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Automatic stabilization: the missing welfare dimension in Latin America[1]

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Abstract. We extend the LACIR chapter by Lustig et al. (2023a) by adding a new welfare dimension to the analysis of tax-benefit systems – automatic stabilization, i.e., the ability of systems to mitigate income losses. Using tax-benefit models with nationally representative household survey data from different countries, we show that tax-benefit systems in Latin America and the Caribbean (LAC) outperform those in other developing regions like Sub-Saharan Africa (SSA) in terms of income redistribution and poverty reduction. However, similar to those in SSA, LAC systems provide a limited degree of automatic stabilization against income shocks. This limited capacity is due to three factors: (i) the prevalence of a large informal sector, which limits the role of social insurance contributions and personal income taxation; (ii) the presence of high tax exemption thresholds and generous tax deductions; and (iii) the design of cash transfer programs as proxy means-tested benefits, which prevents them from acting as stabilizers.

Key words: Automatic stabilization, Redistribution, Poverty, Taxes and benefits, Welfare.

JEL codes: C15, D31, E63, H2, H31.

1. Introduction

A large body of literature has focused on the role of fiscal policy in reducing income poverty and inequality in high-income countries (Mahler and Jesuit 2006, Caminada et al. 2019, 2021). For Latin America and the Caribbean (LAC), the recent LACIR chapter by Lustig et al. (2023a) provides a comprehensive comparison of the extent to which fiscal policy reduces income poverty and inequality in LAC. The study compares pre-fiscal income to final income, which takes into account the incidence of direct taxes and cash transfers, indirect taxes and subsidies, and the imputed value for public services in education and health. The study highlights the heterogeneous role of fiscal policy in reducing poverty and inequality across countries in the region. Their results show that, as a whole, fiscal policy reduces inequality. However, fiscal policy increases poverty in some countries due to the effect of indirect taxes.

Another important, but less studied, role of tax-benefit systems is the extent to which they provide 'automatic stabilization' against economic crisis. Automatic stabilization refers to the in-built capacity of systems to respond to economic downturn (or expansion) through automatic adjustments to tax and benefit payments, thereby mitigating household income losses (gains) and stabilizing the economy, without discretionary government action. For example, if an economic shock strikes and lowers household earnings, automatic stabilizers can protect household incomes through an automatic reduction in household tax liability (with a progressive schedule) and the provision of timely financial support (through means-tested government transfers). Automatic stabilizers have received increasing attention in the context of high-income countries (Auerbach and Feenberg 2000, Auerbach 2009, Bargain et al. 2013, Dolls et al. 2012, Paulus and Tasseva 2020, Dolls et al 2022). However, with few exceptions focusing on countries in Sub-Saharan Africa (Adu-Ababio 2022, Gasior, Tasseva et al. 2022), little attention has been given to this additional welfare dimension in low- and middle-income countries. In fact, most of the evidence for selected countries in Latin America has been provided in the context of the COVID-19 pandemic (Avellaneda et al. 2021, Jara et al. 2022, Rodriguez et al. 2022).

The aim of our paper is to complement the analysis by Lustig et al. (2023a), by examining tax-benefit systems in LAC and elsewhere along the following three welfare dimensions: (i) redistribution measured as a reduction in the Gini inequality index; (ii) poverty headcount reduction; and (iii) automatic stabilization. While related, we consider (iii) distinct from (i) and (ii). On the one hand, both the extent of inequality and poverty reduction, and automatic stabilization, are likely positively correlated with the size of the tax-benefit system. On the other hand, the mere size of the system is insufficient to guarantee its effectiveness in times of crisis – the design of policies matters too. A large tax-benefit system may be effective in curbing income poverty and inequality under normal economic conditions but might not be responsive to negative economic shocks. By considering all three welfare dimensions, we seek to improve our understanding of the effectiveness of tax-benefit systems and inform their future design.

Moreover, we provide the first comparative assessment of the role of tax-benefit systems along these three dimensions for a large set of countries around the world and discuss how LAC performs compared to other regions. Our approach relies on the novel use of comparable tax-benefit microsimulation models for Latin American, European and Sub-Saharan African countries, developed in the EUROMOD platform (Figari and Sutherland 2013, Bargain et al. 2022, Gasior, Leventi et al. 2022, Jara et al. 2023). [2] We focus on the concept of household disposable income, taking into account the role of direct taxes, social insurance contributions and government cash transfers.

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[2] The EUROMOD platform was originally built to simulate tax-benefit policies in the EU. The platform is highly flexible, well-documented and transparent, and has been used to build tax-benefit models for many countries around the world. For more information about the EUROMOD platform see: https://euromod-web.jrc.ec.europa.eu/.

