Transfer Progressivity and Aggregate Development

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MOTIVATION

What explains income per capita differences across countries? *TFP*, *K*, *H*, institutions ...

We propose transfer progressivity as a source of cross-country GDP per capita differences.

- ▷ We interpret (microfound) transfer progressivity as the result of social norms.

Main finding: Moving to optimal transfer progressivity increases income p.c. by 56%.

OUR CONTRIBUTION

(1) Empirical cross-country (across time and space) evidence on:

(1.1) Transfer progressivity decreases with GDP per capita.
(cross-sec data per country)

(1.2) Consumption insurance decreases with GDP per capita.
(micro panel data per country)

Our measure of transfers includes formal (public) + informal (private). E.g., we include food transfers across households (large for the poor).

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(2) Build an OLG model w/ heterogeneous agents (in permanent skills and shocks) that consume, work, accumulate physical and human capital (LBD).

(2.1) Show that transfer progressivity $\phi(Y)$ can explain the behavior of consumption insurance across development levels.

(2.2) Quantify the effect of too much transfer progressivity on income per capita: move to optimal progressivity in poor countries increases income p.c. by 56% and welfare by 1/3.

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Relative Inequality: Malawi and US

Variance of Logs

	Malawi			U.S.	
	Rural	Urban	Full	SCF	PSID
Consumption	0.41	0.55	0.50	–	0.79
Income	0.98	1.56	1.09	0.99	0.97
Wealth	1.49	4.52	1.96	4.53	2.11

De Magalhaes and Santaeulalia-Llopis (JDE 2018) 'The Consumption, Income, and Wealth of the Poorest'.

Test of Full Risk Sharing

Full risk sharing (Townsend, 1994; Kinnan 2022), that is,

$$\frac{U_{c_i}(c_i(s^t))}{U_{c_{-i}}(c_{-i}(s^t))} = \frac{\omega_{-i}}{\omega_i}.$$

Under CRRA:

$$\ln c_i(s^t) = \frac{1}{\sigma}\left[\ln \omega_i - \overline{\ln \omega}\right] + \overline{\ln c(s^t)}.$$

Imposing $\Delta \ln \hat{c}_i(s^t) = \ln \hat{c}_i(s^t) - \ln \hat{c}_i(s^{t-1})$:

$$\Delta \ln (\hat{c}_{it}) = \phi \Delta \ln(\hat{y}_{it}) + \varepsilon_{it}$$

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Test of Full Risk Sharing: Data

22 countries with at least 2 years of representative household panel for consumption and income; 66 country-year surveys with 185,000 household observations.

- Poor countries (most from LSMS-ISA): Ethiopia, Uganda, Tanzania, and Malawi.
- Middle income countries: China (CHNS), Indonesia (IFLS), India (IHDS), and Mexico (MXFLS).
- Rich countries: United States (PSID) and E.U. countries (HFCN-ECB).

Consumption and Income Measurement

For poor countries, we use the new LSMS-ISA data:

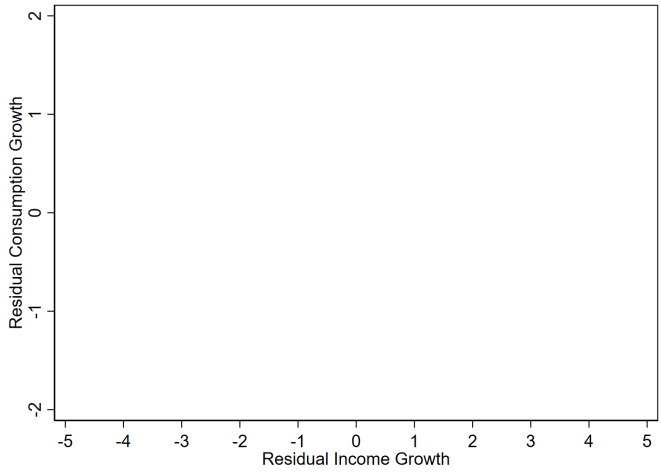
- Consumption (nondurable): Food, Clothing, Utilities, Other nondurables.

