universalist approach to social policy by Fischer (2018) to illustrate the problematic aspects of the fragmented social reproduction configuration, and I represent the guiding principles of such approach in the molecule of social protection, to show how it achieves a more cohesive and stable social configuration.

This conceptual and schematic analysis is useful to represent the problems associated to the double fragmentation, and to illustrate the main ideas behind an alternative way to analyze this problem, in opposition to neoclassical interpretations that emphasize on mechanisms of incentives and rational behavioral responses. However, being a purely illustrative device, it is necessary to further explore its capacity to represent other social configurations, analyze deeply its stability properties, and use to study the experiences of particular countries in such respect.

Chapter 4

Pensions and informality in a structuralist dual-economy model

4.1 Introduction

The state of old-age protection in Latin America reflects very well the progress, challenges, and dilemmas of social protection in developing countries. The region exhibits a relatively good performance when compared with other developing regions in the world (ILO, 2017), as three-quarters of the old-age population are covered by some form of pension (Arenas de Mesa, 2019). However, there is still one quarter of the population uncovered, and the benefits provided are quite low in most countries (Rofman et al., 2015).

The strong expansion of pension coverage in the region is mainly due to the implementation of subsidized, non-contributory schemes of money transfers to the old-poor called *social pensions*: (Arenas de Mesa, 2019; Rofman et al., 2015). Although social pensions tend to be considered poverty-alleviation programs, they have become an important component of pension systems in Latin America, should these be broadly understood as mechanisms to provide income security to the old, to maintain an aggregate level of income, and to guarantee the right to not work after a certain age.

Pension systems are thus divided into non-contributory social pensions and contributory schemes, the latter in turn exhibiting different combinations of public Pay-As-You-Go and private Fully-Funded schemes. This is evidence of the infamous fragmentation of social protection systems in the region that will be explored in the next chapter, and that can be defined as the coexistence of different schemes and programs aimed at different groups of people with different rules and benefits (Barrientos, 2019; Levy & Cruces, 2021).

Another fragmentation in labor markets and productive structure is pervasive in the region: the presence of informality, a wide spectrum of precarious and unstable forms of work and production, alongside a formal sector based on regulated wage relations. Both types of fragmentation—in social protection systems and the formal/informal divide in labor markets—are closely intertwined, since non-contributory schemes are created to cover informal workers excluded from contributory schemes.

The analysis of such *double fragmentation* has been tackled mainly from the neoclassical approach, where informality is thought to be driven by fragmented social protection systems: these reduce incentives to formalization and non-contributory schemes act as a subsidy to informality (Levy & Cruces, 2021). For these reasons, neoclassical authors tend to advocate for the restructuring of social protection through the reduction in benefits, the fine-tuning of incentives, and a greater role of private actors, in a policy framework where social protection is subordinated to the bigger goals of efficiency and fiscal discipline. In the case of pensions, this implies the shrinkage of public PAYG schemes to re-direct public resources to the deserving poor in small and means-tested non-contributory schemes.

However, alternative approaches suggest that the neoclassical explanation of double fragmentation might be missing the point, and that neoclassically-oriented social policies might deepen fragmentation due to their pro-austerity bias. From the structuralist approach and the Theory of Social Reproduction, informality can be understood as driven by the productive structure of dual economies (Ros, 2013; Taylor, 1983) and as a social response to vulnerability and lack of protection (Mezzadri, 2019; Picchio, 1992). On the other hand, it is possible to envisage a *maximalist universalist* approach to social policy not guided by austerity, where generous programs targeted at vulnerable groups are not equivalent to fragmented and malfunctioning social protection systems (Fischer, 2018). Although these considerations can be included in a structuralist macroeconomic model to analyze their implications, structuralist authors have not explored these issues due to their focus on growth and macrodynamics.

In this chapter, I build a theoretical structuralist dual-economy model with a fragmented pension system, to explore the possibilities and implications of extending old-age protection to informal workers through social pensions. I emphasize the macro-structural determinants of informality rather than behavioral responses to incentives, and, instead of fiscal discipline, I use welfare effects, aggregate demand effects, and progressive financing as criteria to assess social pensions. I use some insights from the theory of social reproduction, in which the domestic, economic, and political orders share the responsibility to guarantee dignified standards of living to the members of society, and pay attention to the financing structure of social pensions. The model aims to represent the situation of Latin American countries and contribute to the analysis of pension systems in terms of their ability to grant effective income protection to the elderly, and to shed light on the implications of different pension designs in these countries.

The chapter is organized as follows: the second section discusses the state of old-age protection and double fragmentation in Latin American countries; the third section reviews and discusses the theoretical insights in the modeling of dual economies; the fourth section introduces the basic structure of the model; the fifth section presents the short-run solution and explores its features; the sixth section analyzes the implications for pension policies; and the seventh section concludes.

4.2 Old-age protection and double segmentation in Latin American countries

Pension systems are a recurrent source of concern in Latin American countries, as they are expected to cause enormous social, political and fiscal pressures in the next decades. Population aging and

financial sustainability are the main points to be addressed in discussions on pensions,¹ but there is another problem at the center of the unsatisfactory state of old-age protection in the region: segmentation.

On the one hand, pension systems are split among several schemes and regimes which are not always well harmonized, each covering different groups and operating under different rules. On the other hand, an important part of the population still has no access at all to old-age income protection. The lack of access to pensions is directly related to the high levels of labor informality, since workers with low and unstable incomes are not able to contribute to pension schemes during their working age, and hence have no right to a pension at the retirement age.

This is the problem of double segmentation, which dates back to the creation of Bismarckian social protection systems in the 20th century. Due to low administrative capacity and low tax revenues, social protection was initially granted to urban waged workers only, and its extension to the rest was trusted on the development process that were supposed to gradually move people into the urban formal sector (Kaplan & Levy, 2014). In the most advanced countries benefits were gradually extended to other groups, leading to very large and complex systems that became the target of pro-austerity reforms; most countries, however, kept their systems very small and exclusionary (Mesa-Lago, 2020).

The economic crises and the influence of the Washington Consensus led to a wave of structural reforms, starting with the privatization of pensions in Chile in 1981 under dictatorship. Other ten countries reformed their pensions later, during the 1990s and 2000s, but there the democratic process allowed for the influence of different interest groups and the inclusion of broader social demands (Arenas de Mesa, 2019; Mesa-Lago, 2020).² As a result, pension systems in the region are highly varied, with different combinations of Pay-As-You-Go (PAYG) and Fully-Funded (FF) schemes, and different degrees of state involvement.

Following Mesa-Lago (2020) and Arenas de Mesa (2019), the contributory side of pension systems in Latin America can be broadly classified in four groups: 1) a public PAYG scheme of defined benefits (PAYG-DB) only; 2) a privately administered FF scheme of defined contributions (FF-DC) only; 3) mixed systems where a predominantly PAYG scheme is complemented by a FF one, and workers participate in both; and 4) parallel systems where PAYG and FF schemes compete for workers' contributions.³

¹The ECLAC predicts that the share of population aged 65 or more will grow from 9% in 2020 to 19% in 2050 in the region (<https://statistics.cepal.org/>), though Latin American countries are highly heterogeneous regarding the stage of the demographic transition they are in (González et al., 2021).

²The countries that made structural pension reforms are Argentina (1994, with a re-reform in 2008), Bolivia (1997, with a re-reform in 2010), Chile (1981, with a re-reform in 2008), Colombia (1994), Costa Rica (2001), Dominican Republic (2003), El Salvador (1998), Mexico (1997), Panama (2008), Peru (1993) and Uruguay (1996). Several parametric reforms have been made too in some of these and other countries.

³The purely public PAYG-DB system subsists in countries that never implemented structural reforms: Brazil, Cuba, Ecuador, Guatemala, Haiti, Honduras, Nicaragua, Paraguay, and Venezuela. In Argentina, a structural reform adopted the mixed system in 1993, but it was later reversed, with the FF-DC pillar nationalized and integrated into a unique PAYG-DB scheme. The purely private FF-DC system was pioneered by Chile in 1981 and later adopted by Bolivia, Mexico, El Salvador, Dominican Republic. Chile re-reformed its system in 2008 to integrate components of solidarity in a PAYG fashion, with public funding and administration in part; Bolivia also re-reformed the system nationalizing its administration but keeping the FF-DC design. Costa Rica, Panama and Uruguay have mixed systems, while only Colombia and Peru have parallel systems.

There are other *non-contributory* pension schemes that were introduced or expanded in several countries during the 2000s, as part of a bigger wave of growth in cash-transfers-based social assistance (Abramo et al., 2019; Barrientos, 2019). These, also known as *social pensions*, were the main response to the problem of double segmentation. It became a widespread strategy to extend old-age protection to those left out of the contributory schemes, since it “could reach many people, involve relatively limited budgets, and enjoy popular support” (Arza, 2019, p. 25).⁴

As in the contributory case, there are several types of social pensions designs, but most operate as cash transfers targeted to the old that do not qualify, or are not eligible, for a contributory pension. The more used strategy is what Arza (2019) calls the *means-tested poverty relief* model: targeted pension benefits of relatively low size and coverage, in countries where the contributory schemes are also small and the informal sector is relatively large, “a pension coverage strategy that does not guarantee full coverage or adequate benefits, but which has expanded access to cash benefits among older adults considerably in some countries” (p. 36).⁵

Thanks to these strategies, Latin American countries have expanded old-age protection in recent decades and exhibit rates of coverage that are relatively high when compared to other developing countries (ILO, 2017). Considering the active or contributors’ rate of coverage—the ratio of pension contributors to total active population—there was an increase from an average of 34,8% in 2000 to 45,3% in 2017 (Arenas de Mesa, 2019). Despite the progress, contributory regimes are quite small, since more than a half of the current working population does not participate in a contributory scheme. The active rate of coverage is closely and negatively correlated with the size of labor informality, while positively correlated with the level of income and contribution density.⁶ This suggests that it is low incomes and working instability what is preventing people from contributing to pensions in the region.

On the other hand, passive or recipients’ coverage—the share of population aged 65 or more that receives a pension—passed from an average of 51,5% to 76,2% between 2002 and 2017. Most of this improvement comes from non-contributory schemes, whose coverage expanded from 3,8% to 22,7% in the same period, while contributory schemes passed from 48,1% to 55% (Arenas de Mesa, 2019).

Regarding *sufficiency*, apart from the countries with the strongest social protection systems (Argentina, Brazil, Costa Rica, Chile and Uruguay), the benefits granted by social pensions in Latin America are very low: they are in general below the poverty line and represent a small fraction of pensions in contributory systems, 30% at best (Rofman et al., 2015).

⁴According to Rofman et al. (2015), there were at least 14 countries that introduced reforms to create or expand non-contributory pensions: Argentina (2003), Bolivia (2008), Brazil (2006), Chile (2008), Colombia (2004), Costa Rica (2000), Ecuador (2006), El Salvador (2009), Mexico (2001), Panama (2009), Paraguay (2010), Peru (2008), Uruguay (2005) and Trinidad and Tobago (2010).

⁵This strategy operates in Colombia, Ecuador, El Salvador, Guatemala, Paraguay and Peru. Other types of social pensions are called by Arza (2019) the *contributory plus* model in Argentina, Brazil, Chile and Uruguay, where social pensions, with relatively high levels of benefits and coverage, are used to reach “close-to-full coverage” (p. 28) and complement already strong contributory schemes. There is also the *universal minimal* model in Bolivia and Mexico, where contributory schemes have low coverage and social pensions are granted universally, although with relatively low benefits. Rofman et al. (2015) provide a complete and detailed analysis of the experience of 14 Latin American countries with social pensions.

⁶Contribution density is the length of time during which contributions are made as a percentage of the total length of working life.

Therefore, although social pensions have contributed to the expansion of coverage, old-age protection is still quite deficient in most Latin American countries. This is linked to the level of development and the size of the informal sector, since low and unstable incomes prevent people from contributing during their working age and qualifying for a pension when old.

The segmentation in labor markets is aggravated by a segmentation in pension systems, since social pensions tend to be considered more like social assistance programs for poverty alleviation, rather than integral parts of pension systems, and discussions on pension reforms are usually focused on the contributory side. Only the most advanced countries, like Chile and Uruguay, have integrated systems (Arenas de Mesa, 2019), but even there it is misleading to see social pensions as a residual segment for poverty alleviation: in Chile, for example, the reform of 2008 expanded the role of the state to guarantee a minimum pension through subsidies even to those in the contributory scheme, since pensions delivered by the private FF-DB scheme tend to be very low.

This casts into question the relation between labor markets, contributory schemes, and subsidized schemes. Low rates of active coverage respond to high levels of informality, but they can also be affected by the design of pension schemes, since it has been widely documented how the privatization turn failed to increase coverage despite reductions in informality (Arenas de Mesa, 2019; Mesa-Lago, 2020). On the other hand, there is a strong concern about the negative effects on formalization of non-contributory social protection programs, which are considered subsidies to informality and drivers of segmentation (Levy & Cruces, 2021; Melguizo et al., 2017). It is thus necessary to better understand the relation between labor markets and pension systems, comprising both contributory and non-contributory schemes.

4.3 Informality and pensions in economic models

Informality is an heterogeneous set of low-paid, unstable and insecure forms of work in small-scale and low-productivity activities, usually organized and operated by workers themselves with low costs of entry and capital needs. It includes the activities of street vendors, trash pickers, small family businesses, small scale commerce, domestic labor, unpaid labor, some forms of self-employment, and some forms of waged work that are typically insecure and unregulated. Although Latin American countries are highly heterogeneous in this respect, on average a 53% of the labor force was informal in 2019 in the region (ILO, 2020).

Informality is generally analyzed in multi-sector labor market models (Fields, 2005, 2011a), where each sector exhibits different working and productive conditions; this framework can also capture the double segmentation referred to above, by including differences in access to social protection across sectors. To model the existence and persistence of such differences a theoretical explanation of informality is necessary, but since it overlaps with underdevelopment, any such explanation is inescapably framed into a particular worldview of the development process itself.⁷

In this respect, there are two main approaches in economic theory. The *neoclassical* approach

⁷As put by Ohnsorge and Yu (2021, p. 18), “informality is associated with poor economic outcomes.” Countries with large informal sectors tend to exhibit lower per capita incomes and productivity; higher rates of poverty and inequality; lower levels of human capital and health outcomes; weaker states in terms of tax revenues, expenditure, administrative capacity, and quality of institutions; lower financial development and bad infrastructure; and weaker social protection systems.

understands informality as the result of individual optimal choices, whereas for the *structuralist* approach it has to do with the whole set of economic conditions and the productive structure of an economy, which determine the availability of good jobs. This dichotomy is present in diverse strands of literature, but I prefer to put it here in terms of neoclassical versus structuralist approaches, to stress the broader difference in worldviews of the economy and the development process, and to frame it in the history of economic thought.⁸

In the neoclassical approach the nature of informality is mainly *regulatory* or *juridical*. It is defined as any “legal economic activity taking place below the radar of government” (Oviedo et al., 2009, p. 3), or the “labor relations that occur outside the scope of regulation involving employment protection or [that] preclude the access to social security benefits” (Leyva & Urrutia, 2020, p. 1).

The stress here is put on the non-compliance with regulations, and the phenomenon to be explained is why some agents choose to not comply, the reason being that regulations are either exclusionary mechanisms or perverse incentives that lead people to choose informality. For example, labor and social protection norms increase the tax wedge and prevent firms from hiring low-productivity workers (Maloney, 2004), while the perceived benefits of formality are low when compared with some benefits of informality like better pay, flexibility, and access to targeted subsidized benefits (Oviedo et al., 2009). From this perspective, the segmented and malfunctioning social protection systems in Latin America are viewed as leading causes of informality (Kaplan & Levy, 2014; Levy & Cruces, 2021). This is compatible with the neo-institutionalist idea that underdevelopment is the result of bad institutions.

Some empirical findings justify this understanding of informality: the observed transitions of workers between formality and informality (Perry et al., 2007), the overlapping of wage distributions across formal and informal sectors (Maloney, 2004), and a tendency of formal-informal wage gaps to disappear after controlling for workers’ characteristics (Ohnsorge & Yu, 2021). Hence, the neoclassical theoretical literature approaches the relation between social protection and informality as a problem of job search and matching, with social protection policies acting as frictions that alter the value functions of agents, while low-productivity workers and firms self-select into the informal sector (Meghir et al., 2015; Oviedo et al., 2009). In the specific case of pensions, McKiernan (2021) calibrates a model for Chile and finds that privatization increases welfare, mainly because it makes formal work more attractive through tax reduction, and because it increases capital accumulation through higher savings. In general, these models tend to obtain the usual supply-led neoclassical results.

However, these models still assume that formal jobs are somehow better or preferable, with frictions that prevent workers from getting them (Alonso-Ortiz & Leal, 2018; Meghir et al., 2015). Moreover, it is the availability of formal jobs and the growth in employment opportunities which ultimately limits the size of the formal sector (Basu et al., 2019). On the other hand, as stated by

⁸In the context of neoclassical multi-sector labor markets models the dichotomy is captured by the existence or not of *labor market segmentation*, which in this case means a rationing of good jobs so that comparable workers earn different wages in different sectors; in turn, there is no segmentation when earnings are equalized after controlling for the characteristics of workers, who self-select into formality or informality. On the other hand, Perry et al. (2007) present the dichotomy in terms of *exit versus exclusion*: informality can arise either when workers and firms choose to *exit* the formal sector, or when some of them are *excluded* from the formal sector and forced to operate informally because formal jobs and productive processes are not available for everyone. The dichotomy can thus be interpreted as a matter of voluntary versus involuntary informality.

Fields (2005, p. 8), even if wage gaps reflect unobserved differences and there is some labor mobility across sectors, labor markets in developing countries “are better characterized as being segmented in the sense of cumulative advantage and low-level traps.” This means that for most workers, most of the time, good formal jobs are not an option. It is thus necessary to explain why good jobs are scarce rather than just assuming that they are.

For the *structuralist approach*, in turn, informality is *functional*, defined in terms of the activities performed and the role they play in the whole economic structure.⁹ Here informality is the set of low-scale and low-productivity economic activities that are driven by subsistence rather than for-profit reasons (Wang & Piesse, 2013). Their systemic importance lies in that, despite operating at the margins of the main circuit of capital accumulation, informality is *functional* as the *mode of existence* of the industrial reserve army, and a source of low-cost inputs and wage goods for the core capitalist activities (Godfrey, 1977).

The origin of multi-sector labor market models can be placed in this approach, with the notion of economic dualism by Arthur Lewis (1954). Dualism is the result of low capital-to-labor ratios in an economy, where capital is concentrated in a modern or formal sector while the rest of workers engage in close-to-subsistence economic activities. Therefore, the formal sector faces *unlimited supplies of labor* in the sense of a perfectly elastic labor supply (Ros, 2013). The two sectors are usually modeled as differing in terms of the commodities produced, the technologies employed, and their objectives and organizational models (Wang & Piesse, 2013).

Theoretical models in the structuralist approach can take two forms. On the one hand, a general equilibrium analysis based on the Heckscher-Ohlin-Samuelson framework, where factor endowments and substitution mechanisms govern the interaction between sectors, and the results are presented in comparative statics or dynamics for short- or medium-run effects (Chaudhuri & Mukhopadhyay, 2010; Razmi, 2006). On the other hand, dual-economy growth models, where capital accumulation and aggregate demand play a stronger role, and results are presented in terms of steady-states for long-run implications (Dutt & Ros, 2007; Razmi, 2015; Ros & Skott, 1998; Taylor, 1983).

Although labor protection norms are included in some structuralist general equilibrium models (Chaudhuri & Mukhopadhyay, 2010; Razmi, 2011), and some heterodox growth models deal with pensions (Michl, 2007; Rada, 2017), social protection, and pensions in particular, have not yet been analyzed in the framework of structuralist dual economy models.

This is a task worth pursuing for several reasons. First, because the focus on growth and long-run trends of structuralism leaves it with little to say on social protection issues: it is either the outdated promise of a gradual and automatic expansion through the development process, or a generic support for social policies without a deep understanding of their effects. Second, because the issue of double segmentation—in labor markets and social protection—is a salient feature of developing countries that should be included in such analysis. Third, because structuralism considers alternative mechanisms behind informality, like aggregate demand effects and accumulation patterns, that should be explored to have a more complete picture than the purely regulatory view of

⁹This approach resonates with the concept of *structural heterogeneity*, from the Latin American structuralist school of the thought in the ECLAC, which anticipated the notion of dualism by Lewis (1954) (Bielschowsky, 2009), and implies that informality is the result of a particular *economic structure* in the sense of Taylor (1983). Hence, I call this approach *structuralist* to stress the functional role of informality and to frame the analysis in these traditions of economic thought.

neoclassical models. And fourth, because the nature of pensions may have interesting implications for the structuralist understanding of growth in dual economies, through intergenerational dynamics and the effects on savings and capital accumulation.

4.4 Set-up of the model

The most obvious and widespread way to model pensions is through overlapping generations (OLG). This framework allows to differentiate the population by age, to make working status depend on it, and to model the *intergenerational* transfer mechanism that any pension scheme ultimately is. Moreover, OLG allows to establish a link between the present and future conditions of the same generation, an *intertemporal* dimension that is relevant to analyze pensions, especially fully funded schemes where current benefits depend on past contributions, but more importantly, it is necessary to address the problem of low pension coverage due to informality, since it is the lack of contributions during the working age what determines the lack of a pension after the retirement age.

The OLG framework has some drawbacks too. It forces the model to be in discrete time, and in analytical, schematic models the different cohorts are actual generations, so that the period of analysis is very long, of around 30 years. Hence, static solutions cannot be said to be short-run, and the usual assumption that state variables are given for the current period is not very realistic. Moreover, it is a standard assumption that different generations are of equal size, so that demographic structure and changes, relevant to analyze pensions, are hard to incorporate in a realistic way. However, in a first step to incorporate pensions in an analytical dual-economy model, the OLG framework is the simplest way to do it.

It is assumed that there are two generations of young and old people that live for two periods. Both generations are assumed to have the same size equal to 1, so that total population is constant, of size 2. This implies that monetary values can be interpreted as representing per-young (or per-old) person magnitudes. This assumption is made without loss of generality to ease notation, but it excludes any analysis of aging and demographic changes, which is not the main objective herein.¹⁰

The age threshold is given by the mandated retirement age, but to get retired workers must participate in a contributory pension scheme and only those employed in the formal sector can do it. Hence, in any period t all formal workers are young by definition, the size of the formal labor force is denoted L_{F_t} , and the retirees of contributory pension schemes are the young formal workers of the previous period, $L_{F_{t-1}}$. Note that, since the size of each generation is 1, L_{F_t} is actually the share of formal employment among the young, and $L_{F_{t-1}}$ is the share of formal pensioners among the old. In terms of pensions, such shares are respectively the active rate of coverage and the passive rate of coverage of contributory schemes.