Our analysis shows that Latin American tax-benefit systems perform, on average, better than Sub-Saharan countries in terms of redistribution and poverty reduction. All LAC (and Sub-Saharan African) countries are characterized by a lower degree of redistribution and poverty reduction than European countries, except Argentina, Brazil, South Africa and Uruguay where tax-benefit systems perform better that some European countries (e.g., Bulgaria, Romania, Hungary, Latvia, Lithuania and the Netherlands) in terms of poverty reduction. However, Latin American and Sub-Saharan African countries, except Uruguay and South Africa, are characterized by a low stabilization capacity, i.e., in the event of an income shock, tax-benefit systems in these countries would cushion household incomes only to a limited degree. The low degree of automatic stabilization of LAC tax-benefit systems is due to three main factors: (i) the prevalence of a large informal sector which limits the role of social insurance contributions and personal income tax; (ii) the presence of high tax exemption thresholds and generous tax deductions; and (iii) the design of cash transfer programs as proxy means-tested benefits which prevents them from acting as stabilizers.

The paper is structured as follows. Section 2 presents the concept of automatic stabilization. Section 3 discusses recent developments in the field of tax-benefit microsimulation in the LAC region. Section 4 assesses the redistributive, poverty reducing and stabilizing role of tax-benefit policies in LAC compared to countries in Europe and Sub-Saharan Africa. Section 6 concludes.

2. Automatic Stabilization

Automatic stabilizers refer to the components of tax-benefit systems which, by design, mitigate earnings shocks without any discretionary government intervention (Pechman 1983, Auerbach and Feenberg 2000, Browning and Crosley 2001, Dolls et al 2012). There are macro and micro data approaches to studying automatic stabilizers. The macro data literature studies, for example, the relationship between government size and GDP volatility (Fatás and Mihov 2001) or between the generosity of unemployment benefits and earnings and employment growth (Di Maggio and Kermani 2016). However, macro-level estimates ignore the heterogeneity of income effects across people from a macro shock. Furthermore, they are unable to disentangle the effects of automatic stabilizers from discretionary policy changes. In comparison, micro data studies based on counterfactual tax-benefit simulations take into account the heterogeneity in household disposable income changes from a uniform shock and isolate the effect of automatic stabilizers. Pechman (1973) first introduces the concept of the 'in-built flexibility' of income tax, defined as the ratio of the change in taxes with respect to the change in gross (pre-tax) earnings. Auerbach and Feenberg (2000) call this 'the normalized tax change', extended by Dolls et al. (2012) to capture the effect of state benefits. The higher the ratio, the larger the size of taxes and benefits relative to earnings and the more they can act as automatic stabilizers. However, the focus of these studies is predominantly on high income countries.

More recently, in the context of the COVID-19 pandemic, the role played by automatic stabilizers and emergency policies received a great deal of attention, both in the developed and developing world. In high- income countries, micro data studies have highlighted the importance of automatic stabilizers in mitigating the shock in household incomes. In these countries, monetary compensation schemes and COVID-related tax-benefit reforms also played an important role (Brewer and Tasseva 2021, Canto et al. 2021, Gasior et al. 2023, Christl et al. 2023). In low- and middle-income countries, evidence from the pandemic (Jara et al. 2022, Lastunen et al. 2021, Rodriguez et al. 2022) as well as the analysis of hypothetical employment shocks (Gasior, Tasseva et al. 2022) suggests a limited effect of automatic stabilizers due to the design on tax-benefit policies and the characteristics of the labor market. At the bottom of the distribution, cash transfer programs fail to provide automatic stabilization due to their design as proxy means-tested benefits,

whereas taxes and social insurance contributions provide stabilization at the top but to a limited extent due to the prevalence of the informal sector and the limited progressivity of personal income tax. Additionally, the degree of protection provided by COVID-19 emergency cash programs varied widely in these countries, with generous cash transfers in countries like Brazil (Lustig et al. 2023b) and no intervention in countries such as Mexico (Huesca et al. 2021).

In our analysis, we rely on a measure commonly used in the literature (Dolls et al. 2012, 2022), the automatic stabilization coefficient (τ), which captures how changes in market income (Y_i^M), following a counterfactual shock, translate into changes in disposable income (Y_i^D) through the role of tax-benefit policies, and can be expressed as:

$$\tau = 1 - \frac{\sum_i \Delta Y_i^D}{\sum_i \Delta Y_i^M} = \frac{\sum_i (\Delta Y_i^M - \Delta Y_i^D)}{\sum_i \Delta Y_i^M} = \frac{\sum_i (\Delta T_i^{\square} + \Delta S_i^{\square} - \Delta B_i^{\square})}{\sum_i \Delta Y_i^M}$$

where $Y_i^D = Y_i^M - T_i^{\square} - S_i^{\square} + B_i^{\square}$ represents household disposable income with $T_i^{\square}$ representing direct taxes, $S_i^{\square}$ social insurance contributions and $B_i^{\square}$ cash transfers.

As typically done in the literature, we use tax-benefit models and simulate a hypothetical shock to earnings of similar size to study comparably the degree of automatic stabilization provided by tax-benefit systems across countries. We document our approach in the next section.