  Some obstacles: (1) value of own-produced food (prices, bucket of bananas vs. 1 kg bag of bananas, we use median prices per item-season-region.) Different from the unit conversion used at the World Bank; (2) at the gate prices (sales happen in few weeks, after harvest) vs. consumption prices; (3) and de-seasonalization for annualization.

- Income (Before Transfers): Agricultural production (by season), business income (monthly), labor income, and sources of capital income.

  Potential measurement error (e.g. recollection bias and underreporting of income).

Consumption and Income Growth Across GDP per Capita



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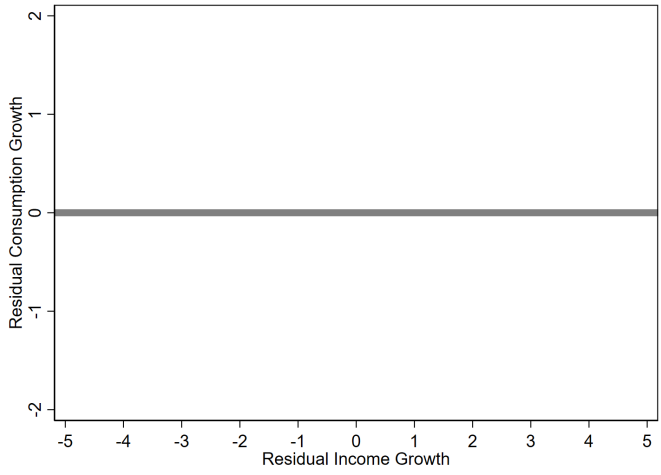

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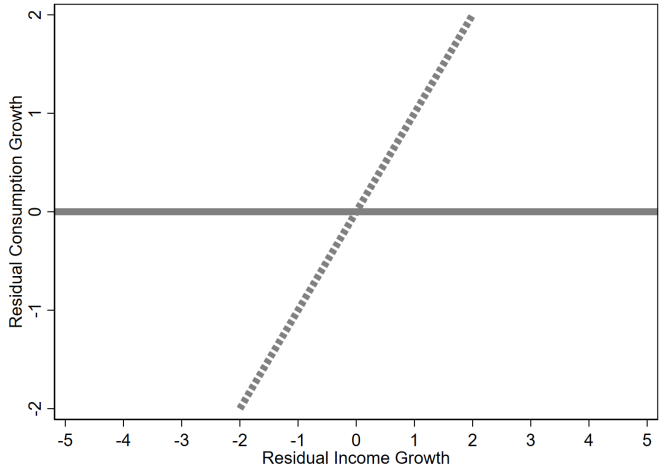

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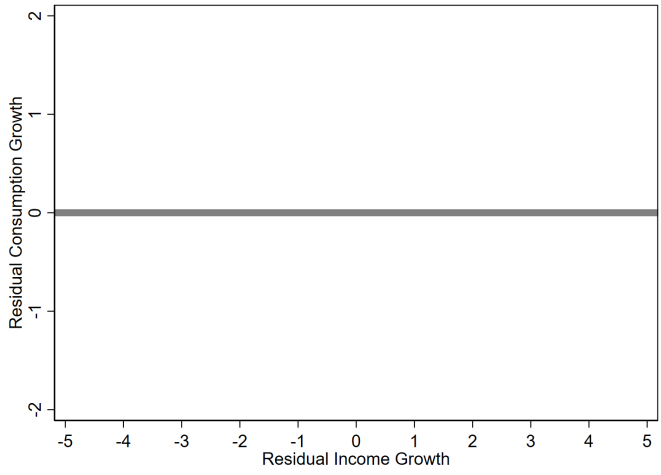