The informal sector is different. Young workers who cannot find a formal job must work in the informal sector. Moreover, since young informal workers will not have a contributory pension, some of them will have to keep working when they get old; this is captured by the parameter ϵ_t : the fraction of old people without a contributory pension—those who were young informal workers in period $t - 1$ —that keep working when they get old. Thus, there are both young and old informal

¹⁰The model could be extended to deal with aging by introducing a survival rate for the young, hence making the size of the old generation a fraction of the young one, like in Cipriani (2013) and Stauvermann and Kumar (2016), although endogenizing aging and demographic changes is far more complex.

workers. The share of informal employment among the young is $(1 - L_{F_t})$ and the share of elders without a contributory pension is $(1 - L_{F_{t-1}})$. The total size of the informal labor force is, in turn:

$$L_{I_t} = (1 - L_{F_t}) + \epsilon_t(1 - L_{F_{t-1}}) \quad (4.1)$$

Total population is thus divided in four groups: i) *formal workers* or the *formal young*; ii) *retirees* or the *formal old*; iii) the *informal young*; and iv) the *informal old*. These are respectively the four terms in the right-hand side of the population identity:

$$2 \equiv L_{F_t} + L_{F_{t-1}} + (1 - L_{F_t}) + (1 - L_{F_{t-1}})$$

Per-person disposable incomes will be denoted by $h_{F_t}^y$ for the formal young, $h_{F_t}^o$ for the formal old, $h_{I_t}^y$ for the informal young, and $h_{I_t}^o$ for the informal old. Hence, total disposable income of working-class households is:

$$H_t = h_{F_t}^y L_{F_t} + h_{F_t}^o L_{F_{t-1}} + h_{I_t}^y (1 - L_{F_t}) + h_{I_t}^o (1 - L_{F_{t-1}})$$

In line with models in the structuralist tradition (Dutt & Ros, 2007; Ros, 2013; Ros & Skott, 1998; Taylor, 1983), economic duality is defined in terms of the organization, technologies and objectives of production. The formal sector is capitalist, produces a commodity that is both a consumption and a capital good, and employs labor and capital under a Leontieff technology with fixed coefficients and constant returns to scale. In any period, capacity is taken as given—not necessarily utilized at the normal rate—and the formal sector is Kaleckian in that it accommodates demand by adjusting the capacity of utilization u_t . Hence, output and employment in the formal sector are demand-determined. Denoting labor productivity by $1/z$, the stock of capital at the beginning of period t by K_t , and assuming the capital to normal output ratio equal to 1, formal sector output and employment are given by:¹¹

$$Y_{F_t} = \frac{L_{F_t}}{z} = u_t K_t \quad (4.2)$$

The formal sector sets prices according to a constant mark-up over labor costs. The price of the formal good is assumed fixed and equal to 1, the real product wage w_t is taken as given in the current period, and there is no inflation.¹² Hereafter, all values in real terms can be considered as

¹¹The rate of capacity utilization is usually defined as the ratio between actual output and output at the normal or desired level, in this case, $u_t = Y_{F_t}/Y_F^n$. Denoting the technical coefficient of capital to normal output by $v = K_t/Y^n$, the actual output to capital ratio is: $Y_{F_t}/K_t = (Y_{F_t}/Y_F^n)(Y_F^n/K_t) = u_t/v$. To simplify notation and streamline the reasoning, and given that there is no technical progress involved, it can be assumed $v = 1$, so that $Y_{F_t}/K_t = u_t$.

¹²Inflation dynamics is an important element of developing countries, but it is not treated because the focus here is on the short-run. On the other hand, wage setting is a very important topic in dual-economy models of informality, which can alter the dynamic implications and the sheer existence of the informal sector (Brown, 2015; Fields, 2005, 2011a; Wang & Piesse, 2013). However, Ros (2013) shows that simple assumptions on wage setting, like that the formal sector wage is just a premium over the informal sector wage, can give interesting results, an assumption that in any case is not controversial for a short-run analysis. Here it is assumed that the formal real wage is given in any period, maybe set by a

deflated by the price of the formal good. Assuming that the government collects sales taxes at the rate τ_F , the profit share π_t and the profit rate r_t are given by:

$$\pi_t = (1 - \tau_F - zw_t) \quad (4.3)$$

$$r_t = \pi_t u_t \quad (4.4)$$

The informal sector, in turn, is characterized by low scale and self-employment activities with low costs of entry. It produces a service that can be used only for consumption, and employs only labor with a given productivity x and constant marginal returns. Informal output is given by:

$$Y_{I_t} = xL_{I_t} \quad (4.5)$$

Informal workers earn a real wage equal to xP_t , where P_t is the price of the informal sector commodity, that can also be interpreted as the relative price or the terms of trade between the two sectors. The informal sector is competitive and adjusts through changes in P_t . In other words, given that informal output is supply constrained by the lack of capital, and by definition it employs the whole informal labor force, the adjustment can occur only through prices.

The dual character of the economy here represented requires some buffering mechanisms in the broader sense of the theory of social reproduction by Picchio (1992). According to her, the attempts by capital to externalize the costs of social reproduction generate parallel forms of work, production and exchange that are necessary for people to meet their needs and for social stability to be maintained. Social protection plays an important mediating role in this process (Théret, 2006), but so does informality, in the classical sense of Lewis (1954), since it absorbs all the (young) workers excluded from the formal sector.

Given that old-age income protection is a key element of social reproduction (Saritas Oran, 2017), a malfunctioning pension system that cannot guarantee dignified conditions of living to the elderly generates different responses by the political, domestic and economic orders: the government provides subsidized social pensions; the old engage in productive activities themselves to earn a living; and households play a greater role in old-age protection, through non-market carework, stronger family ties, and intrahousehold transfers.

The first mechanism was discussed in the second section when describing the non-contributory schemes of social pensions in Latin America. Here it is modeled by assuming that the government grants a subsidized pension of size s in real terms to a fraction φ of the unprotected old. Total household income coming from social pensions is thus $s\varphi(1 - L_{F_{t-1}})$.

The other responses are clearly illustrated by Arza (2019) for Latin American countries., through an index of old-age protection that combines the coverage and sufficiency of pensions, in both contributory and non-contributory schemes. She shows that lower levels of old-age protection are correlated with higher rates of old-age participation in the labor force, and with lower incidence of independent living among older adults.

bargaining process at the beginning of the period.

The first response implies that the buffering role of informality works also for the elderly in a way that expands the classical Lewisian mechanism: it not only absorbs those excluded from formal jobs, but also part of those uncovered by contributory pensions. In this sense, informality is a way for households to cope with the exclusion implied by double segmentation, rather than a cause of it as in the regulatory approach of Levy and Cruces (2021), Maloney (2004), and Perry et al. (2007). In the case of pensions, it is an intertemporal Lewisian mechanism captured by ϵ_t , the fraction of the old non-covered by contributory pensions that work in the informal sector, shown above in Equation 4.1. Using this, and the informal real wage defined above, the total income per-person received by the informal old is given by:¹³

$$h_{I_t}^o = xP_t\epsilon_t + s\varphi \quad (4.6)$$

The second response identified by Arza (2019) points to the buffering role of families, which is modeled by assuming income-sharing inside households. This is a standard assumption in the modeling of informality since Lewis (1954), whose idea that informal wages are determined by the average—instead of marginal—product of labor is interpreted as a form of wage sharing. Also Razmi (2015) and Razmi et al. (2012) use the concept of work sharing in the presence of underemployment to define the average income of the informal sector as the informal wage divided by the sum of informal labor and unemployment;¹⁴ they use this average informal income as a reservation wage that affects the wage bargaining process in the formal sector, so it can be rather interpreted as the expected income of those losing their formal jobs.

Here, on the contrary, I consider income sharing as a mechanism used by families to support their members when they happen to work in informality or do not have a contributory pension; intrahousehold solidarity between old and young generations thus works in both directions, in line with the evidence that pensions and old-age transfers have a positive impact on household security and children’s well-being (Abramo et al., 2019).

The modeling of intrahousehold solidarity requires a more detailed specification of their composition: first, households are assumed to have one young member and one old member;¹⁵ second, the working status of young and old members of the household are taken as independent events.¹⁶ With these assumptions it is possible to represent the total, pooled income of a household with an informal old member as the expected income of such a household: the income of an informal old, plus the weighted sum of formal and informal young incomes, the weights being the proportion of formal and informal workers in the young generation: $h_{I_t}^o + h_{F_t}^y L_{F_t} + h_{I_t}^y (1 - L_{F_t})$.

¹³This expression is also the expected income of the informal old, where ϵ_t and φ are the shares of the informal old that work and receive a social pension respectively, while xP_t and s are the informal wage rate and the size of social pensions respectively.

¹⁴Work-sharing means that not only income but also work is pooled in the informal sector, so that it comprises a variety of forms like underemployment, self-employment, irregular employment, non-remunerated work, and even unemployment. Hence, although unemployment is not introduced explicitly as a separate segment in the labor market this is not a full-employment model. It is important to stress that the non-working informal old are better considered as inactive, due to their age and health conditions, rather than unemployed.

¹⁵Since the size of total population equals 2, the model can be interpreted to be on a per-household basis.

¹⁶This means that the probability of a young person being formal or informal is not affected by the their parents being formal or informal during their youth. This is a strong assumption in the context of Latin American countries, where intergenerational mobility is far from being guaranteed and poverty is in a large extent hereditary, but the assumption is useful to facilitate the analysis and as a first approximation to the issue.

Finally, a minimum level of real income per household Ψ is introduced, a level of *subsistence* income in the sense of the classical approach,, where it is “understood with reference to norms and habits that are socially and historically determined, not merely in terms of the bare necessities of survival” (Stirati, 1994, p. 35). The minimum level of income also reflects the claim by the theory of social reproduction that a certain level of material conditions must be assured for society to endure (Picchio, 1992). It is defined in real terms, hence in terms of the formal sector good, which also implies that, even though the economy is dual and segmented, all members of society are dependent on the capitalist relations of production and must recur to the formal sector to meet their needs. Hence, informality is functional in the Marxist sense of Godfrey (1977), in that it expands the market for the formal sector goods.

The participation of the old poor in the labor market is assumed to be the buffering mechanism through which households can assure this minimum level of income when no other option is available. To model this, the expected income of a household with informal old members is equated to the minimum level Ψ and solved for ϵ_t , which, using Equation 4.6, is thus given by:

$$\epsilon_t = \frac{\Psi - s\varphi - h_{F_t}^y L_{F_t} - h_{I_t}^y (1 - L_{F_t})}{xP_t} \quad (4.7)$$

This treatment of the informal sector—comprising the informal old’s labor supply—marks a difference with other structuralist models, which follow the assumption by Lewis (1954) that wages (and incomes) in the subsistence sector are determined by the average product of labor. In the models of Martins and Skott (2021) and Razmi et al. (2012), for example, informal incomes are given by informal output divided by the population not employed in the formal sector, which includes informal workers but also the inactive or unemployed. This allows for the presence of *underemployment*, an important feature of dual economies where informal labor “may be spread across a larger number of workers and/or involve a larger amount of low intensity work” (Razmi et al., 2012, p. 153). It is determined by formal sector labor demand (which residually determines informal labor and underemployment), but is independent of the informal sector price level, thanks to the assumption of Cobb-Douglas utility functions that make consumption demand independent of relative prices (Martins & Skott, 2021). Finally, in such models this effective remuneration in the informal sector acts as the fallback position for the determination of formal wages.

There are two elements here that diverge from this standard practice in structuralist models. First, there is no underemployment in the sense of Martins and Skott (2021) and Razmi et al. (2012): since L_{I_t} includes both young and old informal labor, the latter being explicitly determined by ϵ , the assumptions of constant labor productivity x and real wage xP_t in the informal sector make of L_{I_t} the effective labor input in that sector. Second, the determination of informal old’s labor supply through ϵ , as an adjustment mechanism to attain the minimum level of household income Ψ , contradicts the Lewisian practice of determining informal income by the average product of labor. The purpose is to incorporate the Theory of Social Reproduction’s idea of certain costs of social reproduction that must be covered anyway, and that informality and social protection play a role in that process. Hence, rather than absent, income sharing and underemployment are modeled explicitly as a response by households to the lack of protection, in the form of informal old’s labor supply and household income pooling. Importantly, also formal sector young workers participate in income sharing, which is, thus, a practice in the realm of social reproduction rather than labor markets and wage determination.

This makes the model “classical” in the sense of Picchio (1992) and Stirati (1994), with wages determined by a minimum level of income to attain socially established basic standards of living. Formal wages, which are exogenous, can be assumed proportional to Ψ to maintain the main point of Lewis and structuralist macroeconomics of non-neoclassical wage determination in the formal sector.¹⁷ Since the model here is static, this is not, however, of great consequence for the analysis, but it should be considered deeply in further dynamic extensions.¹⁸

It is now time to describe the workings of contributory pension schemes. In any period t , a fraction γ of young formal workers contributes to the PAYG scheme and a fraction $(1 - \gamma)$ contributes to the FF scheme. Retirees are entitled to a pension benefit from the scheme they contributed to when young. The contribution rate α acts as a tax on labor income and is the same for both schemes. The total size of pension contributions is thus given by the following identity, where the first term of the right-hand side are the contributions going to the PAYG scheme and the second term are those going to the FF scheme:

$$\alpha w_t L_{F_t} \equiv \gamma \alpha w_t L_{F_t} + (1 - \gamma) \alpha w_t L_{F_t}$$

The PAYG scheme collects contributions from young workers and uses them to pay its retirees a pension in the same period, assumed to guarantee a replacement rate b of previous wages. The total size of pension benefits paid by the PAYG scheme is thus $\gamma b w_{t-1} L_{F_{t-1}}$. Assuming that the PAYG scheme is balanced, in period t the value of contributions equals the value of pensions paid:¹⁹

$$\alpha \gamma w_t L_{F_t} = \gamma b w_{t-1} L_{F_{t-1}} \tag{4.8}$$

The FF scheme is assumed to be already in operation.²⁰ In any period t , pension funds collect contributions from workers and use them to buy physical capital.²¹ The stock of capital owned by

¹⁷Note that for Lewis (1954, p. 149) “It is not, however, of great importance to the argument whether earnings in the subsistence sector are determined objectively by the level of peasant productivity, or subjectively in terms of a conventional standard of living. Whatever the mechanism, the result is an unlimited supply of labour for which this is the minimum level of earnings.”

¹⁸There is an important caveat, however. Here social pensions do not affect informal households’ income because these are determined by the exogenous minimum level Ψ . This contradicts some empirical evidence on the effects of social pensions in reducing income poverty and inequality (Rofman et al., 2015). Here I will focus in the labor supply effect (Abramo et al., 2019), but further extensions of the model should include also the income effect.

¹⁹Since both the contribution rate α and the replacement rate b are policy-determined, the PAYG scheme lacks of an automatic stabilizer that guarantees its financial equilibrium. The adjustment usually falls on the government, which absorbs any non-zero difference between contributions collected and pensions paid. This is the main concern when discussing the financial sustainability of PAYG schemes, which can be “fixed” through either parametric reforms—one-time changes in α , b , or retirement age—or a PAYG scheme with notional accounts—endogenizing the replacement rate b so that it depends on contribution history, hence α —or structural reforms towards a FF scheme. Since this is not the main concern of the chapter, and the analysis will be static, I assume that the PAYG scheme is balanced: parameters α and b are set so that equation 4.8 holds.

²⁰This precludes any analysis of the transition from a fully PAYG scheme, which, as pointed out by Cesaratto (2006), has important implications for assessing the effects of aging and the comparability of PAYG and FF schemes. It also implies that pension schemes cannot have an impact on aggregate savings (Cesaratto, 2007), as is usually argued by advocates of FF schemes.

²¹In practice, pension funds invest in a wide range of financial assets which include public debt and foreign assets, so not all of the pension savings end up financing capital accumulation in the country. However, in this model of a closed

retirees through pension funds (K_t^R) and its in the total stock of capital (ρ_t) are:

$$K_t^R = (1 - \gamma)\alpha w_{t-1} L_{F_{t-1}} \quad (4.9)$$

$$\rho_t = \frac{K_t^R}{K_t} \quad (4.10)$$

Retirees' capital stock is lent to formal sector firms and yields the profit rate r_t . Pension funds receive the returns, buyback the capital stock, and transfer all the proceeds to retirees as pensions. Thus, the size of pension benefits paid by the FF scheme and the financial balance of pension funds are given respectively by equations 4.11 and 4.12:

$$(1 + r_t)(1 - \gamma)\alpha w_{t-1} L_{F_{t-1}} = (1 + r_t)K_t^R \quad (4.11)$$

$$\Delta K_{t+1}^R = (1 - \gamma)\alpha w_t L_{F_t} + r_t K_t^R - (1 + r_t)K_t^R \quad (4.12)$$

Besides pension contributions formal workers also pay a tax on labor income at the rate τ_H . Using equations 4.8 and 4.11, it is now possible to fully specify the per-person incomes of the four population groups:

$$\begin{aligned} h_{F_t}^y &= (1 - \tau_H - \alpha)w_t \\ h_{F_t}^o &= [\gamma b + (1 - \gamma)(1 + r_t)\alpha] w_{t-1} \\ h_{I_t}^y &= xP_t \\ h_{I_t}^o &= \epsilon_t xP_t + s\varphi \end{aligned} \quad (4.13)$$

To recap, disposable incomes are: for young formal workers, wages after deducting for labor taxes and pension contributions ($h_{F_t}^y$); for formal old retirees, pensions ($h_{F_t}^o$), a replacement rate of previous wages in the PAYG scheme and past contributions plus returns in the FF scheme; for the informal young, informal output ($h_{I_t}^y$); and for the informal old, informal output plus social pensions ($h_{I_t}^o$). Multiplying each type of income by the size of the respective population group and rearranging some terms, total disposable income of working-class households is:

$$\begin{aligned} H_t &= (1 - \alpha(1 - \gamma) - \tau_H)w_t L_{F_t} + (1 + r_t)K_t^R \\ &\quad + xP_t(1 - L_{F_t}) + (\epsilon_t xP_t + s\varphi)(1 - L_{F_{t-1}}) \end{aligned} \quad (4.14)$$

It is assumed that workers do not save and capitalist do not consume, so total disposable income

economy without government debt and no financial sector the only asset is real capital. It is a simplification also used by Cesaratto (2007), Michl (2007), and Rada (2017), when the financialization implications of FF pension schemes are not the main topic of analysis.

of working-class households equals aggregate consumption. Consumption functions are:

$$\begin{aligned} C_{F_t} &= \theta(P_t)H_t \\ P_t C_{I_t} &= (1 - \theta(P_t)) H_t \end{aligned} \quad (4.15)$$

Where $\theta' > 0$ implies that the commodities of both sectors are gross substitutes, with a non-infinite constant elasticity of substitution.

The government collects taxes from the formal sector only, at rates τ_F , τ_H and τ_K respectively for the taxes on sales, labor income, and capital income (retirees exempted). Total government revenue T_t is used to pay for social pensions, so government budget is balanced.

$$T_t = \tau_F Y_{F_t} + \tau_H w_t L_{F_t} + \tau_K r_t K_t^C = s\varphi(1 - L_{F_{t-1}}) \quad (4.16)$$

The investment function of the formal sector contains only an accelerator mechanism: assuming no depreciation, capital accumulation for the next period is proportional to the current level of output in the formal sector, so all investment is induced.²²

$$I_t = \Delta K_{t+1} = aY_{F_t} \quad (4.17)$$

Such an "investment function should not be taken to imply that actual output is equal to capacity output" (Cesaratto et al., 2003, p. 42), nor that capacity is at its normal level: output is demand-determined and there is a slow adjustment overtime of capacity to effective demand and of utilization to its normal level. Since here the analysis is limited to the static equilibrium, I assume that the propensity to invest is constant and that the formal sector is demand-led, with production being accommodated by utilizing more of the existing capacity.

The stock of capital is split between retirees and capitalists, $K_t = K_t^R + K_t^C$. Given the assumptions that capitalists save all their income and perceive the same rate of return as retirees, investment by capitalists is fully internally financed and equal to their net income:²³

$$\Delta K_{t+1}^C = (1 - \tau_K)r_t K_t^C \quad (4.18)$$

The Social Accounting Matrix in table 4.1 shows the previous set of identities and relations between the sectors of the economy, and ensures that the model is stock-flow consistent.²⁴

²²This type of investment function is used in *supermultiplier* growth models, where growth is driven by autonomous demand. In those models, the propensity to invest reacts to discrepancies between the actual and normal levels of the rate of capacity utilization, so that utilization converges to its normal level in the long-run (Freitas & Serrano, 2015). Since the model here is static, I do not delve into such considerations.

²³I am grateful to Peter Skott for pointing this out.

²⁴In the Social Accounting Matrix H_t^{BT} denotes working class household incomes before taxes and contributions, which is equation 4.14 but using w_t instead of $h_{F_t}^y$.

Table 4.1: Social Accounting Matrix

	Expenditures							Investment	Σ
	Formal sector	Informal sector	Workers	Capitalists	Government	PAYG	Pension Funds		
Income									
Formal sector			C_{F_t}					I_t	Y_{F_t}
Informal sector			$P_t C_{I_t}$						$P_t Y_{I_t}$
Workers	$w_t L_{F_t}$	$x P_t L_{I_t}$			$s\varphi(1 - L_{F_{t-1}})$	$\alpha\gamma w_t L_{F_t}$	$(1 + r_t)K_t^R$		H_t^{BT}
Capitalists	$r_t K_t^C$								$r_t K_t^C$
Government	$\tau_F Y_{F_t}$		$\tau_H w_t L_{F_t}$	$\tau_K r_t K_t^C$					T_t
PAYG			$\gamma\alpha w_t L_{F_t}$						$\alpha\gamma w_t L_{F_t}$
Pension funds	$r_t K_t^R$		$(1 - \gamma)\alpha w_t L_{F_t}$						$r_t K_t^R + K_{t+1}^R$
Savings				ΔK_{t+1}^C			ΔK_{t+1}^R		ΔK_{t+1}
Σ	Y_{F_t}	$P_t Y_{I_t}$	H_t^{BT}	$r_t K_t^C$	T_t	$\alpha\gamma w_t L_{F_t}$	$r_t K_t^R + K_{t+1}^R$	ΔK_{t+1}	

4.5 Equilibrium

As it was stated before, the static, one-period equilibrium in OLG models cannot be properly called a short-run one because the time-lapse of a generation is of around 30 years. It will be called instead a one-period equilibrium, in which the state variables of the model, the stock of capital and the real wage in the formal sector, are taken as givens.

In this section the one-period equilibrium is presented and its properties analyzed, assuming that social pensions follow a policy of “sound finance:” given tax rates and government revenues, social pensions’ parameters s and φ are set to guarantee a balanced budget; this resembles the way that Latin American governments have approached social policies in recent years. Such baseline scenario is modified in the next section, where coverage and sufficiency criteria are imposed on social pensions, assuming that the adjustment falls on tax rates.

The one-period equilibrium is characterized by the simultaneous clearing of both commodity markets, so the following two conditions must be satisfied:

$$\begin{aligned} Y_{F_t} &= C_{F_t} + I_t \\ P_t Y_{I_t} &= P_t C_{I_t} \end{aligned}$$

By using consumption functions 4.15, the two market clearing conditions together imply:

$$Y_{F_t} - I_t = H_t - P_t Y_{I_t} \tag{4.19}$$

From equation 4.19, and after some algebraic manipulations described in Appendix 4.A, an expression can be derived for u_t^* , the one-period equilibrium for the rate of capacity utilization:

$$u_t^* = \frac{\rho_t}{\alpha(1 - \gamma)zw_t + \pi_t(1 - \tau_K)(1 - \rho_t) - a} \tag{4.20}$$

This expression is equivalent to the savings-investment identity and exhibits the standard form for the determination of output in demand-led models: an autonomous component (ρ_t) times a multiplier (the inverse of the denominator). The autonomous component is the share of capital owned by retirees, and is autonomous here in the sense of being predetermined: the contributions made in the previous period to the FF scheme. It is the purely dissaving component of pensions, and enters here as a determinant of capacity utilization since it is entirely spent on consumption.

