

Growth, Poverty and Immiserizing Growth: Empirical Evidence

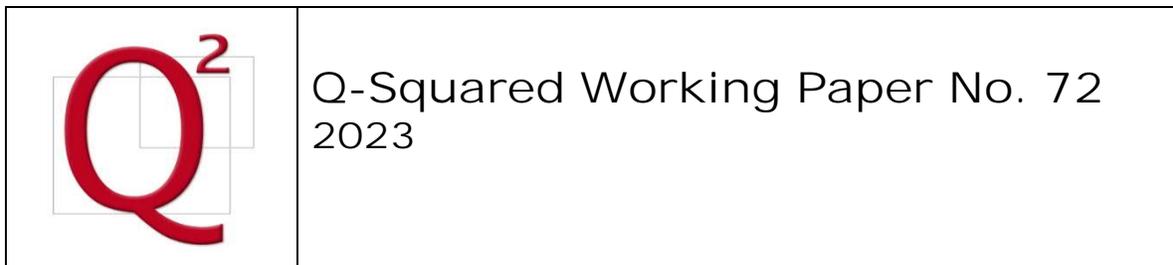
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Abstract

This study aims to bring the underexamined issue of immiserizing growth, situations where growth does not benefit the poor, to the attention of a wider audience, identifying certain of its key characteristics and potential causes. As a preliminary, the relationship between growth and poverty reduction in the Global South is re-examined using recent, comparable household survey data, different measures of growth and poverty, multiple poverty lines and time periods and detailed sensitivity analysis, to arrive at a number of stylised facts about the relationship. The article concludes with a discussion of why the focus on immiserizing growth matters.

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1. Introduction¹

There is a large literature empirically examining the relationship between growth and poverty reduction.² A headline finding from this literature is that growth reduces poverty on average, or ‘growth is good for the poor’ (Dollar and Kraay 2002; Dollar et al. 2013). Another finding from this literature which has received less attention is that there are outliers or instances where growth does not reduce poverty, referred to as cases of immiserizing growth (Shaffer et al. 2019). Immiserizing growth has not received its due attention in the academic literature, dwarfed by this prevailing narrative that ‘growth is good for the poor’.

The primary objective of this article is to bring this issue of immiserizing growth to the attention of a wider audience, examining certain of its key characteristics and potential causes. To do so requires first re-examining the relationship between growth and poverty reduction. The analysis makes use of comparable household survey data only and relies on updated data, multiple poverty lines and time periods, and different measures of growth and poverty.

The article makes four main contributions to the literature. First, it provides evidence on the frequency, geographic location, occurrence over time and potential causes of immiserizing growth to arrive at stylised facts about this underexamined phenomenon. Second, it relies on comparable household survey only, drawing on a recently compiled list by the World Bank (World Bank 2019). This is important as virtually all previous Growth (semi) Elasticities of Poverty (G(s)EP) were based, in part, on incomparable data. Third, it updates previous estimates of G(s)EPs based on the recently released 2017 PPP conversions of income and consumption data. Fourth, it extends the typical estimation of growth (semi) elasticities of poverty by conducting detailed sensitivity analysis to determine if results are sensitive to outliers, measurement error, reverse causation and ‘construct correlation’.

The format of the paper is as follows: Section 2 discussion specification, estimation and data issues. Sections 3 and 4 present results of analyses of the growth/poverty relationship and of immiserizing growth, respectively. Section 5 concludes.

2. Specification, Estimation and Data

This analysis of the relationship between growth and poverty uses different poverty and growth measures, poverty lines, growth and poverty ‘spells’, or time periods over which growth and poverty are calculated, and accordingly, calculates different growth (semi) elasticities of poverty. Specifically:

- i. poverty is represented as poverty incidence (at different poverty lines) and as (growth in) levels of income or consumption expenditure corresponding to the bottom ten, twenty and forty per cent of the distribution³;
- ii. growth is measured by changes in survey mean consumption or income, by Gross Domestic Product (GDP) per capita and at times, by final household consumption per capita from the national accounts (all adjusted using 2017 Purchasing Power Parity (PPP) conversion factors);
- iii. three poverty lines are used, \$2.15/day, \$3.65/day and \$6.85/day in 2017 PPP terms, which arguably correspond to extreme poverty thresholds in low income, lower-middle income and

¹ This article is an updated, revised and expanded version of materials to appear in Shaffer (2023).