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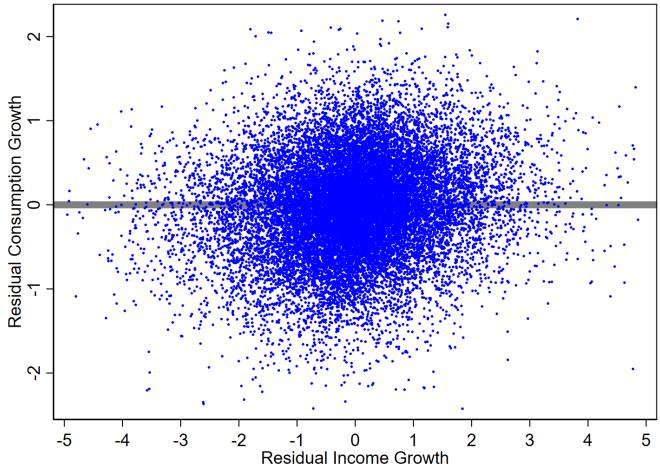

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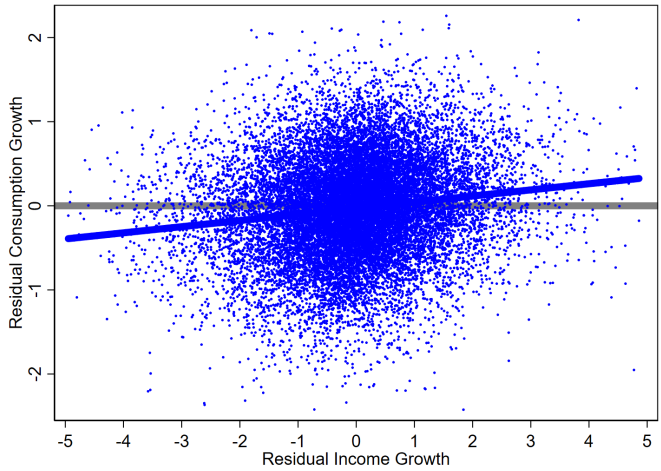

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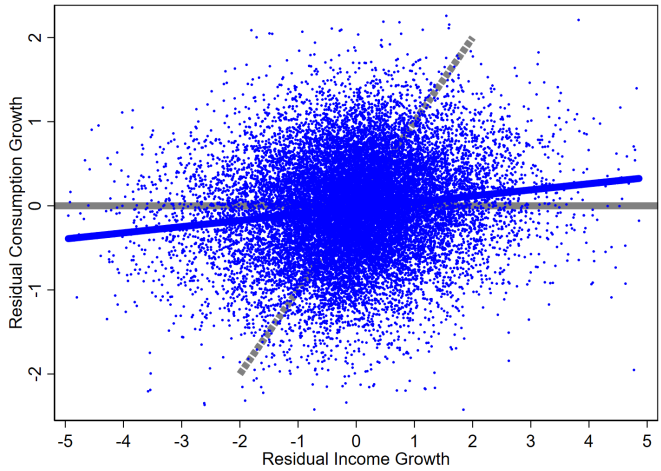

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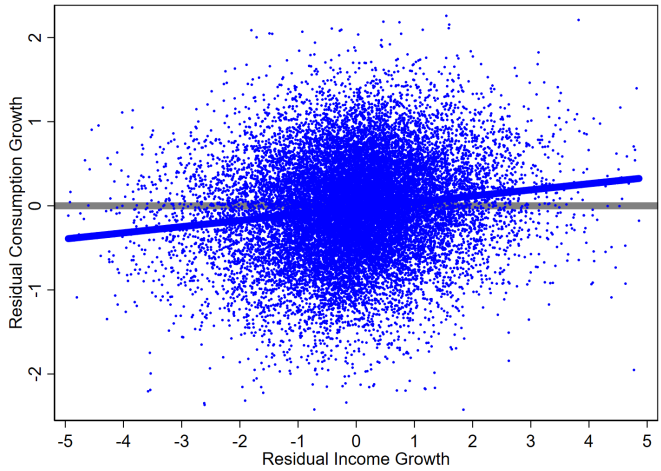