Even though informal workers also consume the formal good, the informal sector does not represent a net source of demand for the formal sector. Note from equation 4.19 that, in the aggregate, since the informal sector uses only labor and distributes all income to workers that do not save, the informal sector spends what it produces in value terms, even if everyone consumes a composite basket of the two commodities. This non-effect of informality on the determination of formal sector output attests the buffering role of informality: those excluded from the formal sector end up producing for their own living in parallel circuits of production and exchange.

The only informal income that has an effect on formal sector output is the one originated outside

of the informal circuit: social pensions. The presence of taxes in the multiplier of 4.20 is because they finance social pensions, $s\varphi(1 - L_{F_{t-1}})$. Taxes contribute to aggregate demand through the consumption of the old, both formal and informal, in line with the argument by Lorente (2019, p. 421, translation is mine) that “the aim of the pension system is to maintain a flow of income.”

A finite value for the utilization rate requires a strictly greater than zero denominator in 4.20, which expresses the standard Keynesian stability condition for average saving rate to be higher than the propensity to invest, and which is assumed to hold.

The two first terms in the denominator represent the average saving rate. The first term, $\alpha(1 - \gamma)zw_t$, are the contributions of workers to the FF pension scheme, and hence proportional to formal labor income zw_t . The second term, $\pi_t(1 - \tau_K)(1 - \rho_t)$, represents capitalists’ savings, which are equal to their income net of taxes and depend on their share in the total stock of capital.

The denominator shows that the effect of taxes on formal sector output comes strictly from capitalists income. Taxes on labor income cancel out since they are a transfer between groups with the same propensity to consume. Taxes on capital income have positive effect on utilization, and also sales taxes. Although the latter do not appear explicitly in equation 4.20, they are present through the profit share, which is defined by equation 4.4 as $\pi_t = 1 - \tau_F - zw_t$. Their positive effect from utilization derives from the assumption that they are not transferred to consumers through higher prices (they are deducted from the residual that constitutes capitalists’ income).²⁵ The positive effect of both sales and capital income taxes derives from the assumption that the propensity to save is lower for workers than from capitalists: taxes transfer income from capitalists, with a propensity to save equal to 1, towards the beneficiaries of the social pensions, with a propensity to save equal to 0, and hence increase aggregate demand.

All this implies that the effect of social pensions on formal output depends on how it is financed. Taking partial derivatives, and denoting by m the multiplier (the inverse of the denominator in Equation 4.20), the effects of taxes on sales and capital income are respectively:

$$\frac{\partial u_t^*}{\partial \tau_F} = (1 - \rho_t)(1 - \tau_K)mu_t > 0$$

$$\frac{\partial u_t^*}{\partial \tau_K} = (1 - \rho_t)\pi mu_t > 0$$

This shows that the relative effect of both types of taxes depends on the relative size of the complement of the tax rate on capital and the profit share, since those are the bases on which each tax is levied. As stated above, taxes have a stimulative effect only because they fall on capitalists’ income, which is $(1 - \tau_F - zw_t)(1 - \tau_K)(1 - \rho_t)u_t$. Hence, sales taxes tend to have a higher stimulative effect when taxes on capital are low, because they are applied on a higher base. In turn, taxes on capital income may have a lower effect because they are applied on a base, the profit share, from which not only sales taxes but also labor income are deducted.

The effect of contributory pension schemes can be seen from the partial derivatives of Equation 4.20 with respect to the rate of pension contributions, α , and the share of the PAYG scheme on them,

²⁵See Appendix 4.A for a more detailed discussion of the role of sales taxes and an expression for u_t^* where they are considered explicitly.

γ , which are respectively:

$$\begin{aligned}\frac{\partial u_t^*}{\partial \alpha} &= -(1 - \gamma)zw_tmu_t < 0 \\ \frac{\partial u_t^*}{\partial \gamma} &= \alpha zw_tmu_t > 0\end{aligned}$$

The rate of pension contributions has a negative effect because it increases savings through the FF scheme, while the share of the PAYG scheme has a positive effect because it redistributes income simultaneously, in the same period, between generations. The role of the share of retirees' capital in the numerator and the effect of the share of PAYG contributions in the multiplier suggests that a mixed pension system with both types of regimes could be appropriate. However, in a broader setting with other sources of autonomous consumption like government spending and exports, the role of retirees dissaving as a source of current consumption could be less important, while a higher share of the PAYG scheme would increase its multiplier effects.

The other endogenous variable to be determined in the one-period equilibrium is the relative price of the informal sector commodity, P_t , which clears the market of this sector. An expression for a function on P_t can be obtained by pulling equations 4.5 and 4.1 into the market-clearing condition for the informal sector, and using the consumption functions 4.15 and the equilibrium condition 4.19 (see the detailed procedure in Appendix 4.B).

$$\frac{P_t\theta(P_t)}{1 - \theta(P_t)} = \frac{(1 - a)Y_{F_t}}{x[(1 - L_{F_t}) + \epsilon_t(1 - L_{F_{t-1}})]} \quad (4.21)$$

Since the left-hand side is increasing in P_t , Equation 4.21 can be intuitively interpreted: the numerator shows that P_t rises with a higher formal sector output, Y_{F_t} , because this implies higher incomes and higher demand for the informal sector commodity; in turn, the numerator shows that P_t falls with higher informal labor supply and productivity, because this increases informal output. However, the effects are more complex since, first, formal output determines as a residuum the level of informal employment, and second, the share of working informal old, ϵ_t , is affected by the two endogenous variables u_t and P_t .

To explore deeply the relation between the two sectors through P_t , first note that the left-hand side of Equation 4.21 is a function $\Theta(P_t)$ such that:

$$\Theta(P_t) = \frac{P_t\theta(P_t)}{1 - \theta(P_t)} = BP_t^\beta \quad (4.22)$$

Where B is a constant and β is the elasticity of substitution between the two commodities.²⁶ Using this, total differentiation of 4.21 yields:

²⁶It can be shown that, assuming a generic CES utility function $(b_F C_{F_t}^{\beta_0} + b_I C_{I_t}^{\beta_0})^{1/\beta_0}$, optimization under the budget constraint H_t yields relative consumption demands such that $\theta(P_t)/(1 - \theta(P_t)) = BP_t^{\beta-1}$, where $B = (b_F/b_I)^\beta$, and $\beta = 1/(1 - \beta_0)$ is the constant elasticity of substitution. See the detailed procedure in Appendix 4.C.

$$\frac{dP_t}{du_t} = \frac{P_t}{u_t} \cdot \frac{L_{I_t} + L_{F_t} - u_t \epsilon_u (1 - L_{F_{t-1}})}{\beta L_{I_t} + P_t \epsilon_P (1 - L_{F_{t-1}})}$$

Where the partial derivatives ϵ_P and ϵ_u are, from Equation 4.7:

$$\begin{aligned} \epsilon_u &= \frac{\partial \epsilon_t}{\partial u_t} = \left[1 - (1 - \alpha - \tau_H) \frac{w_t}{x P_t} \right] z K_t = -\mu z K_t < 0 \\ \epsilon_P &= \frac{\partial \epsilon_t}{\partial P_t} = -\frac{(1 - L_{F_t}) + \epsilon_t}{P_t} < 0 \end{aligned}$$

The second equality in the equation for ϵ_u follows from denoting by μ the formal-informal wage premium, so that $h_{F_t}^y = (1 + \mu) h_{I_t}^y$. Combining the three equations above one arrives at an expression for the ratio of proportional changes in the relative price and the rate of capacity utilization:²⁷

$$\frac{dP_t/P_t}{du_t/u_t} = \eta_{P,u} = \frac{L_{I_t} + L_{F_t}(1 + \mu(1 - L_{F_{t-1}}))}{(\beta - 1)L_{I_t} + (1 - L_{F_t})L_{F_{t-1}}} \quad (4.23)$$

The expression $\eta_{P,u}$ will be positive in general for $\beta \geq 0$, provided that the informal sector exists, $L_{I_t} > 0$. Low values of β can make $\eta_{P,u}$ to be negative, unless the size of the informal labor force is sufficiently large. In the special case of Cobb-Douglas preferences, with $\beta = 1$, it is necessary the existence of current-period informality ($L_{F_t} < 1$) and previous-period formality ($L_{F_{t-1}} > 0$). It is plausible to assume that the two commodities are gross substitutes: informal workers are greatly concentrated in sectors like commerce and other non-tradeables which can compete with similar commodities produced by the formal sector but that are not identical. Hence, a general assumption in this kind of models is $\beta \geq 1$, which, with persistent coexistence of the two sectors, implies that $\eta_{P,u} > 0$; the intuition above of a positive effect of the rate of capacity utilization on the relative price can thus be assumed.

The total effect of u_t on P_t can be decomposed in five effects, the first two already mentioned above: 1) a demand effect, because higher utilization increases formal income, which stimulates demand for the informal sector commodity; 2) a labor supply effect, since higher utilization means a higher absorption of young labor by the formal sector, hence lower labor supply and output in the informal sector; 3) an old-labor-supply effect from income sharing, coming directly from u_t , when higher formal incomes are shared with the informal old, allowing them to reduce their labor supply; 4) an old-labor-supply effect coming indirectly from the informal income effects of u_t on P_t , when an increase in P_t rises informal incomes and hence allows the informal old to achieve the minimum level of household income with less work; and 5) a consumption-substitution effect, when changes in relative prices induce changes in consumption patterns, altering the results of income and labor supply effects above.

Therefore, the buffering mechanisms introduced above—income sharing and labor supply of the informal old—affect the sectoral interlinkages through the relative price.

²⁷See Appendix 4.D for the derivation.

These effects can be identified in Equation 4.23. The first effect is captured by the first term in the numerator, the total informal labor force L_{I_t} . Note from Equation 4.21 that L_{I_t} is the ratio of formal sector consumption to the function $\Theta(P_t)$; in other words, L_{I_t} is proportional to the ratio u_t/P_t . Intuitively, when the informal labor force is large, the informal commodity price is relatively low, so that increases in demand arising from higher formal sector incomes will produce proportionately bigger rises in the relative price.

The second term in the numerator, the formal-informal labor income ratio $(1 + \mu)$ multiplied by the share of formal-young/informal-old households, embodies the second and third effects above: a rise in u_t increases formal employment, hence putting upward pressure on P_t through lower informal labor supply; moreover, higher formal employment means a higher share of households where informal parents are supported by their young formal relatives; higher formal incomes are spread to the un-protected old, which allows them to work less and enhances the lower informal labor supply effect on P_t . Therefore, a higher share of this type of households and a higher formal-informal wage premium result in a higher price-utilization ratio of proportional changes.

The fourth effect—higher prices increase informal income and thus reduce the labor supply of the old—appears in the denominator. It is embodied in the negative sign of L_{I_t} , which is composed both of young and old workers: a higher P_t increases the income of the informal old directly, through their own work, and indirectly, through income sharing when they happen to live in a household with young informal relatives. That is why such income effect is proportional to the whole informal labor force. Note, however, the last term in the denominator, the share of informal-young/formal-old households: a higher share of this type households implies a lower share of informal-young/informal-old households, which reduces the income effect of higher P_t on the informal old labor supply through intrahousehold income sharing; that is why this term appears with a positive sign in the denominator.

Lastly, the effect of substitution in consumption is captured by the elasticity of substitution β multiplying the total informal labor force in the denominator. The substitution mechanism means that a higher price P_t reduces the demand for the informal sector commodity, and hence weakens the upward pressure on the relative price. The higher β , the strongest the substitution effect will be, so the responsiveness of P_t to u_t will be lower. This effect is proportional to the total informal labor force since, as was stated above, the informal sector earns what it consumes; in other words, it is informal income what counts for the working of the substitution mechanism.

4.6 Pension policies

Having discussed the general functioning of the model we can now turn to analyze the policy options concerning the pension system, in particular the non-contributory scheme of social pensions.

The main policy instrument here is $s\varphi$, the size of the subsidized pension, s , multiplied by the share of the informal old who would receive it, φ . It embodies the two main evaluation criteria for pension systems: sufficiency and (passive) coverage respectively. Since the focus here is not on the contributory side, it is assumed that formal retirees in PAYG and FF schemes are fully covered and receive a sufficient pension benefit, although in practice this is not necessarily true.

Parameters s and φ can be discretionary set by the government, and in practice they are. However, following efficiency and fiscal discipline reasons, countries tend to set s at very low levels, well

below the poverty line and contributory pensions (Rofman et al., 2015), while φ is mostly based on means-testing targeting mechanisms (Arza, 2019). In this sense, $s\varphi$ can be thought to be somewhat “endogenous”, correlated with the level of development and fiscal capacity (Arenas de Mesa, 2019).

The set-up of the model above represents such scenario: social pensions do not appear in the expression for the capacity utilization in Equation 4.20, since they are substituted by the tax revenues that finance them. It can be interpreted that the government sets the tax rates and let $s\varphi$ to be determined by what it can collect.

An alternative policy choice requires setting more concrete targets for $s\varphi$. The purpose here is to analyze the implications of quite generous social pensions designs, with targets of full coverage and sufficiency, so it is hereafter assumed that $\varphi = 1$ (full coverage). Regarding sufficiency, there are two alternative policy targets in the context of this model. One option is to set a size of benefits that guarantees a minimum level of income to the informal old, \bar{s} ; since Ψ is the minimum level of income per household compatible with social reproduction, and the old are one half of a household, it can be assumed that $\bar{s} = \Psi/2$.

Note that, in any case, households already obtain the minimum level of income, thanks to the working decisions of the informal old, so the final effect of social pensions will be seen on this decision. Under the target $\bar{s} = \Psi/2$, the share of working informal old will be:

$$\epsilon_t = \frac{\Psi}{2xP_t} - (1 + \mu L_{F_t}) \quad (\text{T1})$$

Setting social pension benefits at the minimum level of income is no guarantee of well-being for the elderly, in the sense of having the right to not work, since household income can still be insufficient if informal young relatives earn a very low wage. The government can thus target $\epsilon_t = 0$, which implies that the size of social pension benefits must be:

$$\bar{s} = \Psi - xP_t(1 + \mu L_{F_t}) \quad (\text{T2})$$

The last target is hard to achieve in practice, because ϵ_t is an endogenous variable that depends on the two adjusting variables of the model, u_t and P_t . It can be seen in Equation T1 that the participation of the old in the labor force increases with high levels of informality among the young (low L_{F_t} , and hence low u_t), and decreases with higher informal wages xP_t . Therefore, this last equation must be interpreted as the required level for s that guarantees $\epsilon_t = 0$, rather than a policy decision on the value of s .

In other words, the government cannot target directly the actual well-being of the informal old, since it depends on general economic conditions, which shows how informality affects policy outcomes. The government can do its best, however, by targeting full coverage and sufficiency. To explore its effects, the total amount of social pensions can be thus taken as constant and redefined, in proportion to the beginning-of-period stock of capital, as

$$\sigma_t = \frac{(\Psi/2)(1 - L_{F_{t-1}})}{K_t} \quad (4.24)$$

The equilibrium level of capacity utilization is different with an exogenous σ_t . After some manipulations of Equation 4.19, and as is shown in Appendix 4.E, it can be shown that:

$$u_t^* = \frac{\rho_t + \sigma_t}{[\alpha(1 - \gamma) + \tau_H]zw_t + \pi_t(1 - \rho_t) + \tau_F - a} \quad (4.25)$$

There are two big differences with respect to the baseline scenario of Equation 4.20, where social pensions were set following a policy of sound finance. First, now social pensions appear in the numerator, as an autonomous source of demand; second, the denominator is slightly changed, since now it is taxes on labor and sales that appear. It does not mean that taxes on capital are not needed anymore, they just do not appear directly because they are implicit in σ , since I assume that taxes on capital income are endogenously adjusted to finance social pensions. They do not need to be the only source of funding, though, also sales and labor income taxes contribute, but they adjust in a different way, through changes in u_t . It is similar to the Keynesian mechanism by which, with a given propensity to save, aggregate income adjusts to equate total savings with total investment. Here, with given tax rates, aggregate income adjusts to allow for the intergenerational transfers implied by σ .

In any case, σ has a positive effect on the equilibrium level of capacity utilization, so it can be considered to generate its own funding through the Keynesian multiplier effect. This means that tax revenue and fiscal discipline should not be considered as constraints for a program of social pensions to the unprotected old in the presence of informality.

As for the effects on the informal sector, σ would appear both in the numerator and in the denominator of the right-hand side of Equation 4.21: social pensions would put upward pressure on the relative price of the informal sector through both demand and supply channels: since σ stimulates u_t , it increases the demand for the informal sector commodity, and since σ lowers ϵ_t , it reduces total informal labor supply. Hence, social pensions would have a positive effect too on informal sector incomes.

Finally, one can explore the effects of a social pension policy that manages to bring $\epsilon_t = 0$. By denoting D_t the denominator in Equation 4.25, and using T2, the utilization level compatible with zero participation of the old in informal labor is:

$$u_t^0 = \frac{\rho_t + (\Psi - xP_t)/K_t}{D_t + xP_t\mu z} \quad (4.26)$$

In turn, the relative price of the informal sector under T2 can be found by pulling u_t^0 and $\epsilon_t = 0$ into Equation 4.21:

$$\Theta(P_t^0) = \frac{1 - a}{x} \cdot \frac{K_t^R + \Psi - xP_t^0}{D_t - z[K_t^R + \Psi - (1 + \mu)xP_t^0]} \quad (4.27)$$

A social pensions policy that totally eliminates the need to work for the old would radically alter the functioning of an economy with informality. First, it will make the rate of capacity utilization depend negatively on the relative price of the informal sector commodity, as can be seen in

Equation 4.26: now, instead of the total amount of social pensions, it is the difference between the minimum level of household income and the informal wage what appears as the second component of autonomous demand, while the denominator is expanded (hence the multiplier is reduced) by formal-informal wage premium. Intuitively, a higher informal wage will allow for a reduction in social pensions, that would have a negative effect on u_t .

On the other hand, the relative price of the informal sector is now independent of the level of capacity utilization, as can be seen in Equation 4.27. Such a policy thus stabilizes informal sector incomes and lets the adjustment fall on the formal sector.

4.7 Conclusions

In this chapter, a pension system with three schemes is introduced into a dual-economy model, to analyze policies of social pensions in developing countries with a large informal sector.

Three main conclusions can be drawn from the exercise herein. First, with a demand-led formal sector there is not a fiscal constraint that can prevent the government from providing social pensions to the informal old, with targets of sufficiency and full coverage. This because social pensions will act as an autonomous component of formal sector demand, hence stimulating that sector. This can be done by taxing the income of capitalists, which means transferring resources from a class with zero propensity to consume to another class with zero propensity to save (in the extreme case of this model). Here the capital income tax can be considered the endogenous policy instrument, although more resources can be drawn from taxes on sales and labor income, whose revenue will adjust endogenously, too, through the Keynesian demand-led mechanism of a higher level of activity.

The second conclusion is that, despite the fiscal feasibility of social pensions, the government cannot target directly the welfare of the informal old through social pensions. Here welfare is understood as the right to not working after a certain age, which is what a pension system is about. In an economy with informality and income sharing inside the household, the old are forced to work when household incomes reach an unacceptable low level, an outcome that depends on the overall functioning of the economy and not only on social pensions. However, given the positive effect of capacity utilization on the relative price, it can be thought that social pensions will eventually guarantee the right to not work to the informal old, since the positive effect on utilization will increase the relative price and hence informal labor income. However, there are other elements at play, like the formal-informal composition of households and the elasticity of substitution between the two commodities, which suggest that this mechanism cannot be taken for granted.

In the third place, it was shown that the design of contributory pension schemes can affect the outcomes of the non-contributory side through their effects on formal sector level of economic activity. On the one hand, a FF scheme is necessary because it provides an autonomous source of demand (the dissavings of past contributions), but, on the other hand, the PAYG scheme amplifies the multiplier mechanism of aggregate demand, so it has a positive effect on the self-funding feature of social pensions, while it helps also to amplify their effects on aggregate demand. With other sources of autonomous demand, the role of a FF scheme seems to be less relevant, so the preferred policy mix would be a universal scheme of social pensions plus a predominantly PAYG non-contributory side.

The analysis here is, however, contains some limitations. First, it does not consider supply

constraints, which are of utmost importance for the structuralist tradition. The demand-led formal sector does not face limits on capital accumulation, since all investment is internally financed through an effective demand mechanism, there is no inflation, and balance of payments' issues are absent because the economy is closed. Second, the model is static, so it is not possible to analyze the evolution of informality over time, the effects that different pension schemes can have on it, nor the dynamic implications of the pension system. Third, financial markets are left outside the picture, but in reality these are increasingly important for pension systems and also for public debt. All these are crucial elements for the economies of developing countries and the dynamics of pension systems, so they should be included in further extensions of the model to have a broader and better picture.

Appendices

4.A Derivation of equation 4.20: equilibrium in the formal sector

Market clearing conditions in the formal and informal sectors are:

$$\begin{aligned} Y_{F_t} &= C_{F_t} + I_t \\ P_t Y_{I_t} &= P_t C_{I_t} \end{aligned}$$

Using equations 4.15, the consumption of formal sector goods can be expressed as the difference between household income and consumption of informal sector goods, $C_{F_t} = H_t - P_t C_{I_t}$. Hence, the market clearing conditions together imply:

$$Y_{F_t} - I_t = H_t - P_t Y_{I_t}$$

Substituting the investment function 4.17 in the left-hand side, and equations 4.14 (household income), 4.1 (informal labor), and 4.5 (informal sector output) in the right-hand side, yields:

$$\begin{aligned} Y_{F_t}(1 - a) &= [1 - \alpha(1 - \gamma) - \tau_H] w_t L_{F_t} + (1 + r_t) K_t^R + x P_t (1 - L_{F_t}) + \\ &\quad (\epsilon_t x P_t + s\varphi)(1 - L_{F_{t-1}}) - x P_t [(1 - L_{F_t}) + \epsilon_t(1 - L_{F_{t-1}})] \end{aligned}$$

Simplifying terms, the above equation can be written:

$$Y_{F_t}(1 - a) = [1 - \alpha(1 - \gamma) - \tau_H] w_t L_{F_t} + (1 + r_t) K_t^R + s\varphi(1 - L_{F_{t-1}})$$

Note that social pensions are the only informal-sector term remaining in the equilibrium equation. It can be substituted using equation 4.16 for the budget balance:

$$Y_{F_t}(1 - a) = [1 - \alpha(1 - \gamma) - \tau_H] w_t L_{F_t} + (1 + r_t) K_t^R + \tau_F Y_{F_t} + \tau_H w_t L_{F_t} + \tau_K r_t K_t^C$$

This equation can be normalized by the capital stock to obtain an expression in terms of the rate of capacity utilization. Recall that, by equations 4.2, 4.10, and 4.3, $Y_{F_t}/K_t = u_t$, $L_{F_t}/K_t = zu_t$,

$K_t^R/K_t = \rho_t$, and $r_t = \pi_t u_t$. Hence:

$$u_t(1 - a) = [1 - \alpha(1 - \gamma) - \tau_H] w_t z u_t + \tau_F u_t + \tau_H w_t z u_t \\ + (1 + \pi_t u_t) \rho_t + \tau_K \pi_t u_t (1 - \rho_t)$$

Reorganizing some terms, one arrives at an expression for u_t :

$$u_t = \frac{\rho_t}{1 - a - [1 - \alpha(1 - \gamma) - \tau_H] z w_t - \tau_F - \tau_H z w_t - \pi_t \rho_t - \tau_K \pi_t (1 - \rho_t)}$$

This is a typical Keynesian expression where demand is determined by the double effect of some autonomous component and a multiplier. In this case, the autonomous component is only ρ_t , the share of capital stock owned by formal sector retirees, which is a dissaving of previously accumulated assets. The multiplier is the reciprocal of the denominator.