² Contributions include Ravallion (2001), Besley and Burgess (2003), Dollar and Kraay (2002), Adams (2004), Foster and Székely (2008), Chambers and Dhongé (2011), Balakrishnan et al. (2013), Dollar et al. (2016) among others.

³ Data on income or consumption shares were converted to levels in order to facilitate interpretation of results.

- upper-middle income countries, respectively (Jolliffe and Prydz 2016), alongside a fourth hybrid poverty line which assigns these poverty lines to a country’s corresponding income status⁴;
- iv. three non-overlapping⁵ country spells of different duration are presented, namely spells of at least five years duration, spells of at least ten years duration and the longest available country spell of at least ten years duration.

Following the notation in Ravallion (2012), the G(s)EP models in section 3 takes the following form:

$$g(P_{it}) = \alpha_i + \beta g(\mu_{it-\tau}) + \varepsilon_{it} \tag{1}$$

where g represents the annualized growth (positive or negative) of poverty, P , for country i at time t as a function of the annualized growth (positive or negative), g , of mean income or consumption expenditure, μ , over a spell of duration τ . α denotes country-specific effects, while ε is a country and time-specific error term. The coefficient β is either the Growth Elasticity of Poverty (GEP), or the percentage change in poverty associated with a one percent change in growth, or the Growth semi-Elasticity of Poverty (GsEP), or the percentage point change in poverty associated with a one percent change in growth.

The model is estimated using Ordinary Least Squares (OLS) and Two Stage Least Squares (2SLS) techniques depending on the specific analysis conducted. Robust standard errors are presented, clustered by country-specific comparable surveys. Those versions of the model where poverty is represented in terms of income/consumption growth of the bottom ten, twenty and forty per cent are log-transformed whereas those models relying on poverty incidence have left the original variable units untransformed to facilitate interpretation of results.

Data are from the World Bank’s Poverty and Inequality Platform and World Development Indicators databases. The sample was restricted to countries of the Global South, from 1990 until the most recent survey available (as of 16 May 2023). Countries were excluded if poverty incidence was below one per cent at the beginning or end of a spell. Because of this one percent rule, the country spell sample size increases as higher poverty lines are used. Specifically, as one raises the poverty line from \$2.15/day to \$6.85/day, an increasing number of countries have poverty rates of at least one percent. Table 1 presents the number of country spell observations for the five-year, ten-year and long spells at poverty lines of \$2.15/day, \$3.65/day and \$6.85/day, respectively.

Table 1 Observations per Country Spell

Poverty Line	Spell Duration		
	5 Year	10 Year	Long
\$2.15/day	160	51	44
\$3.65/day	187	60	50
\$6.85/day	197	66	54

⁴ The analysis using hybrid poverty lines is approximative in that country income status is based on the most recent GDP per capita data, and not on spell-specific time periods.

⁵ Spells are non-overlapping in the sense that end-date of spell $t-1$ is also the beginning date of spell t .

3. The Growth/Poverty Relationship

3.1 Growth Semi-elasticities of Poverty

Table 2 presents the results of growth semi elasticities of poverty for multiple poverty lines and spells (as detailed in section 2). Growth is expressed in terms of GDP per capita and survey mean income or consumption expenditure. There are three main findings. First, results provide strong support for the view that growth reduces poverty on average. All twenty-four models are signed negatively and are statistically significant, with p-values of 0.05 or less. The scattergrams in figure 1 visually depict these relationships. Second, coefficient values of survey mean growth typically range from around -0.2 to -0.4, indicating that a one percent increase in the rate of growth is associated with a 0.2 to 0.4 percentage point reduction in poverty incidence. The comparable range for GDP per capita is lower from around -0.1 to -0.25. Third, the R-squared values for survey mean income or consumption are generally high, ranging in most cases from 0.5 to 0.65, indicating that growth 'explains' between 50% and 65% of the variation in poverty incidence (R-squared values at the \$6.85 poverty line are lower). R-squared values are considerably lower for GDP per capita, ranging in most cases between 0.1 and 0.35.