3. Multi-country tax-benefit microsimulation in Latin America

A key aspect in the assessment of the redistributive and poverty reducing effect of fiscal policy is the allocation of taxes and benefits to households to compare pre-fiscal and post-fiscal indicators. As a rule, CEQ uses information on taxes and transfers directly from the data (Lustig et al. 2023a). If information is not available or deemed unreliable, other methods are used to derive tax and benefit values (see Table B3 in Lustig et al. 2023a). However, analyzing the stabilizing properties of fiscal policy requires detailed tax-benefit models to simulate changes in benefit entitlements and tax payments, and thereby household disposable income, following an observed or hypothetical shock in market income.

Multi-country tax-benefit microsimulation models have been recently developed for a number of Latin American countries (Arancibia and Macas 2023, Bargain et al. 2017, Jara et al. 2022, Jara et al. 2023, Rodriguez et al. 2023, Torres and Chang 2023). These models are aimed to enable researchers to perform ex-ante evaluations of policy reforms in a comparative way and can be used to quantity the extent to which tax-benefit policies mitigate the effect of income shocks on household incomes. The models have been developed in the EUROMOD platform, which offers a common set of protocols for data harmonization and modelling, a programming language specific to tax-benefit simulations, and a user-friendly interface (Sutherland and Figari 2013). Based on individual microdata from official household surveys, the models compute direct taxes and social insurance contributions paid, and government cash transfers received by each household in the data.[3] More precisely, market incomes and socio-demographic information from the survey are used by the models to calculate tax-benefit policies following the rules governing each instrument according to the national legislation. Being built in the EUROMOD platform, these models are also comparable to EUROMOD-based models for other countries.

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[3] Indirect taxes are also simulated in EUROMOD for EU countries (Akoguz et al. 2020) and for countries which are part of the SOUTHMOD project (For more information see: https://www.wider.unu.edu/project/southmod-simulating-tax-and-benefit-policies-development-phase-2).

The analysis presented here makes use of EUROMOD-based microsimulation models for 50 countries in Europe (EU27 and the UK), Latin America (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Panama, Peru, Uruguay) and Africa (Ethiopia, Ghana, Uganda, Mozambique, Rwanda, Tanzania, Zambia, South Africa).[4] We focus on 2019 tax-benefit policies in all countries, except Chile (2017 policies) and Mexico (2018 policies), for the simulation of government cash transfers, taxes and household disposable income. In the analysis, we consider public pensions as government transfers (as in the PGT (Pensions as Government Transfer) definition in Lustig et al. 2023a).[5] The underlying microdata used in the simulations come from official household surveys representative of the population in each country. Table A1 in the appendix provides information about the surveys used in each country.

We consider three dimensions of welfare in the analysis: (i) redistribution which is defined as the difference between the market and disposable income Gini coefficients; (ii) poverty reduction which is defined as the difference between the market and disposable income headcount ratio; and (iii) automatic stabilization which is measured using the automatic stabilization coefficient following a 5% reduction in earnings for all individuals with positive earnings as done in the literature (Auerbach and Feenberg 2000, Dolls et al. 2012, Dolls et al. 2022). The next section presents the results of the analysis.