To further simplify and understand the equation, note that the terms $\tau_H z w_t$ in the denominator cancel-out. This means that the net effect of (formal) labor income taxes on formal sector demand is zero: they reduce the disposable income of formal workers, but increase by the same amount the income of the informal old through social pensions. Given that the propensities to consume and the sectoral composition of consumption are assumed to be equal for both formal and informal households, labor income taxes are just a transfer of income and, hence, demand, that does not change the overall size of aggregate demand. After canceling-out these terms, and rearranging the denominator, the equation is:

$$u_t = \frac{\rho_t}{[\alpha(1 - \gamma) z w_t + (1 - \tau_F - z w_t) - \pi_t \rho_t - \tau_K \pi_t (1 - \rho_t)] - a}$$

Note that sales taxes, levied at the rate τ_F , have a positive effect on aggregate demand, since they reduce the average rate of savings (the terms in brackets in the denominator). Recall from equation 4.4 that $\pi_t = 1 - \tau_F - z w_t$, so sales taxes, like wages, are a deduction on aggregate income that goes to a group with high propensity to consume: they are transferred to the informal old through social pensions. Their effect on aggregate demand is positive because they reduce the share of income that goes to capitalists and that herein is assumed to be entirely saved. The story would be different should sales taxes be passed-on partly or entirely to consumers through prices; in that case, the net effect would be zero, like it happens for labor income taxes.²⁸ In any case, given that with the present assumptions sales taxes are a deduction on the (residual) capitalists' income, using equation 4.4 the second term in the denominator can be substituted by π_t . Rearranging, one arrives at the short-run equilibrium for the rate of capacity utilization, equation 4.20.

$$u_t^* = \frac{\rho_t}{\alpha(1 - \gamma) z w_t + \pi_t (1 - \tau_K) (1 - \rho_t) - a}$$

²⁸This effect is worth exploring in future works, since sales and consumption taxes are a main proposal from the basic universalism approach, to finance the extension of social protection to informal workers.

4.B Derivation of equation 4.21: equilibrium in the informal sector

The market clearing condition for the informal sector is:

$$P_t Y_{I_t} = P_t C_{I_t}$$

Equations 4.5 and 4.15 can be used to substitute for informal output and informal consumption in the left- and right-hand sides respectively:

$$x P_t L_{I_t} = (1 - \theta(P_t)) H_t$$

In turn, substituting for the definition of informal employment L_{I_t} in equation 4.1:

$$x P_t [(1 - L_{F_t}) + \epsilon_t(1 - L_{F_{t-1}})] = (1 - \theta(P_t)) H_t$$

Now, note that, after multiplying the whole equation by $\theta(P_t)$, the right-hand side is $(1 - \theta(P_t))\theta(P_t)H_t$, and from the consumption functions $\theta(P_t)H_t = C_{F_t}$. The equilibrium condition for the formal sector implies $C_{F_t} = Y_{F_t} - I_t$, so that using the investment function in equation 4.17, the above expression can be rewritten as:

$$x P_t \theta(P_t) [(1 - L_{F_t}) + \epsilon_t(1 - L_{F_{t-1}})] = (1 - \theta(P_t))(1 - a) Y_{F_t}$$

Equation 4.21 for the equilibrium in the informal sector can be easily derived by rearranging some terms:

$$\frac{P_t \theta(P_t)}{1 - \theta(P_t)} = \frac{(1 - a) Y_{F_t}}{x [(1 - L_{F_t}) + \epsilon_t(1 - L_{F_{t-1}})]}$$

4.C Derivation of equation 4.22: function $\Theta(P_t)$

Assume a utility function with Constant Elasticity of Substitution $\beta = 1/(1 - \beta_0)$ (I omit here the subscript t for the time period to ease notation). The consumer problem is:

$$\max_{C_F, C_t} (b_F C_F^{\beta_0} + b_I C_I^{\beta_0})^{1/\beta_0} \quad \text{s.t.} \quad P_F C_F + P_I C_I - H = 0$$

The consumption levels derived from the first order conditions are:

$$C_F^* = \frac{H}{P_F \left(1 + \left(\frac{b_F}{b_I} \right)^{\frac{1}{\beta_0-1}} \left(\frac{P_I}{P_F} \right)^{\frac{\beta_0}{\beta_0-1}} \right)} ; \quad C_I^* = \frac{H}{P_I \left(1 + \left(\frac{b_I}{b_F} \right)^{\frac{1}{\beta_0-1}} \left(\frac{P_F}{P_I} \right)^{\frac{\beta_0}{\beta_0-1}} \right)}$$

Therefore, the ratio C_F^*/C_I^* is:

$$\frac{C_F^*}{C_I^*} = \frac{P_I}{P_F} \cdot \frac{1 + \left(\frac{b_I}{b_F}\right)^{\frac{1}{\beta_0-1}} \left(\frac{P_F}{P_I}\right)^{\frac{\beta_0}{\beta_0-1}}}{1 + \left(\frac{b_F}{b_I}\right)^{\frac{1}{\beta_0-1}} \left(\frac{P_I}{P_F}\right)^{\frac{\beta_0}{\beta_0-1}}}$$

Note that, denoting $h = (b_F/b_I)^{\frac{1}{\beta_0-1}} (P_I/P_F)^{\frac{\beta_0}{\beta_0-1}}$, the second term in the right-hand side is of the form $(1 + h^{-1})/(1 + h)$, which can be simplified to $1/h$. Hence, the above expression can be written as:

$$\frac{C_F^*}{C_I^*} = \frac{P_I}{P_F} \left(\frac{b_I}{b_F}\right)^{\frac{1}{\beta_0-1}} \left(\frac{P_F}{P_I}\right)^{\frac{\beta_0}{\beta_0-1}} = \left(\frac{b_I}{b_F}\right)^{\frac{1}{\beta_0-1}} \left(\frac{P_I}{P_F}\right)^{\frac{-1}{\beta_0-1}} = \left(\frac{b_F}{b_I} \cdot \frac{P_I}{P_F}\right)^{\frac{1}{1-\beta_0}}$$

Denoting $B = (b_F/b_I)^\beta$, $P = P_I/P_F$, and $\beta = 1/(1 - \beta_0)$, the ratio can be expressed as:

$$\frac{C_F^*}{C_I^*} = BP^\beta$$

Denoting the consumption share of C_F in disposable income by $\theta(P) = P_F C_F/H$, the ratio between consumption shares is:

$$\frac{\theta(P)}{1 - \theta(P)} = \frac{P_F C_F}{P_I C_I} = BP^{\beta-1}$$

Hence, the function $\Theta(P)$ is equivalent to the ratio between consumption demands:

$$\Theta(P) = \frac{P\theta(P)}{1 - \theta(P)} = BP^\beta$$

4.D Derivation of equation 4.23: ratio of proportional changes in relative price capacity utilization

The equilibrium level for the relative price is given by equations 4.21 and 4.22:

$$BP_t^\beta = \frac{(1-a)Y_{F_t}}{x[(1-L_{F_t}) + \epsilon_t(1-L_{F_{t-1}})]}$$

Recall from equation 4.2 that $Y_{F_t} = u_t K_t$ and $L_{F_t} = z u_t K_t$, and from equation 4.1 that the denominator is equivalent to $x L_{I_t}$. Also, from equation 4.7, ϵ_t is a function of both P_t and u_t : $\epsilon_t = \epsilon(u_t, P_t)$. The equation can be rewritten as:

$$\Theta(P_t) = \frac{(1-a)u_t K_t}{xL_{I_t}} = \frac{(1-a)u_t K_t}{x[(1-zu_t K_t) + \epsilon(u_t, P_t)(1-L_{F_{t-1}})]}$$

Denoting by $h_j = \partial h / \partial j$ for any function $h(j)$, the total differential of equation 4.21 with respect to u_t and P_t is:

$$\Theta_P dP_t = \frac{-x\epsilon_P(1-L_{F_{t-1}})(1-a)u_t K_t}{(xL_{I_t})^2} dP_t + \frac{(1-a)K_t x L_{I_t} + x(zK_t - \epsilon_u(1-L_{F_{t-1}}))(1-a)u_t K_t}{(xL_{I_t})^2} du_t$$

Rearranging terms to leave dP_t in the left-hand side and du_t in the right hand side:

$$\left(\Theta_P + \frac{x\epsilon_P(1-L_{F_{t-1}})(1-a)u_t K_t}{(xL_{I_t})^2} \right) dP_t = \left(\frac{(1-a)K_t x [L_{I_t} + (zK_t - \epsilon_u(1-L_{F_{t-1}}))u_t]}{(xL_{I_t})^2} \right) du_t$$

Now it is straightforward to obtain an expression for dP_t/du_t :

$$\frac{dP_t}{du_t} = \frac{(1-a)K_t x [L_{I_t} + (zK_t - \epsilon_u(1-L_{F_{t-1}}))u_t]}{\Theta_P(xL_{I_t})^2 + x\epsilon_P(1-L_{F_{t-1}})(1-a)u_t K_t}$$

It is possible to simplify some terms using $\Theta(P_t) = (1-a)u_t K_t / xL_{I_t}$. Hence, multiplying the term L_{I_t} in the numerator by u_t/u_t , and multiplying the whole equation by xL_{I_t}/xL_{I_t} :

$$\frac{dP_t}{du_t} = \frac{x\Theta(P_t)[L_{I_t}/u_t + zK_t - \epsilon_u(1-L_{F_{t-1}})]}{x\Theta_P L_{I_t} + x\Theta(P_t)\epsilon_P(1-L_{F_{t-1}})}$$

Now, $x\Theta(P_t)$ can be canceled-out by multiplying the first term in the denominator by $\Theta(P_t)/\Theta(P_t)$:

$$\frac{dP_t}{du_t} = \frac{L_{I_t}/u_t + zK_t - \epsilon_u(1-L_{F_{t-1}})}{(\Theta_P/\Theta(P_t))L_{I_t} + \epsilon_P(1-L_{F_{t-1}})}$$

The equation can be further simplified. In the numerator, by using $L_{F_t} = zu_t K_t$ and multiplying the second and third terms by u_t/u_t . In the denominator, by using $\Theta_P/\Theta(P_t) = \beta/P_t$ and multiplying the second term by P_t/P_t :

$$\frac{dP_t}{du_t} = \frac{(L_{I_t} + L_{F_t} - u_t \epsilon_u(1-L_{F_{t-1}}))/u_t}{(\beta L_{I_t} + P_t \epsilon_P(1-L_{F_{t-1}}))/P_t}$$

Equivalently:

$$\frac{dP_t}{du_t} = \frac{P_t}{u_t} \cdot \frac{L_{I_t} + L_{F_t} - u_t \epsilon_u (1 - L_{F_{t-1}})}{\beta L_{I_t} + P_t \epsilon_P (1 - L_{F_{t-1}})}$$

Now, the expressions for the partial derivatives of ϵ_t with respect to u_t and P_t can be expanded. These are, from equation 4.7:

$$\begin{aligned} \epsilon_u &= \frac{\partial \epsilon_t}{\partial u_t} = \left[1 - (1 - \alpha - \tau_H) \frac{w_t}{x P_t} \right] z K_t \\ \epsilon_P &= \frac{\partial \epsilon_t}{\partial P_t} = -\frac{(1 - L_{F_t}) + \epsilon_t}{P_t} \end{aligned}$$

Note that, since the net wage in the formal sector is $h_{F_t}^y = (1 - \alpha - \tau_H)w_t$, while the wage in the informal sector is $h_{I_t}^y = x P_t$, the term in brackets in the equation for ϵ_u is equal to $1 - h_{F_t}^y/h_{I_t}^y$. Denoting by μ the formal-informal wage premium such that $h_{F_t}^y = (1 + \mu)h_{I_t}^y$, and using equation 4.2, the term in brackets is equal to $-\mu$. Hence, $-u_t \epsilon_u = -\mu L_{F_t}$. Regarding the equation for ϵ_P , note that the second term in the denominator of the equation for dP_t/du_t is equal to $-(1 - L_{F_t})(1 - L_{F_{t-1}}) - \epsilon_t(1 - L_{F_{t-1}})$. Now, using the definition of informal labor, equation 4.1, that term is equal to $-L_{I_t} + (1 - L_{F_t})L_{F_{t-1}}$. Therefore, multiplying dP_t/du_t by u_t/P_t one arrives at equation 4.23:

$$\frac{dP_t/P_t}{du_t/u_t} = \eta_{P,u} = \frac{L_{I_t} + L_{F_t}(1 + \mu(1 - L_{F_{t-1}}))}{(\beta - 1)L_{I_t} + (1 - L_{F_t})L_{F_{t-1}}}$$

4.E Derivation of equation 4.25: equilibrium in the formal sector with targets of coverage and sufficiency for social pensions

The procedure is similar to the one depicted in Appendix 4.A: to obtain an expression for the rate of capacity utilization, starting with market clearing conditions for the two sectors. The difference is that now social pensions are set with targets of full coverage and sufficiency. In the context of this model, full coverage implies $\phi = 1$, and sufficiency means that social pension benefits are set to guarantee the minimum level of income following equation T1: $\bar{s} = \Psi/2$. The starting point is the fifth equation in Appendix 4.A:

$$Y_{F_t}(1 - a) = [1 - \alpha(1 - \gamma) - \tau_H] w_t L_{F_t} + (1 + r_t) K_t^R + s\varphi(1 - L_{F_{t-1}})$$

Now, instead of substituting tax revenues for social pensions (so that social pensions adjust endogenously to the available resources), these are set equal to the level that guarantees targets of full coverage and sufficiency:

$$Y_{F_t}(1 - a) = [1 - \alpha(1 - \gamma) - \tau_H] w_t L_{F_t} + (1 + r_t) K_t^R + (\Psi/2)(1 - L_{F_{t-1}})$$

Equation 4.24 defines the ratio of exogenous social pensions to capital stock as $\sigma_t = (\Psi/2)(1 -$

$L_{F_{t-1}}/K_t$. Using this equation together with equations 4.2, 4.10, and 4.3, the expression per unit of capital stock is:

$$u_t(1 - a) = [1 - \alpha(1 - \gamma) - \tau_H]zw_tu_t + (1 + \pi_tu_t)\rho_t + \sigma_t$$

Reorganizing terms to get an expression for u_t :

$$u_t = \frac{\rho_t + \sigma_t}{1 - [1 - \alpha(1 - \gamma) - \tau_H]zw_t - \pi_t\rho_t - a}$$

Reorganizing some terms, and adding and subtracting τ_F :

$$u_t = \frac{\rho_t + \sigma_t}{[\alpha(1 - \gamma) + \tau_H]zw_t + (1 - \tau_F - zw_t) - \pi_t\rho_t + \tau_F - a}$$

Using equation 4.4, the second term (in parenthesis) in the denominator is equal to the profit share. Hence:

$$u_t^* = \frac{\rho_t + \sigma_t}{[\alpha(1 - \gamma) + \tau_H]zw_t + \pi_t(1 - \rho_t) + \tau_F - a}$$

Chapter 5

Measuring social protection fragmentation and its relation with informality in developing countries

5.1 Introduction

Informal labor is the main source of income for a large part of the global population, particularly in developing countries. This is considered a problem for economic growth and development, since informal activities tend to have low productivity, low technological content, and contribute little to tax revenues. It is also a great concern for social policy, because of the precarious, unstable, and insecure conditions faced by informal workers, who are not covered by social protection programs.

To extend social protection to informal workers, developing countries have relied on non-contributory schemes of social assistance, which were strongly expanded in the last decades (Abramo et al., 2019; Samson & Kenny, 2016). Although they now represent an important part of social protection in these countries, they have proven insufficient to protect informal workers. Social assistance thus faces the problem of being too small for the number of people in need of protection, and being too big for social protection systems, where it was supposed to play only a residual role. Therefore, social protection systems have become increasingly *fragmented*, with a multiplicity of uncoordinated programs oriented towards different groups, but still incapable of protecting the people (Barrientos, 2019).

Moreover, there is a growing concern that this fragmentation may itself stimulate and perpetuate informality. Based on an understanding of informality as a matter of rational choice and individual cost-benefit analysis (Ulyseas, 2020), neoclassical authors claim that social protection fragmentation creates a system of perverse incentives that lead people to choose informality (Levy & Cruces, 2021). This may occur through several channels: with regards to social assistance, informal workers may prefer to remain informal not to lose their benefits; in the case of social insurance, excessive protection to formal workers disincentive the creation of formal jobs by firms, while higher payroll taxes, combined with low quality of services, disincentive workers to engage in formal jobs (Levy & Cruces, 2021; Maloney, 2004; Ribe et al., 2012; Ulyseas, 2020). These informality-effects of

social protection fragmentation have thus become a common argument against policies that might benefit formal workers, or extend social assistance benefits, without a deep analysis of the supposedly imminent perverse incentives.

There is also a growing strand of literature that studies the informality effects of particular social policy programs, with mixed results that keep the debate alive. However, if informality is mainly driven by macroeconomic and economy-wide factors, as suggested by structuralist approaches, the effects of social protection fragmentation should be considered also at the aggregate level, that is, by analyzing how a fragmented social protection *system* relates to the *general* level of informality in a country. On the other hand, although the informality effects of individual programs are themselves important, the neoclassical narrative stresses the overall fragmented structure of social protection as problematic by itself, so an aggregate analysis is also necessary from that perspective.

The purpose of this chapter is thus to analyze the relation between informality and social protection fragmentation, at the aggregate level, to contribute to these debates that I review briefly in the second section. A challenge in this respect is to define and measure such fragmentation, so in the third and fourth sections I discuss the concept and construct a set of indicators to measure it, based on the ASPIRE database by the World Bank. In the fifth section I analyze the fragmentation indices and their relation with labor informality for a set of developing countries in the last decades. I present some conclusions and discuss the limitations of this analysis in the last section.

5.2 Empirical evidence on the relation between social protection and informality

There are two types of literature on the relation between social protection policies and informality. On the one hand, microeconomic studies focused on particular programs and countries, and on the other hand, more general macro analyses either focused on informality and its different effects or determinants, including social protection, or studies focused on social protection that consider informality among a wide range of other related factors. However, the relation between informality and social protection as main object of study is rare among empirical works at the macro or aggregate level.

Regarding microeconomic studies, and considering a broad definition of social policies, Farné and Vergara (2015) find that the better employment opportunities and social protection increased employment quality in Colombia in the 2000s. In turn, workfare programs in Argentina might not be generally considered an alternative to informality, since this is observed only for a subset of individuals in the study of Khamis (2009). In turn, Zarkovic-Rakic et al. (2016) show that the elimination of a minimum base to calculate social security contributions in 2004 did not have employment effects in Serbia. For the particular case of pensions, Avila-Parra and Escamilla-Guerrero (2017) show that the expansion of social pensions in Mexico in 2013 did not affect the labor force participation of the beneficiaries, while Yang (2022) found that informality affected the decision to participate in different pension schemes in China, following a reform in 2011, which in turn strengthened the segregation between different categories of workers. Also regarding pensions, Martinez Guzman and St. Clair (2021) find that reforms oriented at expanding coverage to self-employed workers were not effective when they relied on simplified tax regimes (in Brazil and Uruguay) but those based in subsidies achieved some success (Chile and Costa Rica). Conditional Cash Transfers are a

recurrent case of study because the perverse-effects argument is closely related to this type of policies. However, Palacio Ludeña (2019) shows that although such programs may indeed perpetuate labor informality among beneficiary women in Ecuador, it is not because of the neoclassical incentive mechanism in the rational choice of employment, but rather because those policies reproduce traditional gendered roles and segregation.

The literature in this respect is broad, but some authors have conducted meta-analysis the help to summarize the main results. Abramo et al. (2019) review of a large group of impact evaluation studies of social programs in Latin America, which tend to find a negative effect of Conditioned Cash Transfers (CCT) on formalization. However, the authors stress that the evidence is “insufficient to resolve the argument over the possible action of CCT in encouraging informality, since too few evaluations have been done and several of them are not statistically representative” (p. 96). The evidence that CCTs disincentive labor force participation is more common for women, as also found by Canelas and Niño-Zarazúa (2022), which suggests that these programs may deepen gender inequalities as claimed by Palacio Ludeña (2019). For social pensions, in turn, the informalization effect is limited, since benefits tend to be much lower than contributory pensions. The evidence is inconclusive too on the formalization effects of labor and productive inclusion programs. In general, the authors claim that these programs “do not have the capacity to impact on structural dimensions or on the dynamics of labour markets” (p. 94), although there is a strong, consistent and significant evidence on their positive effect on welfare outcomes.

Canelas and Niño-Zarazúa (2022) analyze deeply the literature on the effects of social protection policies on informality in developing countries.¹ They find that the evidence is at best mixed, since social protection policies tend to have nil or small effects on informality. Informalization effects of non-contributory programs are small and marginal, at the threshold with formality, operating only for informal workers who have the opportunity of transitioning to formality. Their study shows an important role of social reproduction: extending social protection benefits to children of formal female workers increases formality. In turn, Ulyssea (2020) documents different studies that find evidence of a positive effect on informality of universal health coverage, cash transfers, and social pensions. Finally, Kugler (2019) shows that payroll taxes are found to have negative effects on formal employment, though this is related to the low quality of the services provided through formal employment.

An interesting microeconomic study is the one by Egger et al. (2021), based on survey data for five Sub-Saharan African countries. They found that informality allows households to increase welfare through income diversification, since “households with a mix of income sources or activities show better welfare outcomes than fully informal households and, in some countries, even better outcomes than fully formal households” (p. 9). According to the authors, social protection play an important role in these results, through the benefits perceived by formal household members.

The relation between informality and social protection at the macro or aggregate levels is analyzed in cross-country studies. Taking a broad notion of social policies, Silva-Peñaherrera et al. (2021) find that a comprehensive social protection system is necessary to ensure the positive effects of formalization in the reduction of mortality rates, since they find a positive and significant

¹They review Randomized Control Trials of policies to increase contributory social protection coverage among informal workers in South-East Asia; studies of the effects of universal healthcare, cash transfers, and social pensions on informality in Latin America; and one study of the informality effects of social pensions in South Africa.

correlation only for countries with a strong welfare state, for a group of 17 Latin American countries between 2000 and 2016. Williams (2015b), in turn, studies informal employment for 26 developing countries in the 2010s, and finds that higher informality is associated, among other variables, with lower social contributions.

Other studies consider social protection as part of a broader set of determinants of informality, which are of utmost importance in neoclassical theory: regulations and institutions. Since this approach considers informality a matter of rational choice, anything that changes the cost-benefit balance in favor of informality would increase it (Ulysea, 2020). In this framework, the costs of formality and the benefits of informality are expected to be higher with excessive regulations and tax burdens, and with low institutional quality—corruption, inefficient bureaucracy, weak judicial systems and rule of law (Maloney, 2004; Oviedo et al., 2009). Excessive labor market regulations and social protection contributions are particularly important, since they increase labor costs (David, Lambert, et al., 2021), while non-contributory social protection programs may act as a perverse incentive as already discussed. In general, regulations and state intervention are considered to hinder growth and development, and hence to deter formalization too.