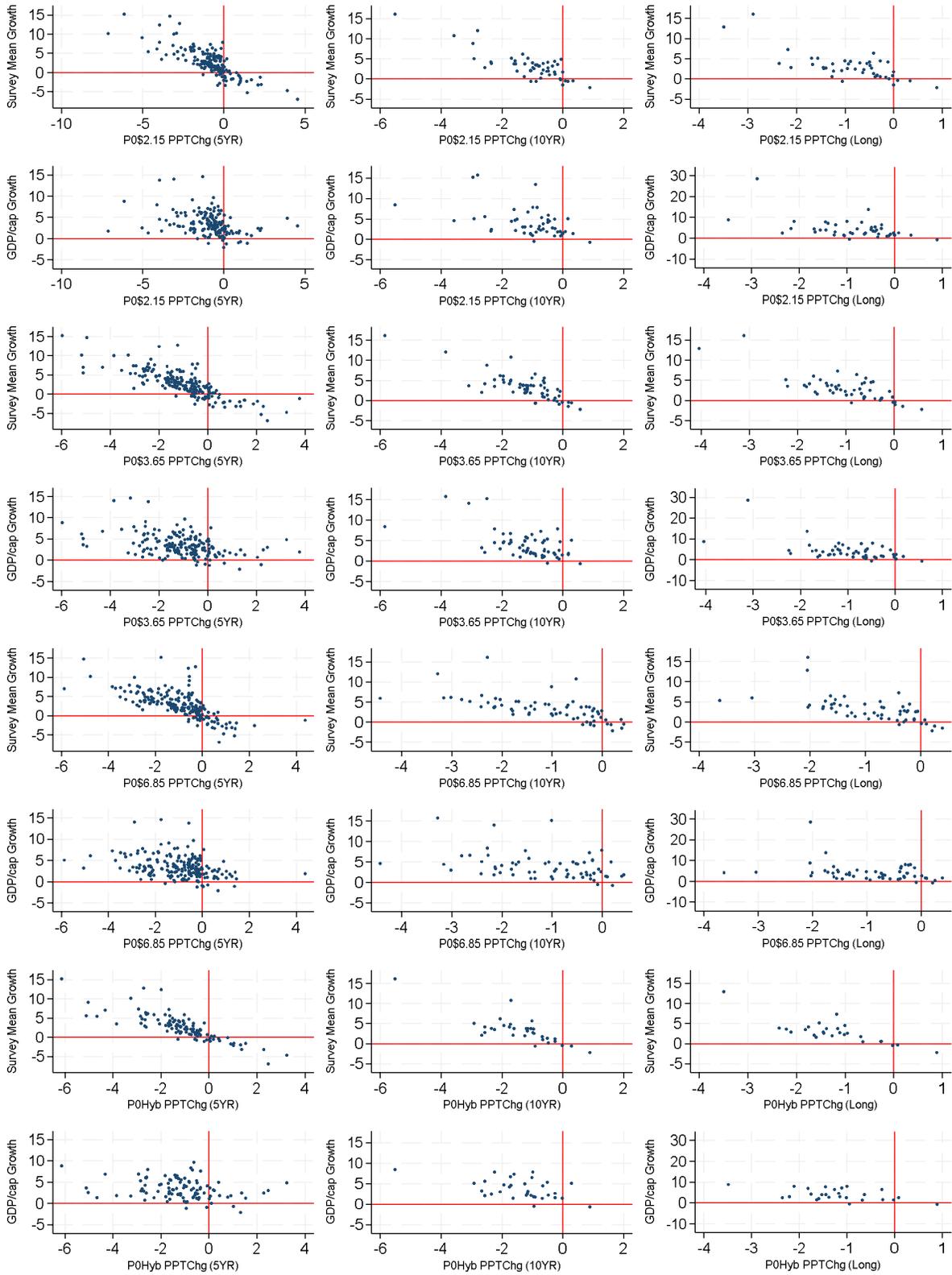
Table 2 Growth Semi-Elasticities of Poverty