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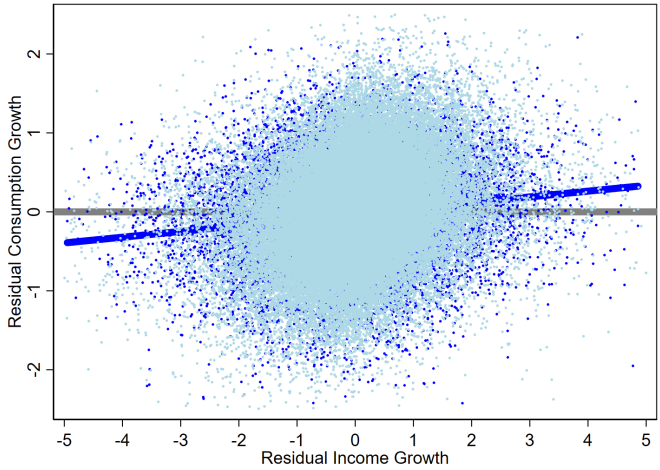

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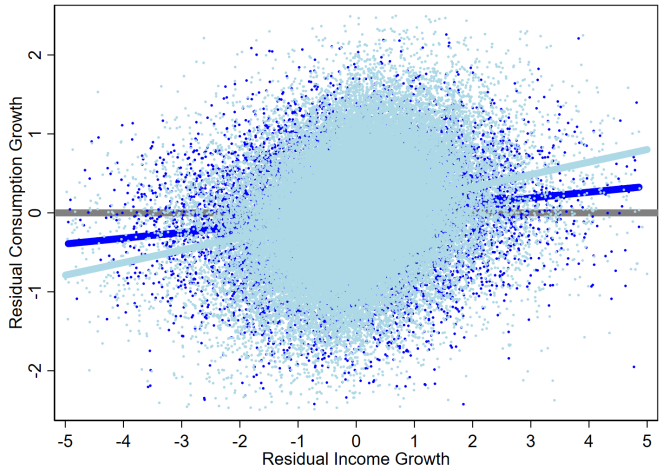

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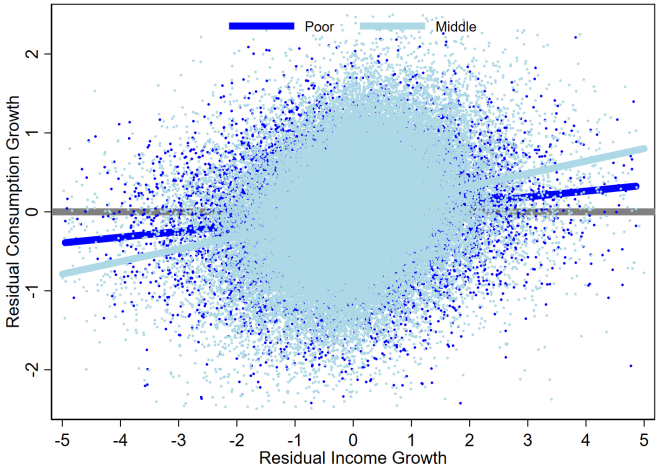

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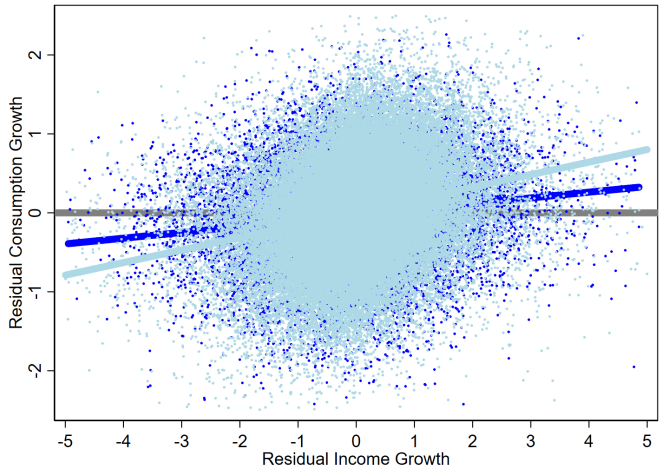