In this literature, higher informality is usually found to be associated with stricter labor market regulations, although the evidence is mixed. (David, Komatsuzaki, et al., 2021). With respect to social protection policies, Lehmann and Muravyev (2012) find, for a panel of 25 Latin American and 27 transition economies between 1995 and 2007, that higher informality is associated with weaker unemployment insurance, particularly regarding the size and duration of unemployment benefits, and especially for Latin America. Berens (2020) finds that the probability of being informally employed is higher for an elitist welfare system, where social insurance benefits are concentrated towards the rich. However, the probability of informality is not affected by more accurately targeted social assistance, that is, when its benefits are concentrated towards the poor. On the other hand, Altamirano (2019) shows that, for 17 Latin American countries in 2010, informal work (defined as lack of health coverage) is associated with lower identification with political parties and lower support for the public provision of social protection. According to her, fragmented social protection systems explain these results: informal workers are not concerned by most political discussions on social policy, since they do not perceive its benefits; in turn, non-contributory schemes, more important for informal workers, are not clearly identified with specific parties or political positions.

The evidence thus seems a bit inconclusive. Microeconomic studies show mixed results regarding the relation between social policies and informality, the perverse-incentives effect is sometimes found, although it tends to be small and marginal, and other effects seem to be more important in this relation, in particular, the fact that social policies strengthen existent divisions and disparities already present, especially related to gender. Cross-country macroeconomic studies, on the other hand, find that informality is associated with low institutional quality in general, which is expected to affect the performance of social protection systems in a similar way. It is apparent that the relation between social protection and informality responds to more structural, underlying factors, that tend to be overlooked in the narrative about incentives and rational choice.

The neoclassical literature has long debated this issue, and arrived at a consensus by which there are different types of informality, as illustrated by the exit-exclusion duality of Perry et al. (2007), where some workers are informal out of necessity, since they are excluded from formal labor markets, while others are voluntarily informal, and choose to exit from the formal market,

more in line with the conventional argument about incentives and cost-benefit analysis by Maloney (2004), for example. This distinction is relevant because the relation between social protection and informality would differ depending on which type of informality is more prevalent in a country.

The importance of the structural, involuntary dimension of informality, is well documented in the literature. At the macroeconomic level, higher levels of informality are associated with lower income per capita, higher poverty rates, worse health outcomes, low levels of education, higher gender inequality (Ohnsorge & Yu, 2021). It is also stronger in developing countries with an economic structure more weighted towards agriculture, and with higher shares of young and rural populations (Loayza et al., 2009). At the microeconomic level, it is consistently observed that informality is more common among the less advantaged social groups: women, the less educated, the young and the old (Ulyseas, 2020), and those living in less dynamic settings and in regions with lower earnings and productivity (Fernández et al., 2017). In Latin America, employers and self-employed workers tend to be in the upper-tier of informality, while informal salaried and unpaid workers tend to be in the lower-tier (Perry et al., 2007). The relative size of subsistence informality is also found to fall as income levels rise across countries (Fernández et al., 2017). Thus, the empirical evidence suggests that, at the structural level, the main drivers of informality are low development and marginalization, so that the bulk of it responds to exclusion and necessity.

To summarize, the empirical evidence tends to find mixed results on the effects of social policies on informality, and when those effects exist they mainly affect those workers at the threshold between formality and informality (Abramo et al., 2019; Canelas & Niño-Zarazúa, 2022; David, Komatsuzaki, et al., 2021; Kugler, 2019). Or, those effects are related to already existent disparities, and reproduce oppression and marginalization dynamics (Palacio Ludeña, 2019) that are more linked to the lower- rather than the upper-tier of informality, being the latter the more relevant one for the neoclassical argument about perverse effects. At the macroeconomic level, social protection is considered in the broader regulatory and institutional framework that is thought to determine informality. In particular, the concept of *social protection fragmentation*, so important for the neoclassical argument, is not consistently defined, measured, nor analyzed in relation to informality at the macroeconomic level. In the next two sections I discuss the concept of fragmentation, and propose a measure of it to fill this gap.

5.3 The fragmentation of social protection systems

Social programs differ along several dimensions: their rules, benefits, and the populations towards which they are oriented; the institutional and administrative infrastructure that determines how they are regulated and operated; and the mechanisms and sources through which they are financed. Such differences are inherent and necessary for the well functioning of social protection systems, but they can become problematic when poorly coordinated, and when they tend to enforce or create inequalities.

This phenomenon of social protection fragmentation is defined by Martinez Franzoni and Sanchez-Ancochea (2018, p. 19) as “the existence of diverse mechanisms of access, funding, entitlements, and providers, as well as the presence of a large outside market option.” It becomes problematic when it hinders the universalistic goal of “similar, generous entitlements for all” (p. 4), and when

the institutional design prevents transitions between different regimes.² Hence, social protection fragmentation is complex and multidimensional, and whether it is considered problematic or not depends on what the goals of social policy are thought to be.

Political and ideological motives thus shape the design of social policy, including fragmentation, and also the assessment of its effects, as argued by Fischer (2018). In particular, the predominance of concepts like poverty and social exclusion, deemed as inevitable rather than political problems, has led to believe that they can be technically fixed through incentive mechanisms to make people overcome poverty by themselves; on the other hand, the view of social protection as a consumption smoothing and risk management device, leads to the proliferation of market-based options.³

This leads to a narrow understanding of social policy as poverty alleviation, and an experimentalist approach that favors the proliferation of small and disconnected programs, since the main concern is to assess behavioral outcomes and incentive mechanisms. On the other hand, such goal-oriented approaches tend to focus in coverage—a concrete and measurable target—and disregard, or even deepen, other forms of social protection fragmentation: differential quality of services, funding, and forms of provisioning. For Martinez Franzoni and Sanchez-Ancochea (2018), the promotion of market solutions deepens fragmentation, since it creates inequalities in benefits and erode the political feasibility of more unified systems. Therefore, when the main objectives are to reduce the size of public action, focus on poverty alleviation, and adequately identify and target the deserving poor, social policies advance segregationist practices that reproduce pre-existent social fractures (Fischer, 2018). From this perspective, social protection fragmentation is a political choice.

Levy and Cruces (2021) recognize the role of institutional and political factors behind social protection fragmentation in Latin America, but they give great importance to informality as a driver and consequence of fragmentation, in a vicious cycle that constitutes the “original sin” of Latin American social protection systems. The crucial type of fragmentation here is what Barrientos (2019, p. 63) calls social protection *dualism*, the split between “social insurance provision for workers in formal employment and social assistance provision for informal and low-income groups.” He explains dualism in Latin America as a historical consequence of informality: social protection systems in the 20th century relied on contributory schemes that excluded informal workers *de facto*, but the high levels of informality created a protection deficit that was filled by social assistance programs. However, these were not fully integrated with contributory regimes, nor able to expand protection massively, and though they contributed to improve poverty and inequality measures, the resulting fragmented systems usually imply regressive redistribution Ribe et al. (2012). They left a “missing middle” of unprotected people, not poor enough to qualify for social assistance, and not rich enough to make social insurance contributions (United Nations, 2018). Moreover, other authors argue that dual social protection systems stimulate informality through the excessive protection of a small group of privileged formal workers, the disincentives to formalization due to its high costs, and the perverse incentives for informality of social assistance programs (Alvarado et al., 2021; Álvarez & Villaveces, 2021).

²I am grateful with Andrew Fischer for pointing this out.

³This is the view held by the Social Risk Management approach, for example (Holzmann & Jørgensen, 2000), which is built upon principles of austerity and efficiency, and promotes a stronger role of private actors and market-based solutions in the provision of social protection. In this approach, public policies should be at most complementary, playing a residual role at solving what the private sector cannot address, while being careful at not distorting incentives and price mechanisms.

However, the relation between social protection fragmentation and informality has not been explored deeply in cross-country empirical studies at the macro level. Instead, two main dimensions of social protection are usually considered: on the one hand, aggregate fiscal variables, like social government spending or social contributions revenues (Williams, 2015a, 2015b); and, on the other hand, regulations that may affect businesses incentives, like payroll taxes (Fernández et al., 2017; Kugler, 2019).

This is surely related to the difficulties involved in trying to measure a complex and multidimensional phenomenon like social protection fragmentation. Instead, social protection systems are assessed by looking either at their overall performance (usually through indicators of coverage and sufficiency), or, when their differentiated effects are considered, in terms of targeting accuracy or their ability to reduce poverty and inequality. Examples of the latter are the targeting accuracy index (Coady et al., 2004), and the different measures of poverty and inequality reduction effects of social protection by the World Bank. Ocampo and Gómez-Arteaga (2016) propose a more comprehensive measure for Latin American countries, the Social Protection Index, which however does not measure fragmentation either.⁴ A close measure of fragmentation is the “elitism of social protection” by Berens (2020)—the concentration of social insurance benefits in the top quintile—which, however, does not capture the problem comprehensively.

Here I will propose different measures of social protection fragmentation to explore its relation with informality in developing countries. I approach fragmentation in terms of dualism and coverage, which is certainly narrow, but feasible with the available data, and meaningful for the problem at stake, since social protection dualism is said to have a close relation with informality. Moreover, to the best of my knowledge, there is not yet a comprehensive measure of social protection fragmentation beyond coverage gaps or the concentration of benefits in certain groups. I propose and discuss different measures in the next section.

5.4 Measuring fragmentation

I use data from the ASPIRE database by the World Bank, which is the most complete set of indicators on social protection worldwide, mainly for developing countries⁵. Coverage indicators are based on nationally representative household surveys, from questions about participation in particular social protection programs, which are harmonized in the ASPIRE database by classifying them worldwide in twelve broad categories.⁶ ASPIRE indicators are not fully comparable across countries, since they depend on the particular questions and programs included in the surveys. However, they capture the biggest and most widespread programs per country, so one can get at least a lower bound for

⁴This index combines different indicators of universality, solidarity, and social spending. The first dimension includes the coverage gap in health and pensions between wage non-wage earners, which is closely related to the notion of fragmentation, while the second dimension is basically the coverage of the poor.

⁵<https://www.worldbank.org/en/data/datatopics/aspire>

⁶There are four main categories: social assistance, social insurance, labor market policies, and private transfers. Social assistance is subdivided in eight categories: unconditional cash transfers, conditional cash transfers, social pensions, food and in-kind transfers, school feeding, public works, fee waivers and subsidies, and other social assistance programs. In turn, social insurance is subdivided in two categories: contributory pensions, and other social insurance. It is important to note that healthcare—included under fee waivers and subsidies, in the case of social assistance, and under other social insurance, for the latter—is not generally included in surveys, so ASPIRE indicators capture mainly participation in non healthcare social protection programs.

coverage indicators. In any case, the problem of comparability is not minor, but I will discuss it extensively later in section 5.4.3.

I consider three notions of fragmentation, directly linked to informality. The first one is what Barrientos (2019) calls *social protection dualism*, or the unequal concentration of social insurance and social assistance in different population groups. The second and third dimensions are, respectively, the reliance of the social protection system on social assistance, and the rate of non-coverage, which I will address at the end of this section. By now, I concentrate on social protection dualism.

5.4.1 Conceptual definition of the fragmentation indices

The main concept in my definition of dualism is the *beneficiary incidence* indicator, the number of (direct and indirect) beneficiaries of a program in each quintile as a percentage of the total number of beneficiaries in the population. This is a widely used indicator to measure, for example, targeting accuracy, and is used by (Berens, 2020) to measure the elitism of social protection—the beneficiary incidence of social insurance in the top quintile. Here, in turn, I use the whole set of beneficiary incidence indicators—one indicator per quintile, for both social insurance and social assistance programs—to get a complete picture of the unequal distribution of both schemes in the population. More precisely, the beneficiary incidence for population group j and social protection program K is:

$$B_j^K = \frac{n_j^K}{N^K}$$

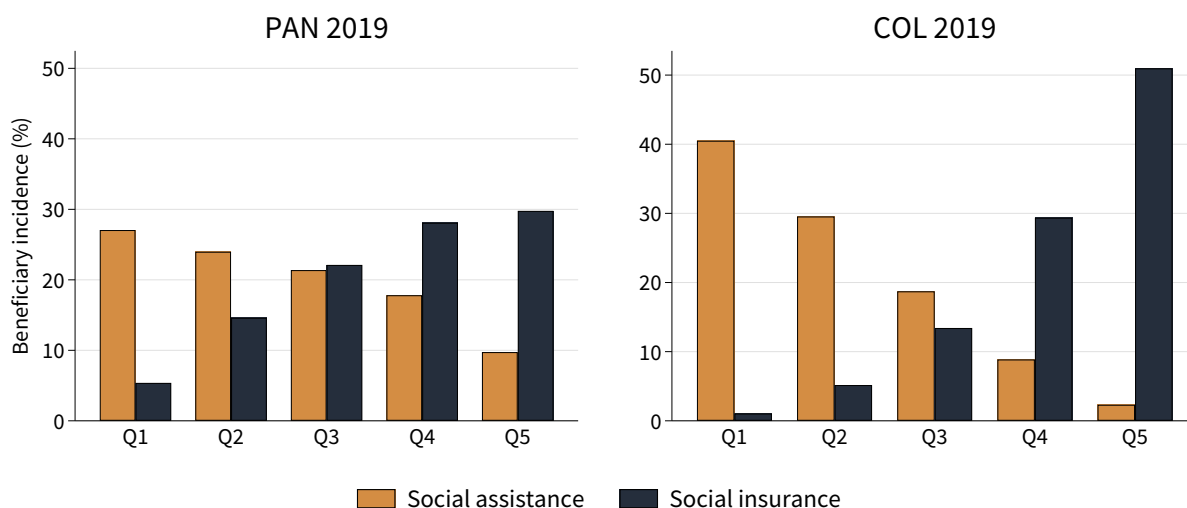
Here n_j^K is the number of people in group j that are covered by the program K , and N^K is the total number of people in the population covered by program K . $j = 1, \dots, 5$ denotes the five quintiles of the welfare—income- or consumption-based—distribution, and $K = SA, SI$ denotes the social protection scheme, SA for social assistance and SI for social insurance. Note also that $\sum_j B_j^K = 1$.

Figure 1 depicts the distributions of beneficiary incidence in Colombia and Panama in 2019, which illustrates very well the problem of dualism. In both cases, social insurance is concentrated at the top and social assistance at the bottom. The beneficiaries of each regime are more evenly distributed across income groups in Panama, which suggests a relatively less fragmented social protection system, while the distributions are heavily concentrated at the extremes in Colombia, indicating a highly fragmented and dual system, each regime covering quite different and segregated groups.⁷

Panama has closely followed the poverty-alleviation approach in social assistance, with an emphasis on improving targeting accuracy, but has a wide range of programs: different forms of cash

⁷It is important to note that Panama and Colombia differ in the composition of programs included in the ASPIRE indicators. Namely, social assistance in Panama includes conditional cash transfers, social pensions, school feeding, in-kind transfers, and other subsidies, and social insurance includes contributory pensions and work-related sickness and injuries benefits. For Colombia, social assistance is limited to cash transfers (conditional and unconditional) and social pensions, while social insurance covers only contributory pensions. However, to the point that such differences are also a consequence of the relative reach and importance of the programs in each country, the picture of social fragmentation obtained from these indicators is not misleading.

Figure 1: Beneficiary incidence



Source: Own construction, based on data from the ASPIRE database, World Bank.

and in-kind transfers, feeding mechanisms, and social pensions (Rodríguez Mojica, 2013). Similarly, it is among the countries with relatively better rates of pension coverage in the region (Sojo, 2017), and the different programs of contributory pensions, sickness, work-related injuries, and maternity benefits are institutionally integrated (Rodríguez Mojica, 2013). In the case of Colombia, the fragmentation of social protection is well known and documented. Contributory pensions have a low passive coverage of around 35% (Azuero Zúñiga, 2020), and are split between two competing schemes—private Fully-Funded and public Pay-As-You-Go. Insurance against work-related injuries performs relatively better in terms of coverage, but in a different institutional framework, and is only accessible to formal workers; in turn, a proper system of unemployment benefits is absent (Álvarez & Villaveces, 2021). On the other hand, relatively well targeted programs of conditional cash transfers and social pensions were expanded in the last decades, but they remain small in coverage and size of benefits (Alvarado et al., 2021). The fragmentation in Colombia’s social protection system is usually claimed to be the cause of informality, in particular, contributory schemes are depicted as excessively protecting a small and privileged group of formal workers, while stimulating informality through perverse incentives (Alvarado et al., 2021; Álvarez & Villaveces, 2021). In this sense, measuring fragmentation can contribute to find out whether these claims are well founded.

An index of dualism should capture the relative concentration of each regime, and show higher values for more fragmented social protection systems. The more suitable option is a measure of inequality, but there are two elements that need further consideration: first, how to combine two varying distributions—one for each regime—in one single index, and second, how to consider the different patterns of inequality in each regime—the concentration of social insurance at the top and social assistance at the bottom. Note that standard indicators of income inequality deal essentially with the same problem, by comparing two distributions of income and population, although in that case the income distribution is the only one that varies—growing always towards the top—while the other is static as population shares are constant by definition across income groups.

I propose three different indices that, while capturing different dimensions of the social protection dualism, generate similar results.

The Palma Index

The first index is inspired in the Palma ratio, an inequality measure that looks at the relative sizes of top and bottom groups in the overall income distribution. To consider the inequality between regimes, I take first the ratio between the beneficiary incidences of social insurance and social assistance, B^{SI}/B^{SA} . Then, I compute the Palma ratio as the top-bottom ratio of these insurance-assistance ratios. The first Social Protection Dualism Index, based on the Palma ratio, is:

$$SPDI_P = \frac{\sum_{j=4,5} \frac{B_j^{SI}}{B_j^{SA}}}{\sum_{j=1,2,3} \frac{B_j^{SI}}{B_j^{SA}}}$$

This index captures very well the differential concentrations of the two regimes at the two poles of the distribution. It is particularly sensitive to cases where large discrepancies *within* quintiles are accompanied by large discrepancies *across* quintiles. In the case of Colombia in Figure 1, for example, a very large numerator is combined with a very low denominator, which results in a SPDI-P of 32,42. For Panama, it is 3,61.

This index captures the intensity of fragmentation in a numerical scale that is not bounded upwards, so the degree of fragmentation of a country can be judged only by looking at other countries, which is not ideal when the original data are not fully comparable. The index does not have a clear lower bound either, so the interpretation of lower values is not intuitive. A value of zero might be achieved if the upper quintiles do not receive social insurance benefits at all—which is unlikely—but relatively close-to-zero values might result when the social insurance has a lower beneficiary incidence than social assistance at the top. It is hard to argue that such a system is less fragmented than one where both regimes are evenly distributed across quintiles, in which case the value of the indicator would be 1.

Another drawback is the arbitrary choice of the top and bottom quintiles, since the results would differ across different grouping possibilities. Here I grouped the lower three quintiles in the bottom and the upper two in the top, because, even if quite fragmented sometimes, the distribution of social protection benefits is not so concentrated at the top as the income distribution. Also, the situation of the middle income groups is relevant for social protection, so excluding them from any measure is not ideal.⁸ However, since $\sum_j B_j^K = 1$, including all the quintiles means that the SPDI-P index can be reduced to the form $(b^{-1} - 1)/(a^{-1} - 1)$, where $a = B_{Top}^{SI}$ and $b = B_{Top}^{SA}$. Hence, in the end it considers only the situation of the top quintiles. A good property in this respect, however, is that it can be computed for cases when some quintile has a zero beneficiary incidence.

In summary, the SPDI-P measures adequately the concentration of benefits of any kind at the top, but the interpretation of its numerical values is not intuitive and it does not have clear upper

⁸The standard Palma ratio for the income distribution considers the top 10% to bottom 40% ratio.

and lower bounds.

The Theil Index

Another option is based on the Theil index, an entropy-based measure of inequality that, in general, measures how different are the distributions of two characteristics across a set of population groups (Conceição & Ferreira, 2000). Hence, it can be used to measure the discrepancies between the distributions of both social protection regimes across quintiles, considering the contribution of each quintile to such discrepancies⁹. The Theil index for social protection dualism is:

$$SPDI_T = \sum_{j=1}^5 B_j^{SI} \ln \left(\frac{B_j^{SI}}{B_j^{SA}} \right)$$

Like the SPDI-P, the SPDI-T considers the social insurance-social assistance ratio, but by applying logarithms it sets a lower bound of zero that represents the non-fragmentation case of evenly distributed regimes—the ratios B^{SI}/B^{SA} would be 1, so $\ln(1) = 0$.¹⁰

The SPDI-T has also some problems. In terms of interpretability and comparability, it is unbounded upwards like the SPDI-P, but in this case the numerical values do not have a clear meaning because of the logarithmic functions. Another problem is that the index is not defined for countries where some quintile has a zero beneficiary incidence. This case is rare but possible, and implies a form of fragmentation that should be considered and measured. Finally, the SPDI-T treats differently the relative concentration of both social protection regimes. A higher concentration of social insurance at the top tends to increase the index, because $\ln(B_5^{SI}/B_5^{SA}) > 0$ and B_5^{SI} is large, but a higher concentration of social assistance at the bottom tends to reduce the index, since $\ln(B_1^{SI}/B_1^{SA}) < 0$. Hence, this index penalizes elitist systems in the sense of Berens (2020), but favors targeting in social assistance. Though the relatively small size of B_1^{SI} gives a lower weight to such cases, it is not evident that more targeted systems should be considered less fragmented. The contrary would occur by using the Theil L index.

These considerations reveal that normative aspects are inescapable in economic indicators, even more for inequality measures that assess the degree of *fairness* of a certain distribution. The Palma and Theil indices are meant to measure income inequality, so using them here implies that their normative criteria is imposed to the case of social protection dualism. Such criteria penalizes the

⁹The standard form of the Theil T index for income inequality is $T_T = (1/N) \sum_{i=1}^N ((x_i/\bar{x})\ln(x_i/\bar{x}))$, where N is the total number of individuals or groups of equal size, x_i is the income of group i , and $\bar{x} = \sum_{i=1}^N (x_i/N)$ is the average income. Since $x_i/\bar{x} = y_i/(1/N)$, where $y_i = x_i/(\sum_{i=1}^N x_i)$ is the income share of group i , the Theil index can be expressed as $\sum_{i=1}^N y_i \ln(y_i/n_i)$, where $n_i = 1/N$ is the population share for group i , that is equal for all groups. Hence, in the end the Theil index compares the distributions of income and population across groups, and can be generalized to compare any pair of two different distributions.

¹⁰An interesting feature of this index is that it can be computed in different ways as to give more weight to different poles of the distribution. This is a property of the Theil index in general, which has two forms, the T and L indices. The one presented here is the Theil T, while the Theil L could be computed by inverting the order of both regimes: $\sum_{j=1}^N B_j^{SA} \ln(B_j^{SA}/B_j^{SI})$. The Theil T index for social protection dualism gives more weight to discrepancies in the higher quintiles: since usually B^{SI}/B^{SA} and B^{SI} are higher at the top, such discrepancies have larger weight in the final index. The opposite happens with the Theil L index, with more weight given to discrepancies at the bottom. However, both indices give very similar results.