	P0\$2.15 PPTChg (5YR)	P0\$2.15 PPTChg (5YR)	P0\$2.15 PPTChg (10YR)	P0\$2.15 PPTChg (10YR)	P0\$2.15 PPTChg (Long)	P0\$2.15 PPTChg (Long)
VARIABLES						
Survey Mean Growth	-0.334*** (0.0300)		-0.277*** (0.0282)		-0.195*** (0.0281)	
GDP/cap Growth		-0.180*** (0.0446)		-0.160*** (0.0433)		-0.0947*** (0.0211)
Constant	0.0409 (0.0918)	-0.276 (0.187)	-0.183* (0.108)	-0.413** (0.167)	-0.291** (0.109)	-0.455*** (0.133)
Observations	160	156	51	51	44	44
R-squared	0.620	0.104	0.670	0.243	0.554	0.267
	P0\$3.65 PPTChg (5YR)	P0\$3.65 PPTChg (5YR)	P0\$3.65 PPTChg (10YR)	P0\$3.65 PPTChg (10YR)	P0\$3.65 PPTChg (Long)	P0\$3.65 PPTChg (Long)
VARIABLES						
Survey Mean Growth	-0.328*** (0.0260)		-0.264*** (0.0361)		-0.201*** (0.0298)	
GDP/cap Growth		-0.230*** (0.0337)		-0.188*** (0.0327)		-0.105*** (0.0194)
Constant	-0.120 (0.0798)	-0.248* (0.140)	-0.323*** (0.114)	-0.432*** (0.126)	-0.393*** (0.0896)	-0.545*** (0.109)
Observations	187	183	60	60	50	50
R-squared	0.641	0.186	0.635	0.350	0.601	0.319
	P0\$6.85 PPTChg (5YR)	P0\$6.85 PPTChg (5YR)	P0\$6.85 PPTChg (10YR)	P0\$6.85 PPTChg (10YR)	P0\$6.85 PPTChg (Long)	P0\$6.85 PPTChg (Long)
VARIABLES						
Survey Mean Growth	-0.259*** (0.0308)		-0.214*** (0.0463)		-0.164*** (0.0343)	
GDP/cap Growth		-0.167*** (0.0343)		-0.124*** (0.0260)		-0.0603*** (0.0159)
Constant	-0.246*** (0.0870)	-0.402*** (0.137)	-0.398*** (0.133)	-0.638*** (0.148)	-0.412*** (0.102)	-0.681*** (0.130)
Observations	197	192	66	65	54	53
R-squared	0.469	0.115	0.399	0.144	0.378	0.097
	POHyb PPTChg (5YR)	POHyb PPTChg (5YR)	POHyb PPTChg (10YR)	POHyb PPTChg (10YR)	POHyb PPTChg (Long)	POHyb PPTChg (Long)
VARIABLES						
Survey Mean Growth	-0.371*** (0.0377)		-0.277*** (0.0483)		-0.251*** (0.0394)	
GDP/cap Growth		-0.169** (0.0724)		-0.237** (0.103)		-0.158** (0.0691)
Constant	-0.170* (0.0955)	-0.604** (0.281)	-0.480*** (0.160)	-0.500 (0.342)	-0.489*** (0.145)	-0.573* (0.315)
Observations	104	102	33	33	26	26
R-squared	0.693	0.068	0.640	0.235	0.644	0.235

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure 1 Growth and Poverty Incidence



3.2 Growth Elasticities of Poverty

Table 3 presents the results of growth elasticities of poverty for different population groups (the bottom 10%, 20% and 40%) and spells. Growth is expressed in terms of (the log of) GDP per capita and (the log of) survey mean income or consumption expenditure. Three core findings emerge. First, once again, results provide strong support for the view that growth reduces poverty on average. All eighteen models are signed positively. In all but one case, p-values are below 0.01 (the exception is the long spell using GDP per capita and the bottom 10%). The scattergrams in figure 2 visually depict these relationships. Second, coefficient values of survey mean growth are very high ranging from around 0.8 to 0.95, indicating that a one percent increase in the rate of growth is associated with a 0.8 to 0.95 percent increase in the income or consumption expenditure of the population group in question. The comparable range for GDP per capita is lower, falling between 0.3 and 0.6. Third, the R-squared values are much lower than those associated with growth semi elasticities of poverty, presented in section 3.1. In most cases, the values for survey mean income or consumption and GDP per capita range from around 0.2 to 0.7 and 0.03 to 0.2, respectively.