4. Redistribution, poverty reduction and automatic stabilization

Figure 1 shows the relationship between redistribution, poverty reduction and automatic stabilization in the 50 countries we analyze. We first discuss the relationship between redistribution (in the vertical axis) and poverty reduction (in the horizontal axis), which are considered by Lustig
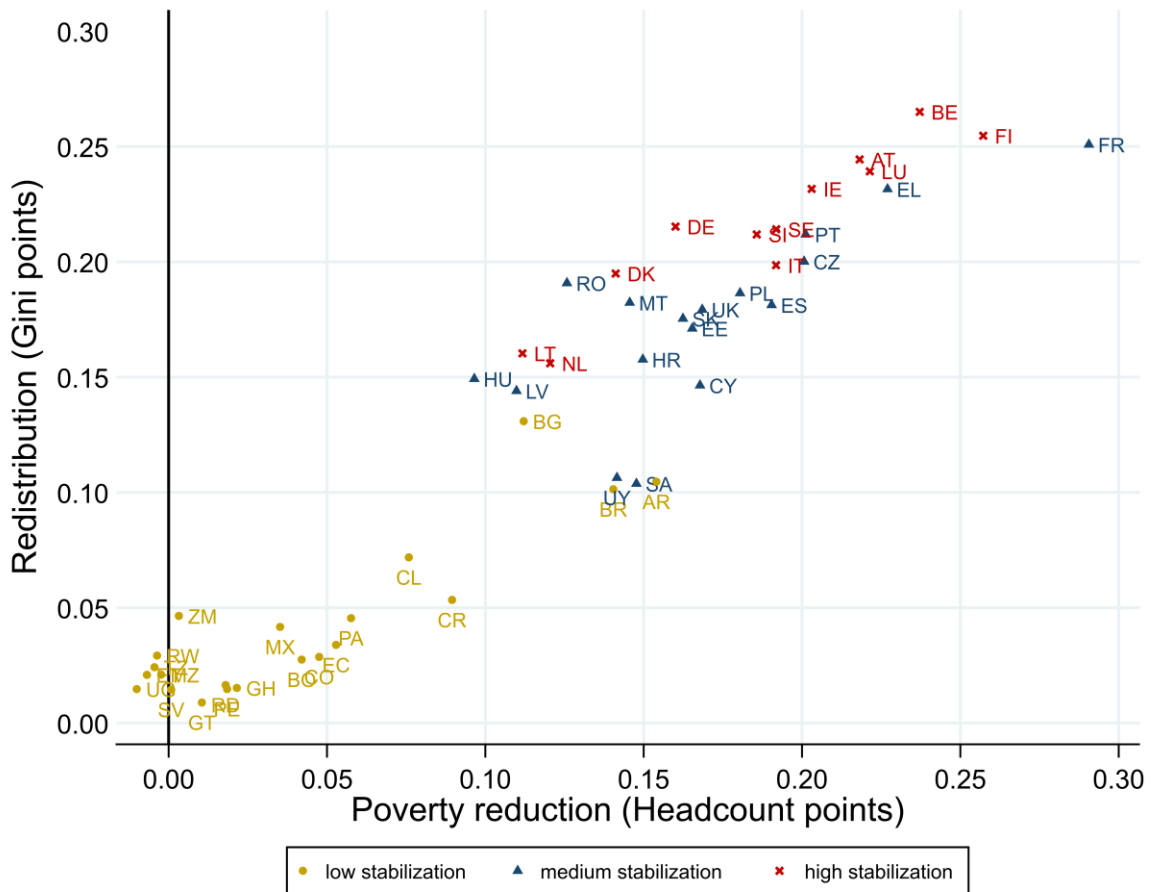
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[4] The EUROMOD platform and the EU27 models are maintained, developed and managed by the Joint Research Centre (JRC) of the European Commission, in collaboration with Eurostat and national teams from the EU countries. UKMOD, the tax-benefit model for the UK, is maintained, developed and managed by the Centre for Microsimulation and Policy Analysis (CeMPA) at the University of Essex (van de Ven and Popova 2023). The models of Bolivia, Colombia, Ecuador, Ethiopia, Ghana, Mozambique, Peru, Rwanda, Tanzania, Uganda and Zambia are part of SOUTHMOD, a joint project between the United Nations University World Institute for Development Economics Research (UNU-WIDER), Southern African Social Policy Research Insights (SASPRI), the International Inequalities Institute at the London School of Economics and Political Science (LSE), and national teams (see Arancibia and Macas 2023, Jara et al. 2023, Rodriguez et al. 2023, Torres and Chang 2023, Shahir and Figari 2023, Adu-Ababio et al. 2023, Castelo et al. 2023, de Mahieu et al. 2023, Leyaro et al. 2023, Waiswa et al. 2023, Kalikeka et al. 2023). The model for Brazil (BRASMOD) is developed and maintained by Laboratório de Economia do Setor Público (LabPub) at the University of São Paulo (FEA-USP). The model for Chile (CHILMOD) is updated by the Centre for Social Conflict and Cohesion Studies (COES, Universidad de Chile), the Centre for Economics and Social Policy (CEAS, Universidad Mayor), Millennium Nucleus of Social Development (DESOC, Univerdad de Chile) and the Faculty of Economics at Universidad de Chile. The model for Costa Rica (CRIMOD) has been developed by the University of Costa Rica. The model for Mexico (MEXMOD) is developed and managed by the Regional Development Division at CIAD of Mexico (Huesca and Llamas 2020). The models of Dominican Republic, Guatemala, El Salvador and Panama were developed with funding from the Inter-American Development Bank. The models of Argentina and Uruguay are developed and maintained by independent researchers in these countries.

[5] Our preferred approach is to treat public pensions as part of the government's budget and the tax-benefit system, distinguishing them from market incomes. While pensions could be considered deferred earnings, the public pension systems in the countries we consider are complex and serve multiple goals. These include a redistributive function, which redistributes resources from higher to lower earners by setting a minimum and maximum social insurance pension amounts; protection against poverty in old age by providing minimum or universal pension benefits funded through general taxation; intergeneration transfers, where the current working generation pays for the pensions of the current retirees (known as Pay As You Go systems); or additional benefits such as disability or survivor pensions, which are not purely based on deferred earnings. Nevertheless, as a robustness check, we provide alternative results where public pensions are considered part of market incomes (see section 4). Indeed, the tax-benefit models and data we use are flexible enough to enable researchers to generate an alternative definition of pre-fiscal income (market income + pensions) as in the PDI (Pensions as Deferred Income) definition in Lustig et al. (2023a).

et al. (2023a). Then, we examine how the characterization of countries varies when the level of automatic stabilization (in colors) is considered as an additional welfare dimension.