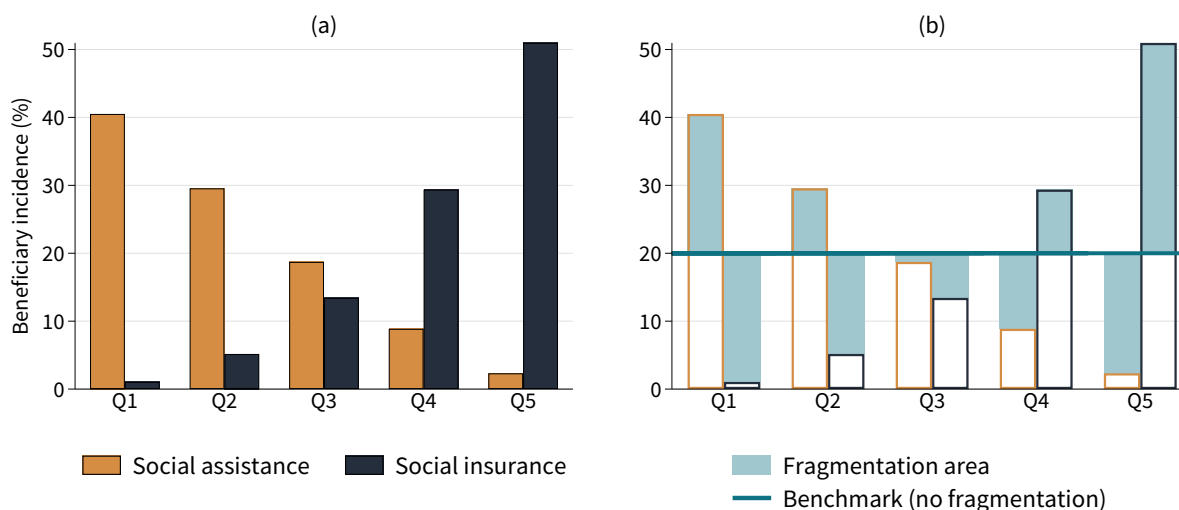
concentration at the top, which in this case means that elitist schemes of social insurance are penalized and targeted systems of social assistance are favored. Although highly and accurately targeted social assistance is a desirable feature from approaches like Social Risk Management (Jorgensen & Siegel, 2019) or basic universalism (Filgueira et al., 2006), it is problematic for its segregating practices and its social, political, and economic consequences Fischer (2018). Hence, it is necessary to have an index that also penalizes this sense of fragmentation, which requires explicit normative criteria for the measurement of social protection fragmentation.

The Benchmark Index

In an ideal, non-fragmented system, where people are not segregated into different social protection schemes based on their incomes, the benefits of social insurance and social assistance would be distributed evenly across income groups. An alternative index, with this non-fragmentation case as the normative benchmark, would measure fragmentation as deviations from it.

In the benchmark case, the beneficiary incidence would be 20% for each quintile, so a simple computation involves taking the distance—the absolute value of the difference—between 20% and the observed beneficiary incidence. Taking this distance for each quintile and each social protection regime, and then summing them all, gives another measure of dualism.

Figure 2: Beneficiary incidence: fragmentation area



Source: Own construction, based on data from the ASPIRE database, World Bank.

The case of Colombia in 2019 is used again as an example in Figure 2. Panel (a) shows the distribution of beneficiary incidence as before, while panel (b) depicts the benchmark case as a horizontal line at the 20% level. Any value of beneficiary incidence above or below such level—highlighted in light blue—implies a deviation from the benchmark. Taken together, these deviations constitute the *fragmentation area*, which is higher for cases with more concentrated distributions of beneficiary incidence for *each regime* and *across quintiles*. To set an upper bound, the fragmentation area can be expressed as a proportion of another hypothetical case of full-fragmentation, with social insurance totally concentrated in the fifth quintile, and social assistance totally concentrated in the

first quintile; in that case, the fragmentation area is 3.2. Therefore, an alternative index of social protection dualism, in terms of deviations from the non-fragmentation *benchmark*, is:

$$SPDI_B = \frac{1}{3.2} \left(\sum_{j=1}^5 |BI_j^{SA} - 0.2| + \sum_{j=1}^5 |BI_j^{SI} - 0.2| \right) \quad (5.1)$$

This index has some interesting properties. First, its numeric values are easily interpretable as positions between the benchmark case of non-fragmentation and the extreme case of full-fragmentation, with clear lower and upper bounds, between 0 and 1.¹¹ Second, it considers the discrepancies between social insurance and social assistance in each quintile in the same way by taking the distance to the benchmark case, so none of such regimes is particularly favored or penalized for having a higher beneficiary incidence in some quintiles. Third, it can be computed for cases where the beneficiary incidence takes the value of zero for some quintile and regime. The main drawback of the index is that, by construction, it does not consider the relative situation of different quintiles and it cannot address issues of regressivity and income-inequality in social protection.

The Theil indices for social insurance and social assistance

Another way to analyze dualism is to look at the Theil indices for each regime separately, to know which one is more concentrated and might be a stronger driver of the overall fragmentation. These indices can be thought to measure, respectively, the extent of targeting of social assistance, and the elitism of social insurance. They are defined as:

$$T_{SA} = \sum_{j=1}^5 B_j^{SA} \ln \left(\frac{B_j^{SA}}{0.2} \right)$$

$$T_{SI} = \sum_{j=1}^5 B_j^{SI} \ln \left(\frac{B_j^{SI}}{0.2} \right)$$

Other measures of fragmentation

Besides dualism, I consider other two notions of fragmentation that are more intuitive and simpler to measure. First, the reliance of social protection on social assistance: the percentage of people that is covered only by social assistance programs (C^{SAonly}) as a ratio of the total social protection rate of coverage (C^{SP}). It measures how important is social assistance for social protection coverage, thus measuring how weak is the underlying non-contributory system too. From another point of view, a higher value of this index means that social assistance is more a structural rather than a residual component of social protection. It is computed as:

$$RSA = \frac{C^{SAonly}}{C^{SP}}$$

¹¹In practice, the maximum values of the index are around 0.4, which shows that the full-fragmentation case is quite implausible.

The last indicator is just the rate of non-coverage, the complement of the overall social protection rate of coverage, and can be thought as a measure of the missing middle.

$$NC = 1 - C^{SP}$$

There are three indices to measure fragmentation as dualism. The Palma index of social protection dualism ($SPDI_P$) measures the discrepancies of the social insurance-social assistance ratios between top and bottom quintiles, and penalizes any concentration at the top, so it is an index of the *elitism of social protection*. However, it is not easily interpretable, is sensible to the definition of *top quintiles*, and although it favors redistribution towards the bottom, that is irrespective of the type of regime, so it does not favor explicitly targeting in social assistance. The Theil index of social protection dualism ($SPDI_T$), in turn, measures the general discrepancy between the two distributions across all quintiles, penalizing the concentration of social insurance at the top but favoring some concentration of social assistance at the bottom. It thus recognizes targeting as a necessary feature of social protection that helps to reduce fragmentation by compensating the upwards concentration of social insurance; however, its values are not easily interpretable, and it cannot be computed for cases with zero beneficiary incidence for some regime or quintile. Finally, the Benchmark index of social protection dualism ($SPDI_B$) measures fragmentation as deviations from a hypothetical scenario of non-fragmentation, where social insurance and social assistance are evenly distributed; unlike the other indicators, it also penalizes targeting of social assistance, considering it a feature that increases the fragmentation of social protection systems.

Additionally, I consider also separate Theil indices for each regime (SA_T and SI_T), to measure their relative concentration across income groups, plus the reliance on social assistance (RSA) and the rate of non-coverage (NC). There are thus seven different indices that allow to have a broader picture of social protection fragmentation, in terms of coverage.

5.4.2 Data and descriptive statistics

Since the focus of this study is the developing world, I consider countries classified as emerging or developing economies in the IMF's World Economic Outlook (Währungsfonds, 2022); for countries not included there, I use the UNCTAD's classification instead. This results in a set of 122 countries for which it is possible to compute at least one of the fragmentation indices. The summary statistics for the indices are presented in Table 1.

As expected, the Palma index is unbounded upwards, it takes values in a range from 0 to 44.5, and exhibits a high dispersion. The other two indices for social protection dualism take a more limited range of values, and the Benchmark index, in particular, shows a relatively lower variability, with a standard deviation slightly smaller than half the mean. On the other hand, the means of the Palma and Theil indices are closer to the minimum values, while for the Benchmark index it lies around the center of its range of values. This means that the Palma and Theil indices tend to classify most countries as low fragmented, and the exhibit a higher variability because of the cases with higher fragmentation; the Benchmark index, on the contrary, is more evenly distributed along its range of values.

Table 1: Fragmentation indices: summary statistics

	Obs.	Mean	S.D.	Min.	Max.
Social Protection Dualism Index - Palma	399	5.85	5.65	0.45	44.50
Social Protection Dualism Index - Theil	391	0.42	0.38	0.00	1.76
Social Protection Dualism Index - Benchmark	399	0.22	0.10	0.02	0.44
Social assistance Theil index	432	0.09	0.11	0.00	0.56
Social insurance Theil index	405	0.15	0.16	0.00	0.80
Reliance on social assistance (%)	445	58.22	30.73	0.00	100.00
Rate of non-coverage (%)	450	50.72	25.32	0.10	99.49

Source: Own construction based on data from the ASPIRE database, World Bank.

Note also that social insurance is considerably more concentrated than social assistance, according to the mean and maximum values of their Theil indices. Finally, the reliance on social assistance and the rate of non-coverage show a very large dispersion. All these statistics suggest a high variability in social protection systems in the countries considered, which in terms of dualism might be better captured by the Benchmark index.

Table 2: Fragmentation indices: correlations

	SPDI-P	SPDI-T	SPDI-B	SA-T	SI-T	RSA	NC
S.P. Dualism Index - Palma	1.00						
S.P. Dualism Index - Theil	0.92	1.00					
S.P. Dualism Index - Benchmark	0.79	0.89	1.00				
Social assistance Theil index	0.48	0.52	0.52	1.00			
Social insurance Theil index	0.64	0.69	0.77	-0.07	1.00		
Reliance on social assistance	0.33	0.46	0.46	-0.27	0.67	1.00	
Rate of non-coverage	0.22	0.22	0.40	0.24	0.26	0.03	1.00

Source: Own construction based on data from the ASPIRE database, World Bank.

Note: S.P. stands for Social Protection. Column headers are the acronyms of the variables in rows.

Table 2 shows the correlations among the different indices of fragmentation. As expected, the Palma and Theil indices for dualism are highly correlated. Their correlations with the Benchmark index are slightly lower but also high (0.79 for the Palma index and 0.8 for the Theil index) which

means that the particularity of the Benchmark index in its frequency distribution does not make it too different from the other two. In short, all three indices measure a similar phenomenon, so the dualism of social protection is a feature consistently observed in the data.

The correlation of these indices with the Theil index for social assistance is moderate (around 0.5), and smaller than their correlations with the respective index for social insurance (around 0.7). This means that the unequal distribution of social insurance might be driving the fragmentation in social protection systems. The latter correlation is higher for the Benchmark index than for the Palma or Theil indices, which is striking given the emphasis of the latter on the concentration at the top. An explanation might be that a higher concentration at the bottom—which both Palma and Theil indices tend to favor—attenuates the effect of higher concentrations at the top.

Interestingly, the correlation between the social insurance and social assistance Theil indices is close to zero (-0.07), which is itself a sign of fragmentation: the targeted nature of social assistance regimes is not related to the elitism of social insurance; both phenomena might respond to rather different drivers and determinants. This might not be true with regards to the reliance on social assistance, which has a negative, though relatively low correlation with the Theil index for social insurance (-0.27). Finally, note that all indices have a positive but low correlation with the rate of non-coverage, except for the Benchmark index for dualism, with a correlation of 0.40. This suggests that the type of dualism measured by the Benchmark index is more closely related to the missing middle, another important dimension of fragmentation that the other indices do not capture.

In general, the proposed indices seem to capture different features of the fragmentation of social protection systems. The next step is to analyze their relation with informality.

5.4.3 Problems of data availability and comparability

Recall from Table 2 that fragmentation indices have a around 400 observations, a very low value considering the number of countries (122) and the time span covered by the ASPIRE database (1998-2019). This is so because most countries have data only for a few—usually non-consecutive—years. There is a group of countries with more information, starting around 2008, but most of them have missing values in the middle, which impedes to have proper time series.

Another problem is comparability. Each country-year observation comes from a particular household survey that conveys information from different types of social protection programs. By classifying them in homogeneous categories across countries, the ASPIRE database is somehow harmonized. However, the data are not fully comparable because surveys differ in the type and number of programs included. For example, several countries do not include healthcare in their surveys, even if they have large and well-developed healthcare systems. Comparing these countries with others that do include healthcare will cast dubious results. Further, data may not be even comparable *within* countries either, because it is common for countries to change their surveys over time. Hence, the observed evolution of the fragmentation indices partly reflects changes in the surveys.

It is possible, however, to account for and correct the comparability issue *within* countries, by looking at the programs included for each observation. On the one hand, the correlation between fragmentation indices and the number of programs gives a hint on the extent of the problem: a significant non-zero correlation means that the observed changes in fragmentation are related to changes in the surveys. On the other hand, a set of observations per country can be considered

comparable to each other if they exhibit the exact same combination of programs for consecutive years, as this suggests that the underlying surveys were not changed greatly for those years. The evolution of fragmentation indices within such *program groups* can be analyzed to get a hint about the dynamic behavior correcting for comparability issues.¹²

5.5 Descriptive analysis

There is no univocal definition of informality, given the multiple and varied forms of informal labor and the different criteria used by countries to measure it. However, the International Labour Organization (ILO) uses a set of criteria that allow for cross-country comparability, with two main concepts of informality: *informal employment*, based on job characteristics, and *employment in the informal sector*, based on the characteristics of the productive units where informal workers operate (Dell'Anno, 2021).¹³ Informal employment is broader, since it includes workers in the different institutional sectors of the economy, while employment in the informal sector may include formal jobs in informal firms. In general, informal employment comprises contributing family workers, domestic workers, wage workers without employment-related social protection, and self-employed workers and employers in informal sector firms.¹⁴ I focus on the rate of *informal employment* (as a percentage of total employment), because it is the broadest and most comprehensive definition. The data by the ILO is available from 2010 to 2021.

Note that a defining criteria to classify workers as informal is their lack of access to employment-related social protection, which falls under the realm of social insurance. This makes it hard to disentangle the relation between social protection indicators and informality, since both concepts are related by definition, and any claim about, or analysis of, such relation risks to be tautological. In this sense, it is the rate of non-coverage which is more strongly related to informality by definition.

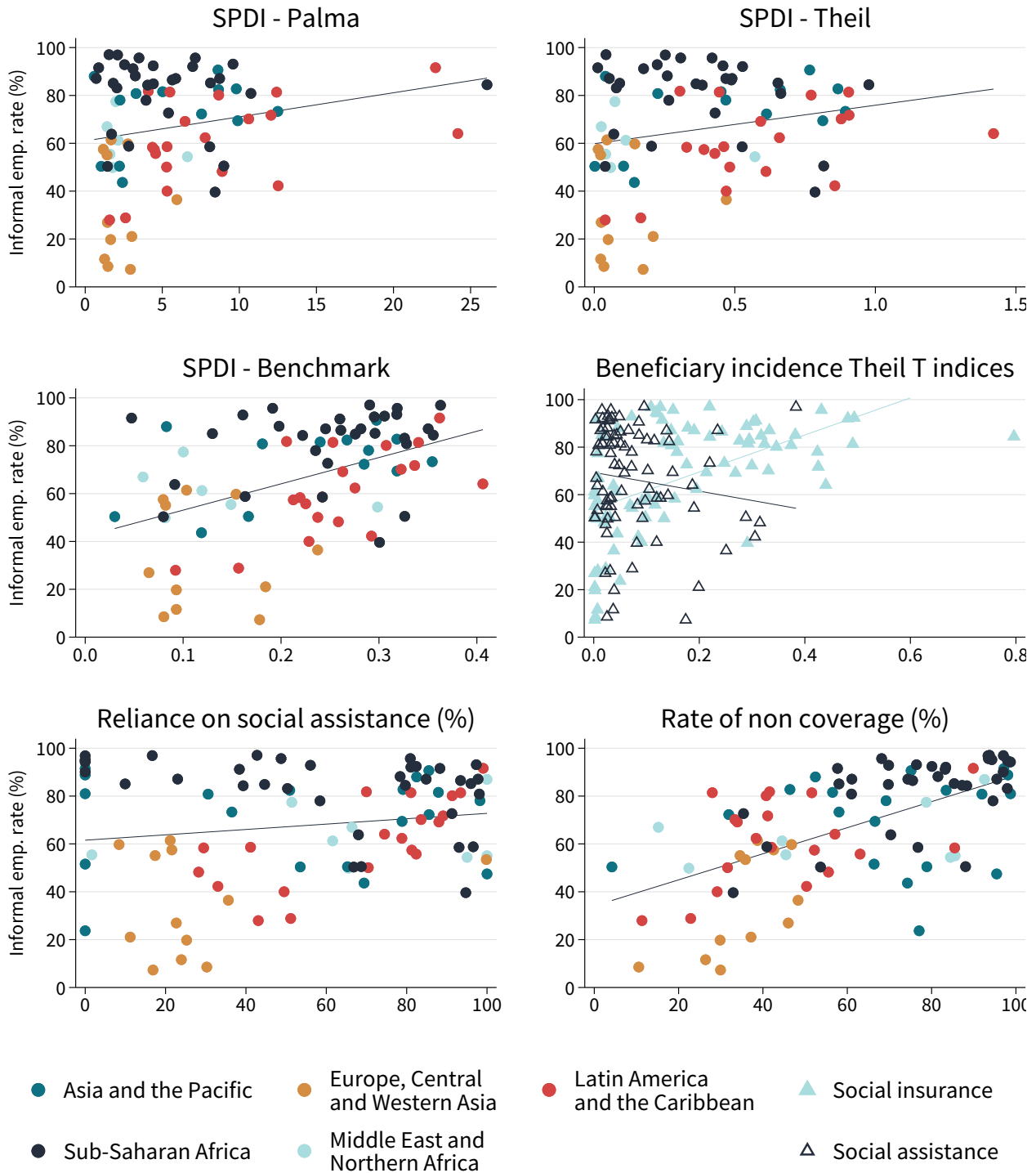
Using all the available information, without correcting for comparability, Figure 3 presents the relation between national averages of the indices of social protection fragmentation dualism and the rate of informal employment, with countries classified in five regional groupings. The first thing to note is the positive correlation between the levels of social protection dualism and informal em-

¹²The notion of program groups may, in principle, also help for comparability across countries, but there are 133 different program groups in the data and 453 observations. Comparing countries with data for the same program group is unfeasible and not very informative, and surveys would still differ across countries. Moreover, program groups vary greatly in their frequencies (61 of them appear only once while 18 appear 36 times), so the usable information for each group is different, and considering only those with higher frequencies leads either to a group of many countries with few data points, or a group of few countries with relatively longer series. The number of program groups per country also varies greatly, with three different program groups for most countries, and some having even six. For these reasons, I only consider program groups within countries for consecutive years, as it is more likely that surveys are homogeneous within such groups, and it allows for a dynamic analysis.

¹³The two concepts correspond to what Perry et al. (2007) call the intersectoral margins of informality for workers and firms respectively.

¹⁴The classification of workers as informal or not by ILO (2018) is based on three sets of criteria: status in employment, firm's characteristics, and the access or not to social security and employment protection. Informal employment thus includes: contributing family workers (usually non-remunerated); employers, own-account workers, and members of cooperatives in the household sector (with non-market production) or in the informal sector; and employees without employment-related social protection. The informal sector, in turn, comprises unincorporated firms that produce at least partially for the market, do not keep accounts, and are not registered with national authorities. Not having employment-related social protection, a fixed work place, or working in a small establishment (5 or less employees) are the criteria to classify workers in the informal sector as informal.

Figure 3: Informal employment and social protection dualism (country averages)



Source: Own construction, based on data from the ASPIRE database, World Bank.

ployment, which is stronger for the Benchmark index, and for the Theil index of social insurance, although the Theil index for social assistance shows a negative correlation.

A second feature to stress is the high dispersion of the data along the vertical dimension in the leftmost area of each plot. Very different levels of informal employment are compatible with a given level of fragmentation, provided that the latter is relatively low. On the contrary, high levels of fragmentation are more consistently associated with high levels of informality. This suggests some non-linearity or discontinuity in the relation.

Third, the patterns of the relation differ across regions. Taken separately, the correlation is weak in general and sometimes negative, except for Latin America and the Caribbean. Note also that very different levels of social protection dualism are associated with the narrower range of informality levels that are more prevalent in each region: very high for Sub-Saharan Africa and Asia and the Pacific, moderate for the other regions, and low for some countries in Europe and Central-Western Asia.

Fourth, the rate of non-coverage, as expected, is strongly correlated with informality, while reliance on social assistance exhibits a weak relation and a similar pattern to the indices of dualism: high dispersion at lower levels, and a stronger relation at higher levels. All these patterns are consistently observed for other measures of informality, except for the rate of employment in small establishments, whose relation with fragmentation indices is much weaker.¹⁵

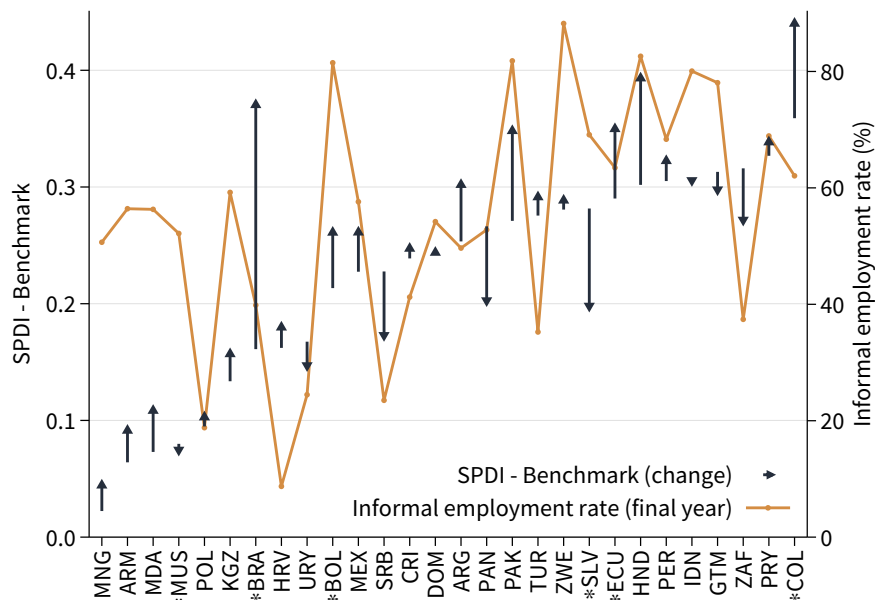
Until now, I have used country averages, which allow to analyze the relation between levels; the next step is to look at the joint evolution of informality and fragmentation over time and analyze the dynamic dimension of their relation, accounting for problems of data availability and non-comparability. The bigger set of country-year observations is achieved for the period 2010-2019. For each country, I select the first and last years with available data both for the rate of informality and a particular fragmentation index; then, I analyze the changes in the two variables over the selected periods per country. I present here the results for the Benchmark index of dualism only, since it captures better the concept of fragmentation.

To determine whether a deepening of fragmentation results in higher levels of informality, Figure 4 presents the changes in fragmentation (the blue arrows) and the final levels of informality (the yellow line) over the selected periods per country. Countries are sorted along the horizontal axis, from lower to higher initial levels of fragmentation, and those whose patterns are significantly correlated with surveys changes are marked with an asterisk. The start and end points of the arrows mark the initial and final levels of fragmentation respectively, to depict simultaneously both levels and changes.