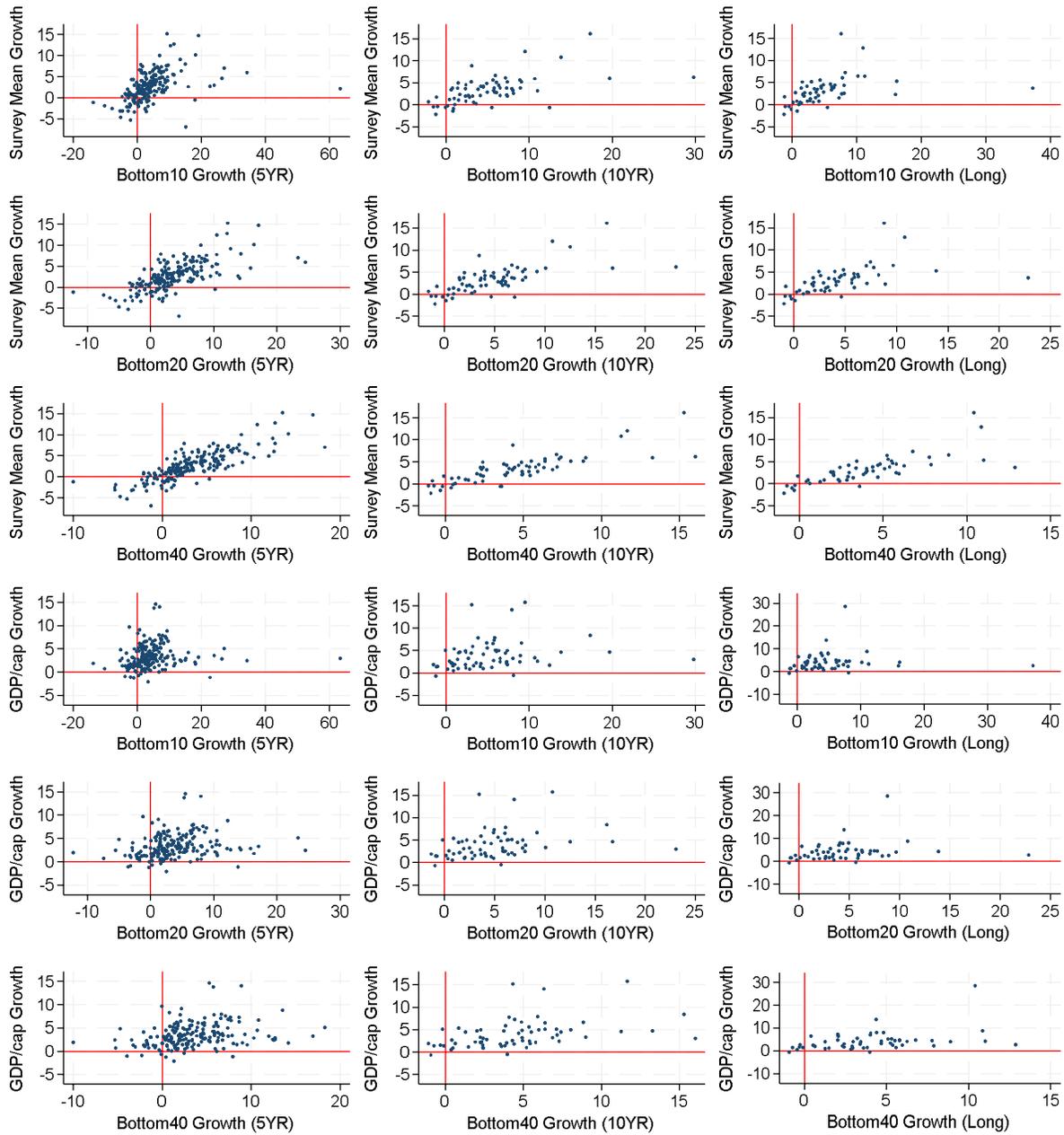
Table 3 Growth Elasticities of Poverty (logged values)