Figure 1. Relationship between the redistribution, poverty reduction and automatic stabilization of tax-benefit policies

Note: Redistribution is defined as the change in the Gini coefficient from market income to disposable income. Poverty reduction is defined as the change in the poverty headcount from market income to disposable income (poverty lines: 5.5 US$ per day for Latin America, 1.9 US$ per day for Africa, and 60% of median equivalized household disposable income for Europe). Automatic stabilization is defined by the coefficient of income stabilization based on a 5% reduction in earnings. Low stabilization is defined as having a stabilization coefficient below 0.2, medium stabilization if it is above 0.2 and below 0.4, and high stabilization if it is above 0.4. Policy years refer to 2019 except in Chile (2017) and Mexico (2018).
Sources: Own calculations based on microsimulation models.

The figure shows a positive and strong relationship between redistribution and poverty reduction, with a correlation coefficient of 0.93. Based on these two dimensions, we observe four categories of groups related to geographic regions. The first group is characterized by a modest degree of redistribution and a poverty increasing role of direct taxes and cash transfers. This group is made of all Sub-Saharan African countries included in the analysis, except South Africa and Ghana. The poverty increasing role of tax-benefit policies in Sub-Saharan African countries is in line with previous studies based on incidence methods and multi-country microsimulations and is due to the role of direct taxes (Bargain et al. 2022, Gasior, Leventi et al. 2022, Higgins and Lustig 2016). The second is characterized by a modest degree of redistribution and poverty reduction, and includes Ghana and most Latin American countries considered in the analysis (Bolivia, Chile,

Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Panama, Mexico and Peru). Note that the degree of redistribution in this group is similar to that of the first one. However, direct taxes and cash transfers have also a poverty reducing effect. The third group is made of non-European countries achieving moderate redistribution and moderate poverty reduction, and include Argentina, Brazil, Uruguay and South Africa. Note that these countries achieve as much poverty reduction, through direct taxes and cash transfers, as some Former USSR countries (Latvia, Lithuania) and Post-Communist countries (Bulgaria, Croatia, Hungary, and Romania), as well as Malta, the Netherlands and Denmark.[6] However, they still rank lower than European countries in terms of redistribution, most likely due to the lower redistributive effect of direct taxes. Finally, the fourth group is made of most European countries and characterized by a larger degree of redistribution and poverty reduction. Within the latter group we also observe heterogeneity across countries. However, we assign them to a single group as our focus is on the role of taxes and benefits in Latin American countries from a cross-country perspective.

Accounting for the automatic stabilization inherent to tax-benefit systems provides additional information for the categorization of countries into groups. The correlation between automatic stabilization and redistribution is high with a coefficient of 0.92. The correlation between automatic stabilization and poverty reduction is slightly lower yet strong with a coefficient of 0.78. The highest value of the income stabilization coefficient in the countries is 0.58 in Belgium. We define low stabilization according to the maximum level of stabilization observed in the countries under analysis and split them into three groups: (i) low stabilization if the value of the income stabilization coefficient is below 0.2 (in yellow); (ii) medium stabilization if it is above 0.2 and below 0.4 (in blue); and (iii) high stabilization if it is above 0.4 (in red). Figure 1 shows that the low stabilization group is made of all Sub-Saharan African and Latin American countries, except Uruguay and South Africa. Thus, although Latin American countries perform better than most Sub-Saharan African countries at least in one of the two dimensions considered previously, they present similar levels of automatic stabilization. This means that in the event of an income shock tax-benefit systems in these countries would cushion household incomes only to a limited degree. The medium stabilization group is mostly made of Southern European countries (Cyprus, Greece, Malta, Portugal and Spain), Post-Communist countries (Croatia, Czechia, Hungary, Poland, Slovakia and Romania), Former USSR countries (Estonia and Latvia), and France. The only two non-European countries which present medium levels of automatic stabilization are Uruguay and South Africa. Finally, the high stabilization group includes Social Democratic countries (Denmark, Finland and Sweden), Liberal/Anglo-Saxon countries (Ireland and the UK), Conservative countries (Austria, Belgium, Germany, Luxembourg and the Netherlands), Lithuania and Slovenia.[7]

To understand better cross-country differences in the magnitude of automatic stabilization Figure 2 depicts the decomposition of the income stabilization coefficient into the contribution of direct taxes (black bars), social insurance contributions (white bars) and benefits (grey bars).

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[6] We refer to the classification of European countries by welfare regimes as per Olivera (2018) who expands the traditional Esping Andersen welfare state regimes.

[7] Figure A1 in the Appendix presents results considering public pensions as deferred income and hence, part of market income. Our findings for the level of automatic stabilization remain unchanged. In terms of inequality and poverty reduction, the ranking of regions remains broadly unchanged, although the gap between regions narrows and some countries move down in rankings, particularly in Europe and LAC where public pensions account for a large share of government spending. For example, excluding public pensions reduces the redistributive effect of the tax-benefit system by more than three times in Hungary and twice in Argentina, Brazil and Uruguay. Similarly, the combined effect of taxes and benefits switches signs and becomes poverty-increasing in a number of European countries where public pensions play a crucial redistributive role and provide a safety net in old-age, such as the flat rate pensions in Denmark. The tax-benefit system also becomes poverty increasing in El Salvador and to a lesser extent in Guatemala.