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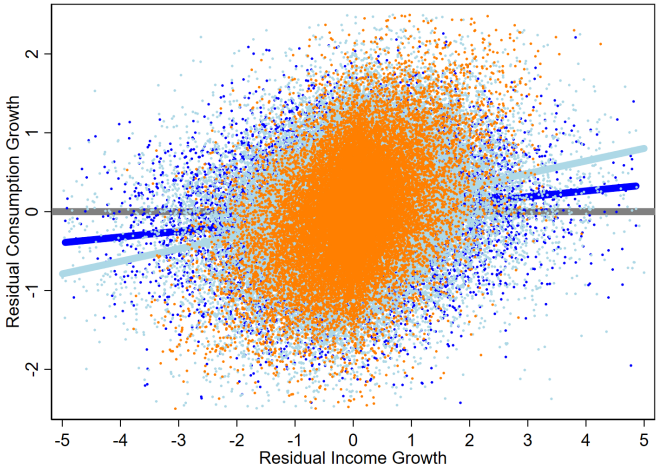

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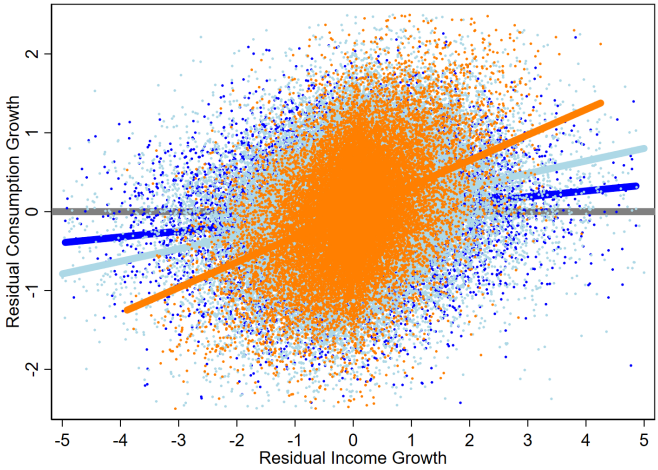

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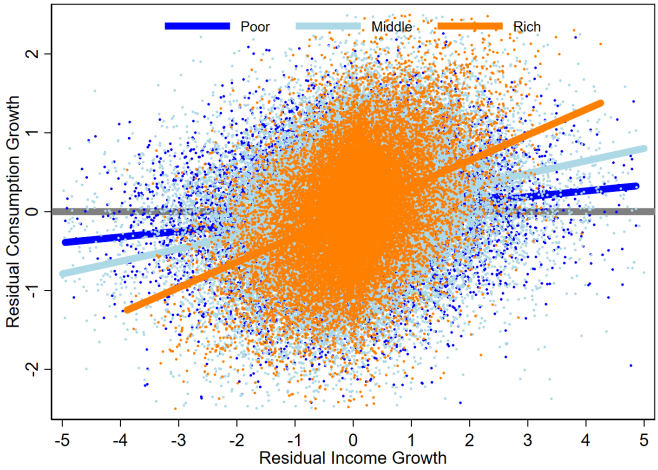