	Bottom10 Growth (5YR)	Bottom10 Growth (5YR)	Bottom20 Growth (5YR)	Bottom20 Growth (5YR)	Bottom40 Growth (5YR)	Bottom40 Growth (5YR)
VARIABLES						
Survey Mean Growth	0.900*** (0.158)		0.928*** (0.108)		0.951*** (0.0703)	
GDP/cap Growth		0.466*** (0.153)		0.483*** (0.127)		0.514*** (0.108)
Constant	0.0104* (0.00571)	0.0181*** (0.00658)	0.00759** (0.00382)	0.0152*** (0.00518)	0.00588** (0.00251)	0.0129*** (0.00423)
Observations	196	191	196	191	196	191
R-squared	0.248	0.034	0.434	0.060	0.630	0.095
	Bottom10 Growth (10YR)	Bottom10 Growth (10YR)	Bottom20 Growth (10YR)	Bottom20 Growth (10YR)	Bottom40 Growth (10YR)	Bottom40 Growth (10YR)
Survey Mean Growth	0.869*** (0.147)		0.896*** (0.112)		0.917*** (0.0791)	
GDP/cap Growth		0.469*** (0.155)		0.519*** (0.132)		0.576*** (0.117)
Constant	0.0143*** (0.00487)	0.0232*** (0.00633)	0.0120*** (0.00352)	0.0199*** (0.00516)	0.00973*** (0.00249)	0.0163*** (0.00435)
Observations	66	65	66	65	66	65
R-squared	0.393	0.100	0.533	0.157	0.692	0.237
	Bottom10 Growth (Long)	Bottom10 Growth (Long)	Bottom20 Growth (Long)	Bottom20 Growth (Long)	Bottom40 Growth (Long)	Bottom40 Growth (Long)
Survey Mean Growth	0.794*** (0.117)		0.799*** (0.0932)		0.827*** (0.0717)	
GDP/cap Growth		0.307* (0.154)		0.378*** (0.132)		0.460*** (0.117)
Constant	0.0136*** (0.00329)	0.0227*** (0.00617)	0.0120*** (0.00267)	0.0191*** (0.00510)	0.00988*** (0.00209)	0.0151*** (0.00430)
Observations	54	53	54	53	54	53
R-squared	0.386	0.052	0.514	0.103	0.689	0.189

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Figure 2 Growth and Income/Consumption of the Bottom 10%, 20% and 40%



3.3 Sensitivity analysis

In this section, sensitivity analysis of the results in tables 2 and 3 is undertaken. The objective is to determine if results are robust when taking into account outliers, measurement error, reverse causation (from poverty to growth) and construct correlation, or the fact that the growth variable is constituted, in part, by the poverty variable.⁶ The analysis examines whether the sign, statistical significance or magnitude of the coefficients presented in tables 2 and 3 change when adjusting for these four sets of factors.

⁶ The robustness tests for measurement error and reverse causation draw on Ravallion (2012).

In terms of outliers, a procedure has been used which first removes very large outliers and next uses an iterative outlier weighting procedure which continues until subsequent iterations make little difference to outcomes.⁷ Results for growth semi elasticities of poverty and growth elasticities of poverty are presented in appendix tables A1 and A2, respectively. The coefficient signs and levels of statistical significance are almost identical to the analyses in tables 2 and 3 (in one instance the p-values changes from 0.05 to 0.01, while the reverse occurs once as well). In most cases there are very small differences in the size of the coefficients, though they do tend to be lower in the outlier-adjusted regressions.

To partially address measurement error associated with the use of income data, the growth (semi) elasticities of poverty are re-estimated using final consumption expenditure per capita (constant 2015 \$US) from the national accounts⁸ and consumption-based household survey data only. Appendix tables A3 and A4 present the results for the growth semi elasticities and growth elasticities, respectively. The core results in tables 2 and 3 are more sensitive to this adjustment, though all coefficient signs stay the same and overall, 34 of 42 models retain statistical significance with p values of 0.05 or less. The eight exceptions occurred when using the national accounts consumption growth measure, and six of eight, when calculating growth semi-elasticities of poverty. In fact, all of the growth semi-elasticities at the \$2.15/day poverty line lose statistical significance.