Figure 2. Decomposition of the income stabilization coefficient
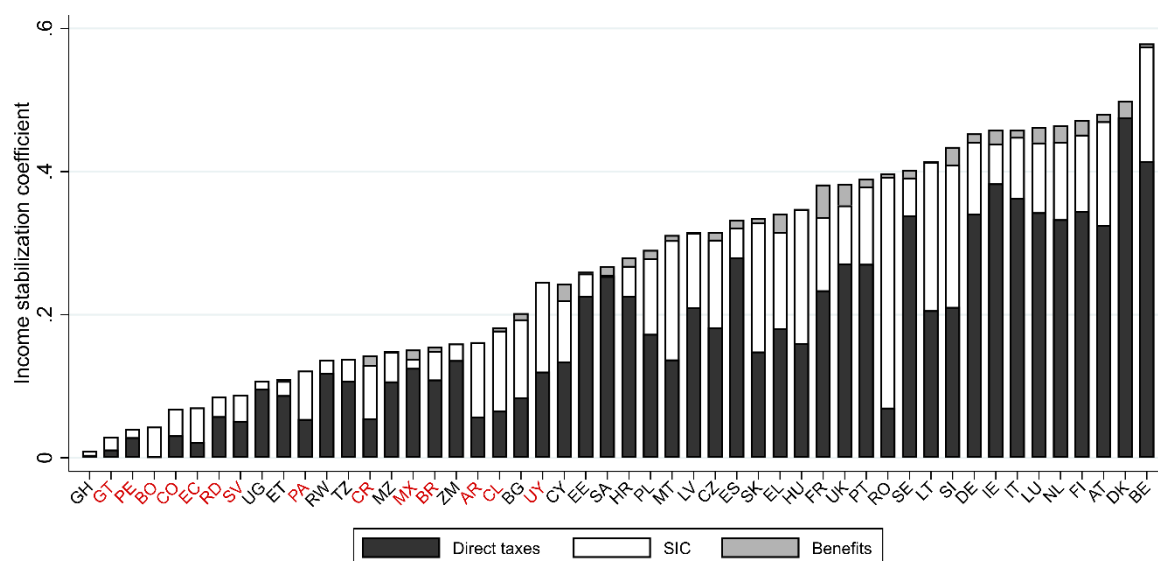
Note: The income stabilization coefficient is based on a 5% reduction in earnings. Policy years refer to 2019 except in Chile (2017) and Mexico (2018). Latin American countries are presented in red.
Sources: Own calculations based on microsimulation models.

In around two thirds of countries the largest contribution to automatic stabilization comes from taxes. However, the magnitude of the contribution varies widely across countries. In particular, seven Latin American (Argentina, Bolivia, Chile, Colombia, Costa Rica, Ecuador and Peru) countries rank the lowest in terms of the contribution of direct taxes to automatic stabilization. In these countries, the contribution of taxes to automatic stabilization is lower than that of all Sub-Saharan countries, except Ghana. The limited role of direct taxes in Latin America can be explained by the design of personal income tax. In these countries, personal income tax is characterized by high tax exemption thresholds and generous tax deductions (Jara et al. 2023). This means that in practice only a small fraction of the population is liable to personal income tax. In Colombia, for example, the exempted threshold can be as high as 4 times the annualized minimum wage and expenditures in education, health and mortgage payments can be deducted from taxable income. In Bolivia, a unique tax rate of 13% applies to taxable income above the exempted threshold, which explains the small contribution of taxes to income stabilization.

An additional factor explaining the small contribution of direct taxes but also that of social insurance contributions in Latin America is the presence of informal employment. The majority of Latin American as well as Sub-Saharan African countries are characterized by high levels of informal employment meaning that only a reduced fraction of workers contributes to social security, limiting its stabilizing role.

Finally, Figure 2 shows that there is no contribution of benefits to income stabilization in most Latin American and Sub-Saharan African countries. As the main cash transfer programs in these countries are proxy means-tested rather than income-tested, entitlement to benefits is based on a composite index comprising household conditions and characteristics other than income. Thus, as entitlement depends on the ranking of households according to the composite index and not directly on income, benefit entitlements do not automatically adjust to cushion income losses (Gasior, Tasseva et al. 2022, Jara et al. 2022). Moreover, benefit eligibility is assessed over long periods of time, when administrative data is collected to update the composite index. Thus, although providing an important redistributive and poverty reducing role, proxy means-tested cash transfers do not act as income stabilizers in low- and middle-income countries.