As was observed before, there is an association between the *levels* of fragmentation and informality, especially for high levels of fragmentation, because the higher values of the yellow line correspond to a higher position of the arrows in the rightmost area of the plot. However, the association between final *levels* of informality and *changes* in fragmentation is not that clear. For example, similarly high final levels of informality are compatible with strong and moderate increases of frag-

¹⁵I consider other definitions of informality too, to check the robustness of the results. In particular, besides the already mentioned *employment in the informal sector*, I consider also *self-employment*, *employment in small establishments* (from 1 to 4 persons), and *vulnerable employment* (contributing family workers and own-account workers), all expressed as a percentage of total employment. The data comes from the ILO as well.

Figure 4: Changes in fragmentation and final level of informality during the 2010s



Source: Own construction, based on data from the ASPIRE database, World Bank.
 Note: The asterisk (*) identifies countries with significant correlation at the 5% level between the fragmentation index and the number of social protection programs.

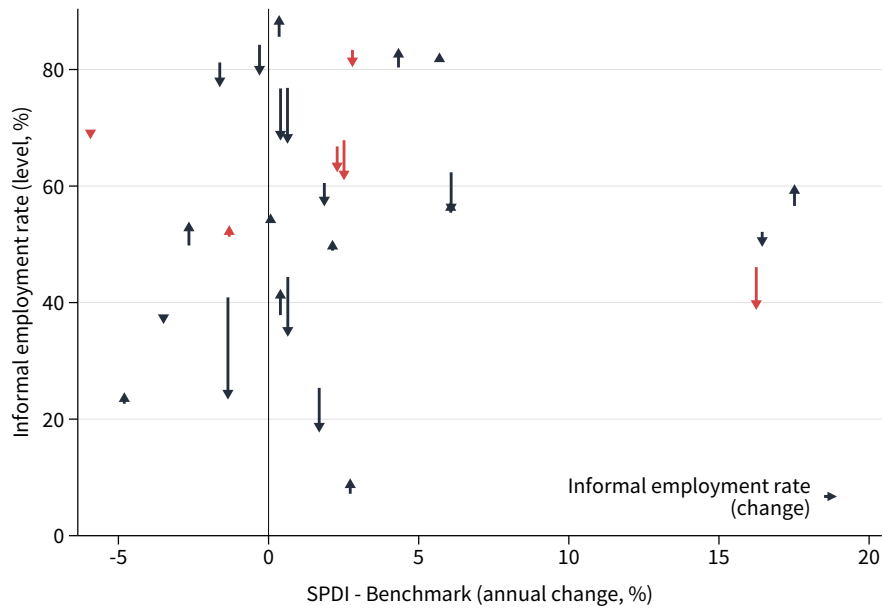
mentation (Zimbabwe and Honduras) and also with reductions of it (Indonesia or Guatemala). The same is true for more moderate levels of informality, compatible with very different patterns in the evolution of fragmentation (Mexico, Costa Rica, or Panama). This suggests that even if changes in fragmentation have an effect on informality, it is relatively small and unable to change its level. However, the size of fragmentation changes might reflect differences in the time lengths selected for each country, and the picture is incomplete without considering the changes in informality.

To surmount this, Figure 5 presents the association between the changes in informality, represented by arrows from initial to final levels, and the *annual rates of growth* in fragmentation implied by the observed changes. These rates of growth are computed as the total percentage change during the period divided by the number of years in that period, as a way to correct for the different time-lengths and available data points across countries. Countries with significant correlations between fragmentation and the number of programs in surveys are now marked by red arrows.

It is now apparent that there is no systematic relation between *changes* in fragmentation and *levels* of informality, and maybe neither between *changes* of the two variables, since the directions taken by the arrows do not follow a clear pattern along the horizontal dimension. Figure 6 confirms this claim: the observed positive correlation is driven by an outlier (Kyrgyzstan), but it disappears without that case. These patterns are observed for all the fragmentation indices and different measures of informality here considered so, in general, it can be concluded that for the majority of countries there is no relation between changes in informality and changes in social protection fragmentation.

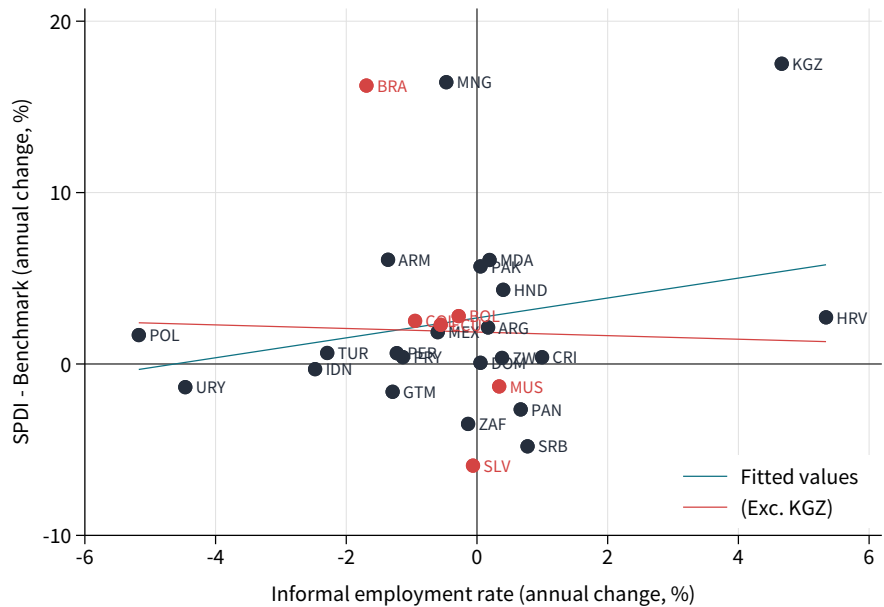
Recall, however, that the data is not fully comparable within countries, and although excluding the countries in red from the analysis does not change the results, it is better to look at the

Figure 5: Change in fragmentation and initial level of informality in the 2010s



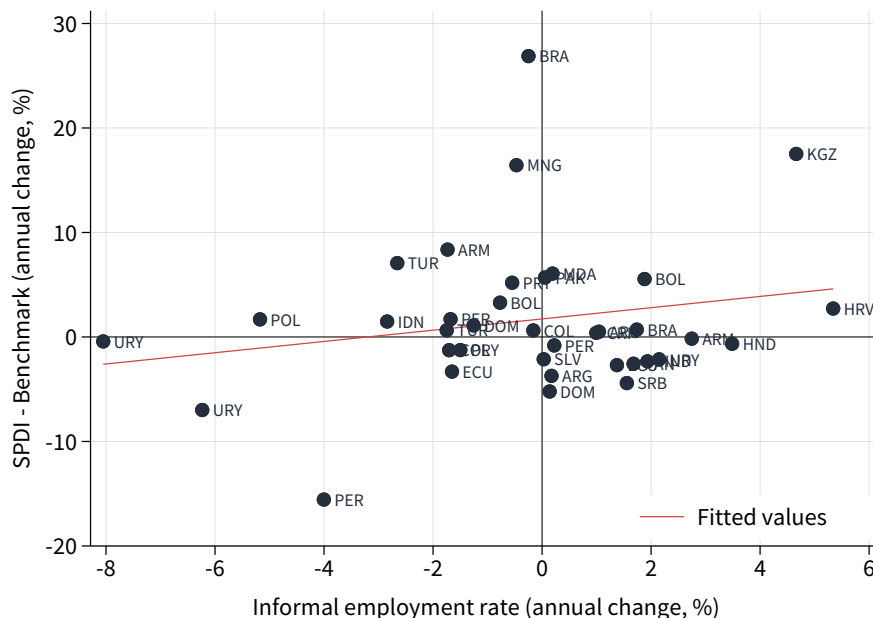
Source: Own construction, based on data from the ASPIRE database, World Bank.
 Note: Red arrows identify countries with significant correlation at the 5% level between the fragmentation index and the number of social protection programs.

Figure 6: Changes in fragmentation and informality in the 2010s



Source: Own construction, based on data from the ASPIRE database, World Bank.
 Note: Red markers identify countries with significant correlation at the 5% level between the fragmentation index and the number of social protection programs.

Figure 7: Changes in fragmentation and informality for comparable program groups



Source: Own construction, based on data from the ASPIRE database, World Bank.

changes within sets of comparable observations: the aforementioned program groups. Using only those groups with at least two observations (to compute changes), there are 37 program groups for 23 countries, with an average of 4.3 observations (years) per group. Figure 7 shows the relation between changes in informality and the Benchmark index of dualism for these groups.

The countries are approximately the same as those considered for the changes in the 2010s, but correcting for comparability has an effect on the results for some groups and countries. The correlation is positive, and slightly higher than the one for changes during the 2010s, although it is again driven by some outliers. For the majority of countries, instead, there seems to be no correlation between changes in informality and social protection fragmentation. Considering other measures of informality the correlation is closer to zero, except for the reliance on social assistance and the Theil index for social insurance, although the strongest correlation is the one presented here, for the Benchmark index of dualism.

5.6 PVAR and Granger causality tests

The descriptive analysis is informative, but other quantitative methods might provide greater insights. Since the data covers information for a set of countries and years, I use panel data methods, in particular tests for Granger-causality, which refers to the capacity of a variable to predict the values of another variable in the future. Here my purpose is to establish whether current informality rates are affected by past values of social protection fragmentation.

5.6.1 Methodology

The nature of the data imposes several limitations for an econometric analysis.¹⁶ Given that the group of countries with sufficient consecutive observations is reduced (around 20), and the number of years as well (10), the sample size is very small, which is aggravated by the scattered nature of the data, with several missing values¹⁷. It is possible to circumvent such problem by filling the gaps through imputation or interpolation, but it would alter artificially the behavior of the data in a non negligible way, given the already small sample size and the percentage of missing values.¹⁸ Moreover, this would aggravate the third problem: measurement errors, partly related to the non-comparability issue already discussed. Given that the problem of missing values is stronger for the fragmentation index, using interpolations in that case will bias the estimates when using it as an explanatory variable.¹⁹ For these reasons, I prefer to use the original dataset with missing values, which can be handled with methods suited for unbalanced panels, the main problem remaining the small sample size.

As for the methods, for standard panel data estimations like fixed-effects, the estimates would be biased due to the possible endogeneity with fragmentation, and the persistence of informality as dependent variable, the so-called Nickell bias (Bond, 2002). This can be addressed with a dynamic panel estimation by Generalized Method of Moments (GMM) (Bond, 2002), but to be correctly specified such model requires the use of multiple lags of the endogenous variables and other exogenous regressors as instruments, which is problematic given the reduced sample size. On the other hand, given the possibility of a dynamic feedback between the variables, a single equation approach may exclude some important mechanisms.

Here I opt for a Panel Vector Autoregression model (PVAR), an alternative that accounts for the dynamic relation between the variables, while applying the GMM estimation to address the endogeneity problem and the Nickell bias. In such framework, Granger-causality tests can be applied to explore the dynamic effect of fragmentation of informality. Given the small sample size and the other problems mentioned, the point estimates in a regression are likely to be imprecise. Thus, I will not concentrate on the point estimates of the coefficients, but on the significance of the dynamic relation between the variables, which allows for a more intuitive interpretation of the results. I use the PVAR-GMM estimation procedure by Abrigo and Love (2016), which gives consistent estimates and is well suited for panel datasets with a smaller number of periods than cross-sections. I consider as endogenous variables the rate of informal employment and the Benchmark index of fragmentation, since it seems to better capture the extent of fragmentation according to the descriptive analysis.

The PVAR is a system of two equations, one for informality and the other for the fragmentation

¹⁶I am grateful to Gabriele Lombardi, Marwil Davila, Silvia Tiezzi, and José Perez, for helping me to understand the limitations of such analysis and to figure out alternatives to apply econometric methods in this case. Any errors in this section are entirely mine.

¹⁷The time-length is restricted to the period between 2010 and 2019, because those are, respectively, the start year for data on informality, and the end year for data on fragmentation. In that period, considering only countries with at least 2 data points for at least one of the two variables, there are 400 observations, but with a percentage of missing values of 26.7% for informality and 48.7% for the Benchmark index. Considering only countries with at least 5 data points, the number of observations reduces to 170, with 6.4% and 16.4% of missing values for informality and fragmentation respectively. This is a very small sample size, considering that some observations are lost in the transformations required for some estimations.

¹⁸The analysis was applied to data with linear interpolations for missing values, which tended to change the results.

¹⁹I am grateful to Silvia Tiezzi for pointing this out.

index, which are considered to be endogenous. In each equation, the dependent variable is affected by lags of itself and the other dependent variable, and by other exogenous variables that may be included in the model. Assuming only one lag for simplicity, denoting INF the rate of informality, FRI the fragmentation index, $i = 1, \dots, N$ the country and $t = 1, \dots, T$ the year, the model is:

$$\begin{aligned} \text{INF}_{i,t} &= \alpha_1 \text{INF}_{i,t-1} + \alpha_2 \text{FRI}_{i,t-1} + \mathbf{X}'_{i,t} \boldsymbol{\beta}_i + \mu_i + \varepsilon_{i,t} \\ \text{FRI}_{i,t} &= \gamma_1 \text{FRI}_{i,t-1} + \gamma_2 \text{INF}_{i,t-1} + \mathbf{X}'_{i,t} \boldsymbol{\phi}_i + u_i + e_{i,t} \end{aligned}$$

Here α_1 and γ_1 are the autoregressive coefficients for each equation, \mathbf{X}' is a vector of exogenous regressors, with corresponding vectors of coefficients $\boldsymbol{\beta}$ and $\boldsymbol{\phi}$, μ_i and u_i are panel-specific fixed effects, and $\varepsilon_{i,t}$ and $e_{i,t}$ are the idiosyncratic errors.

The GMM estimation consists in applying a transformation to the variables to eliminate the fixed-effects, and then using the exogenous variables and lags of the dependent variables as instruments to correct the bias. In the case of unbalanced panels, the appropriate transformation is the Forward Orthogonal Deviation, which consists in subtracting from every observation per country the average of all available future observations. For this transformation, the first and further lags of the untransformed variables are valid instruments (Abrigo & Love, 2016).

While in standard time-series VAR models stationarity is necessary for the consistency of estimates, it is also necessary for GMM estimations of panel VAR models, since otherwise the instruments are weak, resulting in badly specified models and finite sample bias (Bond, 2002). I run unit root tests appropriate for unbalanced panels, which indicate that the rate of informality and the Benchmark index are non-stationary in levels for all panels. The next step should be to check for cointegration, but the unbalancedness of the dataset and the small sample size reduce the meaning of a long-run concept like cointegration in this context, and impede the application of test. Hence, following (Abrigo & Love, 2016), I use first differences of the variables to make them stationary. Hence, this is a short-run analysis that deepens the exploration of the last section on the relation between the annual changes of the variables. The preferred specification, that ensures the stability of the model and the validity of instruments, includes one lag of the endogenous variables as regressors in each equation, and lags 1 to 3 of the untransformed variables as instruments. I also use robust standard errors and time-demeaning to account for cross-sectional dependence.

5.6.2 Variables

The endogenous variables for the estimations are the rate of informal employment (`inf_ie`) and the Benchmark index of fragmentation (`fr_b`). Given the possible role of common factors in the dynamics between informality and fragmentation, it is important to include exogenous regressors. However, the small sample size limits the number of exogenous variables that can be included. To consider the effect of other variables I follow this strategy: first I estimate the model including only the two endogenous variables; then, I estimate the models including only one exogenous variable at the time, which I group in different categories according to the possible determinants of informality suggested by different theories. Finally, I estimate the models including all the exogenous variables of a certain category, to explore the importance of different types of determinants for the results. The level of GDP per capita, expressed in logarithms (`lgdp`), will be used as a regressor in all the models with more than one exogenous variable, to control for the general level of income and development.

All the macroeconomic variables in levels are expressed in constant US dollars at Purchasing Power Parity rates (PPP).

The first group of variables are associated with productivity and capital accumulation, which are considered the fundamental determinants of informality by the dual-economy model of Lewis (1954), the structuralist approach (Ros, 2013), and the neoclassical approach alike (Loayza, 2016). To capture this, I use the logarithm of the hourly productivity, measured by the output per hour worked (prodhw), the logarithm of the capital-labor ratio (lkl), and gross fixed capital formation as a share of GDP to measure investment (gfkf).

The second group of variables are related to the external sector, which is considered a key determinant of informality by the structuralist approach. I use the current account balance as a percentage of GDP (ca) and the real exchange rate (reer), to capture the effect of the external constraint and domestic competitiveness Cimoli and Porcile (2016), Porcile et al. (2020), and Razmi et al. (2012). I also consider personal remittances as a percentage of GDP (remt), which are an important component of balance of payments for several developing countries, and have been found to be related with social protection choices among informal workers (Kolev & La, 2021).

The third group of variables capture the productive structure: the share of manufacturing in value added (vamnf), since industrialization is a crucial element of structural change (Cimoli & Porcile, 2016; Porcile et al., 2020), and the share of agricultural employment (empagr), that besides its relation with the productive structure, is stressed in seminal dual-economy models as a reservoir of unlimited supplies of labor (Lewis, 1954) and a driver of informality through rural-urban migration (Harris & Todaro, 1970). I include another variable in this group that may capture some insights from the Theory of Social Reproduction. It is the labor dependency ratio (depl), measured by the ratio of non-working to working population. For the theory of social reproduction, the struggles for who bears the costs of social reproduction are crucial for social stability and stratification. At an aggregate level, such costs are reflected in all the work that is necessary to support the whole population. The labor dependency ratio captures such interdependence, and also the extent at which capital manages to externalize the costs of social reproduction onto families.

The fourth group of variables includes regulatory and institutional factors stressed by the neoclassical approach as main determinants of informality (Maloney, 2004; Ulyssea, 2020). I consider the rate of labor and contributions taxes for businesses (btxl) and the ratio of the minimum wage to productivity (mw), to measure labor costs and labor markets rigidity. I also include two indices of the World Bank's Worldwide Governance Indicators that measure the quality of institutions in terms of regulatory quality (wgirq) and rule of law (wgirl).

Finally, the fifth group of variables measures government and social protection finances, which can be considered to be part of the regulatory framework that increases the costs of formal employment in line with the neoclassical approach (Perry et al., 2007; Ulyssea, 2020). However, they also reflect the financing dimension of social policy through which fragmentation may manifest according to Fischer (2016). These variables are the tax burden, measured by total tax revenues of the general government as a percentage of GDP (txrv), the revenue from payroll and workforce taxes as a percentage of GDP (txrv_prwf), and the expenditure on social benefits by the general government as a percentage of GDP (sbxp). The definitions and sources of these variables are presented in Appendix 5.B.

5.6.3 Results

The results of the regressions are presented in the Appendix 5.C. All the models were adjusted with the preferred specification described above (1 lag for endogenous variables, and 1 to 3 lags used as instruments); they pass the Hansen test for overidentifying restrictions and satisfy the stability conditions. This analysis included 14 countries with sufficient information.²⁰

Table 5.C.1 presents the results for productivity and accumulation variables. There is no evidence of Granger-causality in any direction between informality and the fragmentation index. Productivity is the only variable that has a significant effect on informality taken individually, but in the model with all the sets of variables also the GDP per capita and investment have a significant effect, which confirms the importance of productivity and capital accumulation in the dynamics of informality. The effect of investment is positive, meaning that higher accumulation increases informality, which contradicts the classical Lewisian notion that informality should fall with the expansion of the modern sector driven by capital accumulation. Instead, these results may support the neo-Marxist and structuralist views of informality as partly functional to capital accumulation, and an inherent feature of contemporary capitalist economies (Castells & Portes, 1989; Godfrey, 1977).

Regarding the variables of the external sector, the results also challenge some of the traditional views of the structuralist approach, because the current account does not have a significant effect on informality. The current account is an important element of structuralist growth theories that emphasize the constraint posed by the balance of payments and the relation with external markets; that it does not result significant in the regressions means that the growth-informality link might be weak. Note, however, the significant and positive effect of personal remittances. Kolev and La (2021) have analyzed this effect, in relation with social protection, arguing that migration of some household members, and the ensuing remittances, are a way to find alternative sources of income in a context of job scarcity analogous to informality. Hence, informality and migration could be driven by the same structural causes, which explain their positive relation, and can be understood as different mechanisms by which households take over the burden of the costs of social reproduction. Another interesting result is the effect of the real exchange rate; although it does not affect informality, it induces Granger-causality from social protection fragmentation to informality, which suggests that the external sector may play a role in these dynamics.

Table 5.C.3 presents the results of models with variables that measure the productive structure, and also the social interdependence, in the spirit of the Theory of Social Reproduction, through the ratio of non-working to working population. This variable turns out to have a significant and negative effect on informality, and a significant and positive effect on social protection fragmentation. The first link can be explained by the fact that a higher labor dependency ratio means a higher capacity of the working population to support the whole population, hence higher productivity and a more dynamic economy. The second link, in turn, denotes the growing pressure that a higher share of dependent population puts on social protection systems. An interesting finding is the effect of manufacturing value added in social protection fragmentation, and the unexpected negative coefficient of agricultural employment. Regarding Granger-causality, there still no evidence of it in any direction.

Table 5.C.4 shows the effect of regulatory and institutional variables. Labor taxes for business

²⁰These countries are Argentina, Armenia, Bolivia, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, Panama, Peru, Paraguay, El Salvador, Turkey and Uruguay.

have a positive and significant effect on informality, which gives support to neoclassical explanations related with firms' incentives. However, the minimum wage, which should be an important determinant through a similar mechanism, does not have a significant effect on informality. This contradicts neoclassical arguments about informality being driven by labor market rigidity, as was initially claimed by Harris and Todaro (1970). Moreover, the minimum wage has a negative significant effect on the fragmentation of social protection, contrary to the claims by Alvarado et al. (2021) and Álvarez and Villaveces (2021) of it being a key impediment to the expansion of social protection. The measures of institutional quality, in terms of rule of law and regulatory quality, do not have a significant effect either. Granger-causality is still not found in any direction.

Finally, Table 5.C.5 presents the results for variables associated with the financing of social protection. The picture here is different, since there is evidence of Granger-causality from fragmentation to informality when taxes on payroll and workforce, or social benefits expenditure, are considered as exogenous variables. It is interesting that, even though they induce Granger-causality, these variables do not have a direct effect on informality nor on social protection fragmentation (their coefficients are non-significant in both equations). Although the direction of the Granger-causality is in line with the neoclassical predictions, the lack of a direct effect on the endogenous variables suggests that the mechanism might be more complex than mere behavioral responses to bad incentives. It is important to note that taxes on payroll and workforce exclude those earmarked specifically for social security, so this variable might as well be related to labor costs, but since social insurance tends to be financed through employment contributions, this variable can be assumed to be correlated with the financing dimension of social protection. Note also that total tax revenues have a significant and negative effect on informality, against the neoclassical view of excessive taxes as an incentive for it.

The financing of social policy is stressed by Fischer (2018) as another dimension through which fragmentation may manifest, since it determines the degree of commodification of social protection and its effects on reproducing social divisions, depending on their progressive or regressive nature. These dimensions are not captured by the fragmentation index used here, but it is interesting that they manifest indirectly through its relation with informality. This suggests that fragmentation in terms of beneficiary incidence is linked with fragmentation in financing and expenditure, and, in such a framework, the amount of resources destined to social policies may well amplify such fragmentation.