The coefficient values for survey mean growth are very similar for the growth semi-elasticities though considerably smaller for the growth elasticities of poverty which fall with the range of 0.66 and 0.85. This latter finding calls into question the alleged one-to-one relationship between overall growth and growth at the bottom of the distribution found in the literature (Dollar and Kraay 2002; Dollar et al. 2016). There is no obvious trend for national accounts consumption growth for either of the sets of elasticities.

To adjust for possible reverse causation from poverty to growth, a two-stage least squared model was estimated using the lagged spell value of GDP per capita to instrument for GDP per capita.⁹ The model was only estimated for five-year spells to ensure adequate sample size. In addition, the growth measure was restricted to GDP per capita as the lagged spell value of survey mean growth proved to be a very weak instrument (F values were below 1 in all models, with very high associated p values). By contrast, as shown in table 4, the lagged spell of GDP per capita fares well on tests of instrument validity with F values well in excess of the rule of thumb value of ten (Stock et al. 2002), and highly significant p values. Table 4 shows that growth semi elasticities of poverty for the \$3.65/day and \$6.85/day poverty lines remain statistically significant, though the GSEP at the \$2.15/day line does not. Further, all growth elasticities of poverty for the bottom 10%, 20% and 40% all lose statistical significance. Overall, then, results in tables 2 and 3 are not robust to the adjustment for reverse causation.¹⁰

⁷ More specifically, the outlier adjustment uses Stata's `rreg` command which first removes outliers whose value exceed 1 according to Cook's distance measure and subsequently employs an iterative weighting procedure, using Huber weights and biweights, which stops when changes associated with subsequent iterations fall below a tolerance value (Statacorp 2017, 2480–83).

⁸ More precisely, the national accounts consumption measure is households and non-profit institutions serving households (NPISH) final consumption expenditure per capita (constant 2015 US\$).

⁹ For spells beginning in 1990, the GDP per capita growth rate from 1985 to 1990 was used as the instrument.

¹⁰ This finding does not imply that growth is not causally relevant to poverty. In fact, the relationship is likely bidirectional, as suggested by a growing body of empirical evidence (Ravallion 2012; Marrero and Servén 2021; Thorbecke and Ouyang 2022).

Table 4 Growth Semi-Elasticities and Elasticities of Poverty, Two Stage Least Squared Estimation

VARIABLES	P0\$2.15 PPTChg (5YR)	P0\$3.65 PPTChg (5YR)	P0\$6.85 PPTChg (5YR)	Bottom10 Growth (5YR)	Bottom20 Growth (5YR)	Bottom40 Growth (5YR)
GDP/cap Growth	-0.001	-0.254***	-0.377***	0.413	0.47	0.521
	0.129	0.098	0.12	0.503	0.434	0.371
Constant	-0.929*	-0.246	0.088	0.023	0.19	0.015
	0.509	0.363	0.389	0.016	0.14	0.012
F value (Instruments)	19.11	18.56	17.66	15.24	15.24	15.24
Prob > F	0.00	0.00	0.00	0.00	0.00	0.00
Observations	130	155	163	163	163	163
R-squared	0.001	0.159	-	0.018	0.042	0.073

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The final sensitivity analysis concerned construct correlation, the fact that the growth variable is constituted, in part, by the poverty variable. The point is self-evident in the case of growth elasticities of poverty in that growth rates of the bottom 10%, 20% or 40% of the distribution comprise a portion of overall growth rates. It also applies in the case of growth semi-elasticities because evidence is strong that poverty reduction is due primarily to growth rather than redistribution (Dollar and Kraay 2002, Fosu 2017). In either case, part of the association between growth and poverty reduction is due to the fact that poverty reduction is a part of the growth construct. To address this issue, table 5 presents growth elasticities of poverty estimated on mutually exclusive population groups such that income/consumption growth of the bottom 10%, 20% and 40% is regressed on growth of the top 90%, 80% and 60%, respectively. All models are statistically significant with p values below 0.01. Accordingly, the household survey data results in table 3 are robust to the problem of construct correlation.