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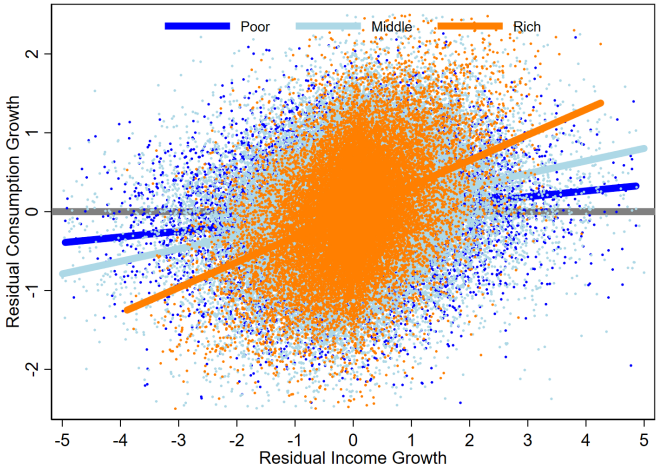

Consumption Insurance Across GDP per Capita

(a) By Country & Groups:	Poor	Middle	Rich	Ethiopia	Uganda	Tanzania	U.S.
Townsend Test	0.0992	0.1571	0.3323	0.0728	0.0493	0.0964	0.1762
	(0.0036)	(0.0022)	(0.0047)	(0.0088)	(0.0097)	(0.0094)	(0.0067)

			Townsend β			Covariances:	
						$(\Delta \ln c, \Delta \ln y)$	$(\ln c, \ln y)$
(b) Full Sample:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ln GDP p.c.	0.0176	0.0176	0.0172	0.0171	0.0167	0.0357	0.0418
	(0.004)	(0.026)	(0.029)	(0.021)	(0.098)	(0.000)	(0.000)
Country FE	No	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	No	No	Yes	Yes	Yes	Yes	Yes
Age FE	No	No	No	Yes	Yes	Yes	Yes
Household Controls	No	No	No	No	Yes	No	No
Sample: Country-Years:	66	66	66	66	63	66	81
Countries	22	22	22	22	21	22	32
Households	185,572	185,572	185,572	185,572	150,700	185,572	185,572

Associated Figures

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Associated Figures

THE IMPORTANCE OF INFORMAL TRANSFERS IN MALAWI

Rural Residency

	Quintiles				
	1st	2nd	3rd	4th	5th
	Income Sources (%)				
Labor	20	19	17	17	19
Agriculture	57	60	63	66	57
Business	3	4	5	6	14
Transfers	3	2	1	1	0
Food Gifts	17	14	12	9	3
	100	100	100	100	100

De Magalhaes and Santaeulalia-Llopis (2015 - World Bank Working Paper 7337) 'The Consumption, Income, and Wealth of the Poorest'

INFORMAL TRANSFERS AS TAXES

- Does Africa need a Rotten Kin theorem? Experimental evidence from village economies (Jakiela and Ozier - R. Stud 2015). Kenyan villagers forgo expected return to reduce that social pressure.
- The effect of social pressure on expenditures in Malawi (Goldberg - JEBO 2017): Spend quicker when paid in the presence of peers.
- Local Elites as State Capacity (Balan et al - AER 2022): Chiefs in the Congo use local information to increase tax compliance.
- The Social Tax: Redistributive Pressure and Labor Supply (Caranza - 2022): optional to hide formal labour income increases labour supply in Cote'Ivoire.

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INFORMAL TRANSFERS AS TAXES: QUALITATIVE EVIDENCE FROM VILLAGE CHIEFS IN MALAWI

- 'Explain the procedures people follow when they approach others to ask for aid'.
- 'Mostly it is not very common to approach the village head. But relatives.'[...] 'from the others, they go buy from them.'[...] We do not state the amount[...] just ask them to help'.
- 'They start to the village head.'[...] 'we just get in the house and get maize'.[...] 'piece work [ganyu] in farms to find the food.'
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ESTIMATING PROGRESSIVITY

A class of tax policies traditional in public finance (Feldstein, Benabou, HSV, etc.) defined by:

$$T(y, Y) = y\left(1 - \lambda(Y)y^{-\phi(Y)}\right), \tag{1}$$

where y is pre-tax income, $T(y, Y)$ is the total tax ($\widetilde{y} = y - T(y, Y)$ is post-tax income). The parameters to be estimated are $\lambda(Y) \geq 0$, and $\phi(Y) \geq 0$.The parameter $\lambda(Y)$ determines the net revenue and $\phi(Y)$ the degree of progressivity.