5. Conclusions

This paper complements the analysis by Lustig et al. (2023a), by assessing the performance of tax-benefit systems in 50 countries across LAC, Europe and SSA, focusing on three welfare dimensions: (i) redistribution in terms of inequality reduction, (ii) poverty reduction, and (iii) automatic stabilization. We find that systems achieving higher poverty and inequality reduction tend to have stronger automatic stabilizers, but this varies greatly across countries due to differences in policy design. LAC countries tend to rank in the middle in terms of redistribution and poverty reduction. SSA countries generally fare worse than LAC, in particular in lowering poverty, while European countries perform better, in particular in lowering inequality. However, in terms of how effective automatic stabilizers are in protecting household incomes from earnings losses, LAC countries are on par with SSA, and lag behind most European countries. This is despite LAC higher tax revenues and spending on transfers (as % of GDP) than most SSA countries (see UNU-WIDER, 2023 and ILO, 2021). The limited responsiveness of LAC and SSA tax-benefit systems to changes in household earnings is due to the design of policies – i.e. the prevalent use of proxy means-testing, instead of income assessment, and high tax exemption thresholds – which, combined with the large informal sector in these regions, limit the effectiveness of automatic stabilizers.

Strengthening the revenue raising capacity of LAC and SSA countries and scaling up systems to increase their reach among informal workers are important strategies to strengthen the redistributive role of tax-benefit systems. Moreover, our results demonstrate that rethinking and simplifying the design of policies, e.g. by moving away from proxy means-testing to income-testing as used widely in European countries, is key to building strong automatic stabilizers that improve households' resilience to negative shocks.

By leveraging tax-benefit microsimulation models with household survey data for a large number of countries, we provide novel insights into the performance of tax-benefit systems across different regions of the world. Our approach allows us to evaluate the size of automatic stabilizers by simulating a hypothetical earnings shock, abstracting from other changes in the economy, population or policy that may occur during an actual episode of crisis. Furthermore, the use of comparable, harmonized tax-benefit models and survey data allows us to make meaningful comparisons across countries enabling cross-country policy learning. The wide availability and easy access to these models by researchers and policy analysts are crucial steps to understanding and improving the design of tax-benefit policies.

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Appendix

Table A1. Data and microsimulation models

| Country	Country abbreviation	Model	Survey data	Data year	Policy year
Latin America					
Argentina	AR	Latinmod-Argentina	Encuesta de Ingresos y Gastos de los Hogares (ENGHO)	2019	2019
Bolivia	BO	BOLMOD	Encuesta de Hogares	2019	2019
Brazil	BR	BRASMOD	Pesquisa Nacional por Amostra de Domicílios (PNAD)	2019	2019
Chile	CL	CHILMOD	Encuesta de Caracterización Socioeconómica Nacional (CASEN)	2017	2017
Colombia	CO	COLMOD	Gran Encuesta Integrada de Hogares (GEIH)	2019	2019
Costa Rica	CR	CRIMOD	Encuesta Nacional de Hogares	2019	2019
Dominican Republic	RD	DOMINMOD	Encuesta Nacional Continua de Fuerza de Trabajo	2019	2019
Ecuador	EC	ECUAMOD	Encuesta Nacional de Empleo, Desempleo y Subempleo (ENEMDU)	2019	2019
El Salvador	SV	SALVAMOD	Encuesta de Hogares de Propósitos Múlriples	2019	2019
Guatemala	GT	GUAMOD	Encuesta Nacional de Empleo e Ingresos (ENEI)	2019	2019
Mexico	MX	MEXMOD	Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIG)	2018	2018
Panama	PA	PANAMOD	Encuesta de Propósitos Múltiples	2019	2019
Peru	PE	PERUMOD	Encuesta Nacional de Hogares (ENAHO)	2019	2019
Uruguay	UY	Latinmod-Uruguay	Encuesta Continua de Hogares (ECH)	2019	2019
Sub-Saharan Africa					
Ethiopia	ET	ETMOD	Ethiopia Socioeconomic Survey, Wave 3 (ESS3) 2018- 2019	2019	2019
Ghana	GH	GHAMOD	The Ghana Living Standards Survey (GLSS7)	2017	2019
Mozambique	MZ	MOZMOD	Inquérito sobre Orcamento Familiar 2014-2015	2015	2019
Rwanda	RW	RWAMOD	Rwanda, Integrated Household Living Conditions Survey, Wave 5, Cross-Sectional Sample, 2016-2017	2017	2019
South Africa	SA	SAMOD	National Income Dynamics Study (NIDS)	2017	2019
Tanzania	TZ	TAZMOD	Household Budget Survey 2017-2018	2018	2019
Uganda	UG	UGAMOD	Uganda National Household Survey (UNHS) 2019/2020	2020	2019
Zambia	ZM	MicroZAMOD	Living Conditions Monitoring Survey 2015	2015	2019

Table A1. Data and microsimulation models (continuation)