In any case, these results must be taken with caution because the sample size is very small to make valid inferences, and the data has some problems of comparability and incompleteness. For these reasons, I do not interpret the coefficients in detail nor explore other tests and analysis that are usually applied in these framework, like impulse-response functions and variance decomposition. Nevertheless, the econometric exercise supports some conclusions of the descriptive analysis, namely, the weak connection between the dynamics of informality and social protection fragmentation. In the next section, I consider the insights of both analysis together and discuss some possible interpretations and implications.

5.7 Discussion

Both the descriptive and econometric analyses suggest that the relation between informality and social protection fragmentation is, at best, weak. Although there is an association between the

levels of the variables, the relation is close to zero for changes, once accounting for comparability issues.

It seems that the type and levels of fragmentation influence its relation with informality. When fragmentation is understood as the concentration of beneficiaries at the top with poorly targeted social assistance programs (the Palma and Theil indices), the relation is weaker. When fragmentation is defined, instead, as deviations from the case of evenly distributed benefits (the Benchmark index), the relation with informality is stronger. Finally, when fragmentation refers only to social assistance, the relation is very weak (RSA) or negative (SA-T). This suggests that the Benchmark index is a better measure of fragmentation because, in that case, the concentration of social insurance at the top is not counteracted by the concentration of social assistance at the bottom, which is what the Palma and Theil indices tend to do. From a conceptual perspective, considering highly targeted social assistance schemes as non-fragmented may give a more nuanced picture of fragmentation.

On the other hand, low levels of fragmentation are associated with a wide range of informality rates, which makes it harder to argue that lower informality requires, or is implied by, less fragmented social protection systems. The problem seems to lie in high fragmentation levels, which are consistently associated with high informality. Regional disparities are also important, since a strong relation between the two phenomena is only evident for Latin American countries, which may confirm some of the claims by Barrientos (2019) and Levy and Cruces (2021).

However, the weak relation between informality and the social assistance-related fragmentation counteracts several arguments behind these claims. The perverse incentives, by which people prefer to remain in informality not to lose their benefits, seem to be absent, or at least considerably small at the aggregate level. Another possible interpretation is that the high levels of informality are not the main reason behind the expansion of social assistance programs. On the contrary, informality is negatively correlated with the social assistance Theil index, a sign that, either, more informality requires less targeted systems, to cover non-poor informal workers, or that more targeting can be actually effective at reducing informality.

The excessive focus on the incentives generated by social assistance programs, based on the possible effects on informality, seem to be missing the point. On the contrary, the relation seems to be driven by the unequal distribution of social insurance. Considering also that the strongest association is with the rate of non-coverage, the descriptive analysis suggests that the problem lies in the exclusion of informal workers from social insurance by definition, and their inability to make contributions.

With regards to the evolution of the two variables over time, the relation is very weak. The econometric analysis shows that feedback mechanisms between the two variables are generally absent, and are only found once the effect of other variables are considered, thus implying some common factor or underlying mechanism. In particular, the financing dimension of social protection is what induces the Granger-causality from fragmentation to informality. This supports some neoclassical arguments, regarding the negative effects of labor costs and the tax burden. However, the fact that financing variables do not have a direct effect on informality implies that there might be more complex mechanisms at play. It can be interpreted through the lens of Fischer (2018), who stresses the importance of pricing and financing for social policy. In this perspective, the debates around targeting or universalism, and the understanding of fragmentation in terms of sheer coverage, might be missing the point, since social policy is varied and multiple by definition. Rather, the problem

lies with the different mechanisms by which social policy reproduces existent divisions and enacts new ones. Although the indices of social protection fragmentation that I propose here are narrow (the only consider beneficiary incidence), the fact that the effect on informality is induced by the financing dimension means that these indices may capture more dimensions of social protection fragmentation.

In short, the alleged connection between social protection fragmentation and informality through incentives and behavioral responses seems to be overemphasized, in line with the the small effects and mixed results found by microeconomic studies. The important question, then, is what are the implications for social policy, and what strategies can be followed to extend social protection to informal workers. Although this is beyond the scope of this analysis, it nonetheless gives some hints. First, the supposed informalization effects of social protection should not be used as an argument against the expansion of benefits, either to formal or informal workers, because such effects are weak, and because social protection should not be oriented towards reducing informality. Rather, its aim is to provide a set of services and guarantee a source of income in adverse situations, independently of the employment status. Second, viewing social protection as a matter of incentives, ruled by principles of austerity and efficiency, might deepen already existent divisions, since it requires the creation of different rules and schemes aimed at different social groups. The same argument applies to the experimentalist approach, and its obsession for evidence-based solutions.

Third, social protection fragmentation is not innocuous, however, but such fragmentation should be assessed in a comprehensive way. The results here indicate that the financing dimension plays a key role, as well as the social reproduction dynamics behind informality. This suggests that the problem lies in the struggle over who bears the costs of social reproduction, which is a political, not a technical question. For the dominant view on social protection, the main concern is to give as little as possible to informal workers and the poor, while making formal workers pay by reducing what are deemed their exorbitant privileges; in the end, the concern with incentives and formalization is about disciplining workers. The missing link in this picture is capital, which benefits from such approach by externalizing the costs of social reproduction. Overcoming fragmentation in social protection should start by disciplining capital instead.

5.8 Conclusions

In this chapter I discussed the relation between informality and social protection fragmentation, which is highly debated topic in the literature. I proposed several indices to measure such fragmentation, based on the beneficiary incidence indicators of World Bank's ASPIRE database, and built a dataset of such indices for a set of developing countries. Although these indices only measure the coverage dimension of social protection fragmentation, they nonetheless provide a good picture of it, and capture several stylized facts of social protection in developing countries. I focused on the Benchmark index of social protection dualism, since it seems to better reflect fragmentation, its distribution is more homogeneous, and it does not use the targeting of social assistance to attenuate the concentration of social insurance. However, the properties of these indices should be explored in more detail. I also discussed the problems of comparability in the ASPIRE indicators, and proposed different strategies to account for, and correct these problems. Both the indices and the strategies for comparability might be useful for different applications in the future.

Here I concentrated in informality, and analyzed the relation of the fragmentation indices with

the rate of informal employment as defined by the ILO. I did both a descriptive and a quantitative analysis, whose main conclusion is that the relation between the two variables is positive in levels but weak in changes. The relation between the levels of the two variables is stronger for higher levels of fragmentation, which suggests some non-linearity. It is shown also that developing countries follow different regional patterns in such relation. Another interesting finding is that there is a negative correlation between the concentration of social assistance (at the bottom) and the level of informality, which seems counterintuitive considering that informal workers are part of the target population of social assistance. These relations should be analyzed deeper in further studies.

To complement the descriptive analysis, I used Granger-causality tests in PVAR models. I used bi-variate models and included several exogenous regressors, one at once, as suggested by different theories of informality, and grouped in five categories: productivity and capital accumulation, external sector, social and productive structure, regulations and institutions, and social protection financing. In general, there is no evidence of Granger-causality in any direction for most models, although including the variables of taxes on payroll and workforce, and social benefits expense, induces Granger-causality from fragmentation to informality. Given that, however, there is no direct effect of such variables on the endogenous variables, I interpret this finding as an evidence of the social protection fragmentation in its dimension of financing, although this effect should be explored more deeply. The results yield some support to the neoclassical approach, in particular regarding the effect of labor costs, and also allow for an interpretation from the Theory of Social Reproduction. On the contrary, the results contradict in part the classical dualist view of informality and the structuralist arguments regarding the external sector. This suggests that the link between growth and formalization might be weak, and that informality should better be seen as a structural and functional element of contemporary capitalist economies. These results should be taken with caution, however, given the small sample size. The exploration of different quantitative methods to apply to these fragmentation indices is also a possible and promising extension of this work.

The main conclusion is that the link between social protection fragmentation and informality is weak. This does not imply that fragmentation in social protection is not problematic or should not be addressed; rather, the message is that social protection policy should not be designed with the aim of reducing informality or providing incentives to formality. Another important implication is that the fragmentation of social protection should be analyzed in other dimensions beyond coverage, in particular its financing dimension. These are questions for the future.

Appendices

5.A List of countries

Code	Name	Region
AGO	Angola	Sub-Saharan Africa
ALB	Albania	Europe, Central and Western Asia
ARG	Argentina	Latin America and the Caribbean
ARM	Armenia	Europe, Central and Western Asia
BDI	Burundi	Sub-Saharan Africa
BEN	Benin	Sub-Saharan Africa
BFA	Burkina Faso	Sub-Saharan Africa
BGD	Bangladesh	Asia and the Pacific
BGR	Bulgaria	Europe, Central and Western Asia
BIH	Bosnia and Herzegovina	Europe, Central and Western Asia
BOL	Bolivia	Latin America and the Caribbean
BRA	Brazil	Latin America and the Caribbean
BRB	Barbados	Latin America and the Caribbean
BRN	Brunei Darussalam	Asia and the Pacific
BWA	Botswana	Sub-Saharan Africa
CHL	Chile	Latin America and the Caribbean
CIV	Côte d'Ivoire	Sub-Saharan Africa
CMR	Cameroon	Sub-Saharan Africa
COD	Congo, D. R.	Sub-Saharan Africa
COK	Cook Islands	Asia and the Pacific

COL	Colombia	Latin America and the Caribbean
COM	Comoros	Sub-Saharan Africa
CPV	Cabo Verde	Sub-Saharan Africa
CRI	Costa Rica	Latin America and the Caribbean
DJI	Djibouti	Sub-Saharan Africa
DOM	Dominican Republic	Latin America and the Caribbean
ECU	Ecuador	Latin America and the Caribbean
EGY	Egypt	Middle East and Northern Africa
ETH	Ethiopia	Sub-Saharan Africa
FJI	Fiji	Asia and the Pacific
GEO	Georgia	Europe, Central and Western Asia
GHA	Ghana	Sub-Saharan Africa
GMB	Gambia	Sub-Saharan Africa
GNB	Guinea-Bissau	Sub-Saharan Africa
GTM	Guatemala	Latin America and the Caribbean
GUY	Guyana	Latin America and the Caribbean
HND	Honduras	Latin America and the Caribbean
HRV	Croatia	Europe, Central and Western Asia
HTI	Haiti	Latin America and the Caribbean
HUN	Hungary	Europe, Central and Western Asia
IDN	Indonesia	Asia and the Pacific
IND	India	Asia and the Pacific
IRQ	Iraq	Middle East and Northern Africa
JAM	Jamaica	Latin America and the Caribbean
JOR	Jordan	Middle East and Northern Africa
KEN	Kenya	Sub-Saharan Africa
KGZ	Kyrgyzstan	Europe, Central and Western Asia
KHM	Cambodia	Asia and the Pacific
KIR	Kiribati	Asia and the Pacific
LAO	Lao P. D. R.	Asia and the Pacific

LBN	Lebanon	Middle East and Northern Africa
LBR	Liberia	Sub-Saharan Africa
LCA	Saint Lucia	Latin America and the Caribbean
LKA	Sri Lanka	Asia and the Pacific
LSO	Lesotho	Sub-Saharan Africa
MDA	Moldova	Europe, Central and Western Asia
MDG	Madagascar	Sub-Saharan Africa
MDV	Maldives	Asia and the Pacific
MEX	Mexico	Latin America and the Caribbean
MHL	Marshall Islands	Asia and the Pacific
MKD	North Macedonia	Europe, Central and Western Asia
MLI	Mali	Sub-Saharan Africa
MMR	Myanmar	Asia and the Pacific
MNG	Mongolia	Asia and the Pacific
MOZ	Mozambique	Sub-Saharan Africa
MRT	Mauritania	Sub-Saharan Africa
MUS	Mauritius	Sub-Saharan Africa
MWI	Malawi	Sub-Saharan Africa
NAM	Namibia	Sub-Saharan Africa
NER	Niger	Sub-Saharan Africa
NIC	Nicaragua	Latin America and the Caribbean
NPL	Nepal	Asia and the Pacific
PAK	Pakistan	Asia and the Pacific
PAN	Panama	Latin America and the Caribbean
PER	Peru	Latin America and the Caribbean
POL	Poland	Europe, Central and Western Asia
PRY	Paraguay	Latin America and the Caribbean
PSE	Occupied Palestinian Territory	Middle East and Northern Africa
RWA	Rwanda	Sub-Saharan Africa
SDN	Sudan	Middle East and Northern Africa

SEN	Senegal	Sub-Saharan Africa
SLE	Sierra Leone	Sub-Saharan Africa
SLV	El Salvador	Latin America and the Caribbean
SOM	Somalia	Sub-Saharan Africa
SRB	Serbia	Europe, Central and Western Asia
SUR	Suriname	Latin America and the Caribbean
SWZ	Eswatini	Sub-Saharan Africa
SYC	Seychelles	Sub-Saharan Africa
TCD	Chad	Sub-Saharan Africa
TGO	Togo	Sub-Saharan Africa
THA	Thailand	Asia and the Pacific
TLS	Timor-Leste	Asia and the Pacific
TON	Tonga	Asia and the Pacific
TUN	Tunisia	Middle East and Northern Africa
TUR	Türkiye	Europe, Central and Western Asia
TZA	Tanzania	Sub-Saharan Africa
UGA	Uganda	Sub-Saharan Africa
URY	Uruguay	Latin America and the Caribbean
VEN	Venezuela	Latin America and the Caribbean
VNM	Viet Nam	Asia and the Pacific
VUT	Vanuatu	Asia and the Pacific
WSM	Samoa	Asia and the Pacific
YEM	Yemen	Middle East and Northern Africa
ZAF	South Africa	Sub-Saharan Africa
ZMB	Zambia	Sub-Saharan Africa
ZWE	Zimbabwe	Sub-Saharan Africa

5.B List of variables

Variable	Description	Source
btxl	Labor tax and contributions payable by medium size businesses (% of commercial profits)	WB – DB
ca	Current account balance (% of GDP)	IMF – BPS
depl	Labour dependency ratio (non-working population as % of total employment)	ILO – ILOSTAT
empagr	Employment in agriculture (% of total employment)	ILO – ILOSTAT
fr_b	Social Protection Dualism Index - Benchmark (based on beneficiary incidence indicators)	WB – ASPIRE
gfkf	Gross fixed capital formation (% of GDP)	WB – WDI
inf_ie	Informal employment (% of total employment)	ILO – ILOSTAT
lgdp	GDP per capita (constant 2017 PPP USD) (logarithm)	WB – WDI
lkl	Capital to labor force ratio (logarithm)	PWT; ILO – ILOSTAT
mw	Minimum wage to GDP per person employed ratio (monthly)	ILO – ILOSTAT; WB – WDI
lprodhw	GDP per hour worked (constant 2017 PPP USD)	ILO – ILOSTAT
reer	Real effective exchange rate index (2010 = 100)	WB – WDI
remt	Personal remittances received (% of GDP)	WB – WDI
sbxp	Social benefits expense (% GDP)	IMF – GFS
txrv	Tax revenue (% GDP)	IMF – GFS
txrv_prwf	Taxes on payroll & workforce (% GDP)	IMF – GFS
vamnf	Value added of manufacturing (% of GDP)	ILO – ILOSTAT
wgi_rl	Rule of Law index	WB – WGI
wgi_rq	Regulatory Quality index	WB – WGI

Sources' acronyms and weblinks

IMF – BPS	International Monetary Fund, Balance of Payments Statistics https://data.imf.org/
IMF – GFS	International Monetary Fund, Government Finance Statistics https://data.imf.org/
ILO – ILOSTAT	International Labour Office, Labour Statistics https://ilostat.ilo.org/data/
PWT	Penn World Table (Feenstra et al., 2015) www.ggd.cnet/pwt
WB – ASPIRE	World Bank, Atlas of Social Protection Indicators of Resilience and Equity https://www.worldbank.org/en/data/datatopics/aspire
WB – DB	World Bank, Doing Business http://www.doingbusiness.org/
WB – WDI	World Bank, World Development Indicators https://databank.worldbank.org/
WB – WGI	World Bank, Worldwide Governance Indicators (Kraay et al., 2010) https://databank.worldbank.org/

5.C Regression results

Table 5.C.1: PVAR: productivity and accumulation variables

	(1)	(2)	(3)	(4)	(5)	(6)
dinf_ie						
L1.dinf_ie	0.21	0.28	-0.03	0.19	0.20	0.15
L1.dfr_b	-3.73	12.11	3.00	7.86	-4.38	-6.69
dlgdp		-25.25				-94.74*
dlprodhw			-73.88***			-50.83*
dlkl				-23.10		-6.61
dgfkf					-0.03	1.18*
dfr_b						
L1.dinf_ie	0.00	-0.00	0.00	0.00	0.00	-0.00
L1.dfr_b	-0.18	-0.24*	-0.11	-0.24*	-0.18	-0.21*
dlgdp		-0.14				0.15
dprodhw			0.45*			0.21
dlkl				0.06		-0.01
dgfkf					0.00	-0.00
Statistics						
Obs.	63	63	63	63	63	63
N	14	14	14	14	14	14
T (Avg.)	4.50	4.5	4.5	4.5	4.5	4.5
Hansen's J	6.45	3.42	6.20	4.20	6.78	5.06
J pval	0.60	0.91	0.51	0.62	0.56	0.75
Non-Granger causality tests						
fr → inf (Chi2)	0.20	0.65	0.15	0.63	0.22	1.04
(P)	0.66	0.42	0.70	0.43	0.64	0.31
inf → fr (Chi2)	0.02	0.00	0.29	0.00	0.07	0.13
(P)	0.88	0.95	0.59	0.94	0.79	0.71

Significance levels: 0.10 (*), 0.05(**), 0.01(***). Prefix d: first differences. L1: first lag.

Table 5.C.2: PVAR: External sector variables

	(1)	(7)	(8)	(9)	(10)
dinf_ie					
L1.dinf_ie	0.21	0.24	0.02	0.12	-0.01
L1.dfr_b	-3.73	-1.28	-37.56***	-6.62	-4.63
dca		-0.10			-0.10
dreer			-0.19		-0.07
dremt				1.96***	1.36
dlgdp					42.44
dfr_b					
L1.	0.00	0.00	0.00	0.00	0.00
L1.dfr_b	-0.18	-0.16	0.11	-0.15	-0.07
dca		-0.00			-0.00
dreer			0.00***		0.00***
dremt				-0.01	-0.01
dlgdp				1.96***	0.24
Statistics					
Obs.	63	63	35	63	35
N	14	14	8	14	8
T (Avg.)	4.5	4.5	4.38	4.5	4.38
Hansen's J	6.45	5.91	8.79	6.24	4.04
J pval	0.60	0.66	0.36	0.62	0.85
Non-Granger causality tests					
fr → inf (Chi2)	0.20	0.02	7.97***	0.44	0.06
(P)	0.66	0.89	0.00	0.51	0.81
inf → fr (Chi2)	0.02	0.00	0.37	0.05	0.02
(P)	0.88	0.96	0.55	0.82	0.88

Significance levels: 0.10 (*), 0.05(**), 0.01(***). Prefix d: first differences. L1: first lag.

Table 5.C.3: PVAR: Structural variables

	(1)	(11)	(12)	(13)	(14)
dinf_ie					
L1.dinf_ie	0.21	0.24	0.23	-0.12	-0.19
L1.dfr_b	-3.73	-10.32	-0.64	-4.24	-0.35
dempagr		0.53			-1.61**
dvamnf			0.11		-1.23
ddepl				-29.14**	-38.63***
dlgdp					-13.43
dfr_b					
L1.dinf_ie	0.00	0.00	-0.00	0.00	-0.00
L1.dfr_b	-0.18	-0.24	-0.13	0.04	-0.00
dempagr		-0.01			-0.00
dvamnf			-0.02***		-0.02***
ddepl				0.38*	0.46***
dlgdp					0.49
Statistics					
Obs.	63	63	63	46	46
N	14	14	14	14	14
T (Avg.)	4.5	4.5	4.50	3.29	3.29
Hansen's J	6.45	8.87	6.37	3.48	4.64
J pval	0.60	0.35	0.61	0.90	0.80
Non-Granger causality tests					
fr → inf (Chi2)	0.20	1.87	0.01	0.15	0.00
(P)	0.66	0.17	0.93	0.70	0.96
inf → fr (Chi2)	0.02	0.05	0.07	0.74	0.01
(P)	0.88	0.82	0.78	0.39	0.92

Significance levels: 0.10 (*), 0.05(**), 0.01(***). Prefix d: first differences. L1: first lag.

Table 5.C.4: PVAR: Regulatory and institutional variables

	(1)	(15)	(16)	(17)	(18)	(19)
dinf_ie						
L1.dinf_ie	0.21	0.19	0.29	0.20	0.23	0.10
L1.dfr_b	-3.73	-4.69	-0.54	0.17	-2.03	-0.93
dbtxl		0.07**				-0.21
dmw			7.81			-1.04
dwgirq				-1.01		20.68
dwgirl					-4.46	7.31
dlgdp						96.32
dfr_b						
L1.dinf_ie	0.00	0.00	-0.01	0.00	0.00	-0.00
L1.dfr_b	-0.18	-0.19	-0.12	-0.20	-0.16	-0.14
dbtxl		0.00				-0.00
dmw			-0.05*			-0.03
dwgirq				0.10		0.12
dwgirl					-0.05	-0.17
dlgdp						-0.29
Statistics						
Obs.	63	63	32	63	63	32
N	14	14	8	14	14	8
T (Avg.)	4.5	4.5	4	4.50	4.5	4
Hansen's J	6.45	6.33	5.59	2.82	8.85	2.86
J pval	0.60	0.61	0.69	0.95	0.35	0.94
Non-Granger causality tests						
fr → inf (Chi2)	0.20	0.31	0.00	0.00	0.12	0.00
(P)	0.66	0.58	0.99	0.98	0.73	0.98
inf → fr (Chi2)	0.02	0.01	2.02	0.18	0.05	0.29
(P)	0.88	0.91	0.16	0.67	0.83	0.59

Significance levels: 0.10 (*), 0.05(**), 0.01(***). Prefix d: first differences. L1: first lag.

Table 5.C.5: PVAR: Social protection finances variables

	(1)	(20)	(21)	(22)	(23)
dinf_ie					
L1.dinf_ie	0.21	0.33	0.35	0.45	0.42
L1.dfr_b	-3.73	3.02	64.40***	45.50***	9.15
dtxrv		-0.45***			-0.48
dtxrv_prwf			24.66		1.76
dsbxp				1.55	1.36
dlgdp					-61.64
dfr_b					
L1.dinf_ie	0.00	0.00	0.00	0.00	-0.01*
L1.dfr_b	-0.18	-0.01	0.12	0.24	-0.10
dtxrv		-0.01*			-0.00
dtxrv_prwf			0.00		0.02
dsbxp				0.01	0.00
dlgdp					1.67***
Statistics					
Obs.	63	36	36	36	36
N	14	8	8	8	8
T (Avg.)	4.5	4.5	4.5	4.5	4.5
Hansen's J	6.45	9.38	7.57	9.56	4.71
J pval	0.60	0.31	0.48	0.30	0.79
Non-Granger causality tests					
fr → inf (Chi2)	0.20	0.33	8.74***	12.22***	0.47
(P)	0.66	0.57	0.00	0.00	0.49
inf → fr (Chi2)	0.02	0.07	0.01	0.00	3.04*
(P)	0.88	0.78	0.90	0.95	0.08

Significance levels: 0.10 (*), 0.05(**), 0.01(***). Prefix d: first differences. L1: first lag.

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