We can manipulate the equation:

$$\ln\left(\frac{\widetilde{y}}{y}\right) = \ln \lambda(Y) - \phi(Y) \ln y.$$

Transfers Measurement

We use an all-in criteria:

- Private transfers: Food gifts, cash, in-kind, adult children living elsewhere, remittances, shared input, causal labor, alimony/child support.
- Public transfers: Free food, food subsidy, input subsidy, public work-labor, food/cash for labor, scholarships, direct cash transfers, and taxes.

Transfer data is available for a sample of 13 countries.

- Food gifts (Malawi and Ethiopia)
- Subsidized work (Malawi and India)

- State and individual pensions must go on pre-transfer income (Italy)
- Personal gifts must go on pre-transfer income (USA)

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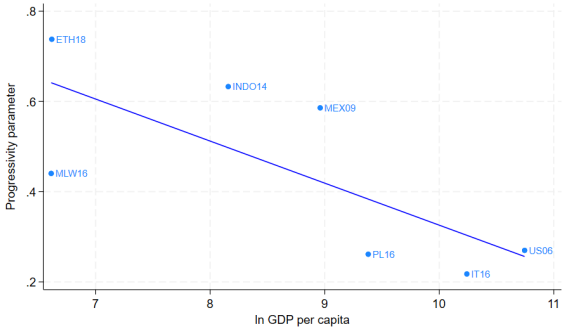
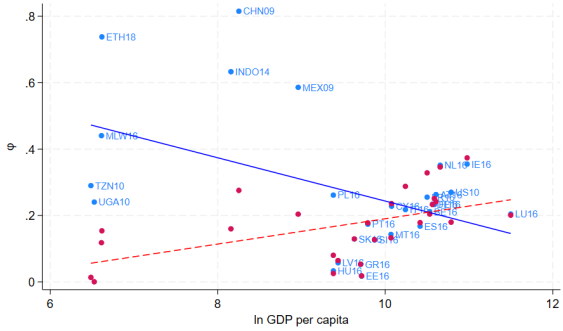


Transfer Progressivity $\phi(Y)$ vs. Government Progressivity



MODEL INGREDIENTS

An OLG economy with J generations. Heterogenous agents choose k, human capital s, and are hit with a labor productivity shock $\varepsilon \in \mathcal{E}$.

Labor income and capital income are taxed at an endogenous rate $\tau(y)$ defined as,

$$\tau(y) = 1 - \lambda y^{-\phi}. \tag{2}$$

Capital and labor demand are determined competitively by a representative firm:

$$Y = BK_t^{1-\theta} N_t^{\theta} \tag{3}$$

The tax-subsidy parameters ϕ and λ are estimated from the data. B and the parameters associated to the accumulation of human capital specific to High, middle, low income (e.g., match Lagakos et al 2018).

Lower Progressivity Reduces Social Insurance but Increases Welfare

Rich country defined by high B (20 times larger than poor countries), high $T \approx 30\%$ (versus 20% in poor countries), and low progressivity $\phi = .10$ (versus $\phi = .40$ in poor countries).

Moving poor countries to rich countries' progressivity increases the covariance between income shocks and consumption, explaining 85% of the difference between consumption insurance in rich and poor countries.

Moving poor countries to their optimal progressivity increases in income (56%) (and consumption) per capita rises welfare (by 1/3) and dominates the negative effect due to loss in insurance.

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Conclusion

1 We have documented two phenomena across levels of development:

- Transfer progressivity decreases with GDP per capita.
- Consumption insurance is negatively correlated with GDP per capita.

2 Using a quant. macro model we find that transfer progressivity is a source of cross-country income per capita differences:

Reducing progressivity to optimal levels—which takes into account the loss of insurance—the income per capita of poor countries increases by 56%.

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