Country	Country abbreviation	Model	Survey data	Data year	Policy year
Europe					
Austria	AT				
Belgium	BE				
Bulgaria	BG				
Croatia	HR				
Czechia	CZ				
Denmark	DK				
Estonia	EE				
Finland	FI				
France	FR				
Germany	DE				
Greece	EL				
Hungary	HU				
Ireland	IE	EUROMOD	EU Statistics on Income and Living Conditions (EU-SILC)	2019	2019
Italy	IT				
Latvia	LV				
Lithuania	LT				
Luxembourg	LU				
Malta	MT				
Netherlands	NL				
Poland	PL				
Portugal	PT				
Romania	RO				
Slovakia	SK				
Slovenia	SI				
Spain	ES				
Sweden	SE				
United Kingdom	UK	UKMOD	Family Resources Survey (FRS)	2019	2019

Source: Own elaboration based on models' Country Reports.

Figure A1. Relationship between the redistribution, poverty reduction and automatic stabilization of tax-benefit policies – Pensions as deferred income
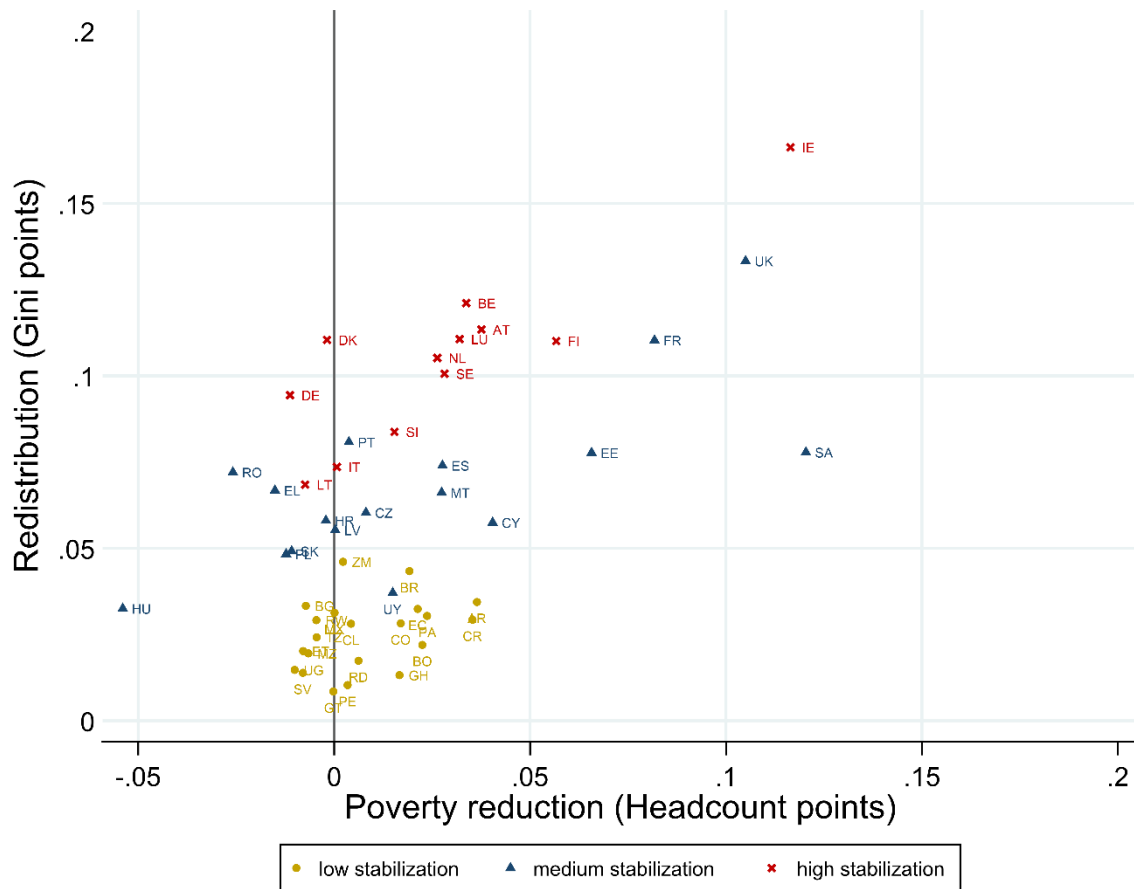
Note: Redistribution is defined as the change in the Gini coefficient from market income, including public pensions, to disposable income. Poverty reduction is defined as the change in the poverty headcount from market income plus pensions to disposable income (poverty lines: 5.5 US$ per day for Latin America, 1.9 US$ per day for Africa, and 60% of median equivalized household disposable income for Europe). Automatic stabilization is defined by the coefficient of income stabilization based on a 5% reduction in earnings. Low stabilization is defined as having a stabilization coefficient below 0.2, medium stabilization if it is above 0.2 and below 0.4, and high stabilization if it is above 0.4. Policy years refer to 2019 except in Chile (2017) and Mexico (2018).
Sources: Own calculations based on microsimulation models.