Table 5: Growth Elasticities of Mutually Exclusive Population Groups

VARIABLES	Bottom10 Growth (5YR)	Bottom20 Growth (5YR)	Bottom40 Growth (5YR)	Bottom10 Growth (10YR)	Bottom20 Growth (10YR)	Bottom40 Growth (10YR)
Top90 Growth (5YR)	0.858*** (0.159)			0.844*** (0.149)		
Top80 Growth (5YR)		0.848*** (0.108)			0.842*** (0.114)	
Top60 Growth (5YR)			0.725*** (0.0709)			0.752*** (0.0808)
Constant	0.0114** (0.00574)	0.00972** (0.00385)	0.0121*** (0.00261)	0.0151*** (0.00492)	0.0139*** (0.00360)	0.0158*** (0.00277)
Observations	196	196	196	66	66	66
R-squared	0.227	0.370	0.407	0.373	0.479	0.510
	Bottom10 Growth (Long)	Bottom20 Growth (Long)	Bottom40 Growth (Long)			
Top90 Growth (5YR)	0.772*** (0.116)					
Top80 Growth (5YR)		0.750*** (0.0916)				
Top60 Growth (5YR)			0.682*** (0.0702)			
Constant	0.0142*** (0.00333)	0.0134*** (0.00274)	0.0143*** (0.00233)			
Observations	54	54	54			
R-squared	0.368	0.466	0.534			

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.4 Summary

The analyses presented in sections 3.1, 3.2 and 3.3 suggest three core stylized facts about the relationship between growth and poverty reduction.

First, growth reduces poverty on average. This result was obtained in all 42 regressions in sections 3.1 and 3.2. It was statistically significant with at least a 95% confidence interval in 41 of 42 regressions (the confidence interval fell to 90% for the long spell of GDP per capita and the bottom 10% in table 3). These results were robust to outliers and construct correlation. In most cases, they were also robust to adjustments for measurement error associated with the use of income data. The main exception involved growth semi-elasticities of poverty when using national accounts consumption growth and the \$2.15/day poverty line which all lose statistical significance. On the other hand, results are generally not robust to the adjustment for reverse causation, with most models losing statistical significance.

Second, there is significant variation in the growth/poverty relationship. In the analysis presents in tables 1 and 2, coefficient values for growth (semi) elasticities of poverty are significantly lower when using GDP per capita rather than survey mean income or consumption as the growth measure. The broader literature shows other sources of variation including region (Fosu, 2009 and 2017; Kalwij and Verschoor 2007; Dollar

et al. 2016; Thorbecke and Ouyang 2022), initial inequality (Kalwij and Verschoor, 2007; Ravallion 2007, 2014), the sectoral composition of growth (Loayza and Raddatz 2010) and so on.

Third, in most cases, growth ‘explains’ a relatively small part of poverty reduction. The highest R-squared values ranged from 0.5 to 0.65 when using survey mean growth in the growth semi-elasticities and from around 0.2 to 0.7 in the growth elasticities. R-squared values were much lower when using GDP per capita ranging from 0.03 to 0.35 across all the elasticities in tables 2 and 3.

A fourth stylized fact is that there are exceptions to the positive relationship between growth and poverty reduction, specifically situations of immiserizing growth, to which we now turn.

4. Immiserizing growth

4.1 Characteristics

In this section, descriptive statistics are presented on characteristics of immiserizing growth drawing on the database discussed in section 2. An IG episode occurs if growth in either, or both, of GDP per capita and survey mean income or consumption are positive and poverty does not fall. To recall, poverty is defined in terms of poverty incidence and income or consumption growth of the bottom 10%, 20% and 40% of the distribution.

Table 6 presents information on the frequency of episodes of immiserizing growth for different poverty lines, population groups and spell lengths. There are three main points to note. First, over five-year spells, immiserizing growth occurs between 13% and 18% of the time. This falls at the lower end of previous estimates of between 15% and 30% (Shaffer 2019). Second, it is less frequent over longer time periods, occurring in around 5% to 10% of all spells. Third, the frequency tends to be quite similar for both poverty incidence and income/consumption growth of the bottom 10%, 20% and 40%, though usually slightly higher for the latter.

Table 6 Frequency of Episodes of Immiserizing Growth

	Poverty Incidence			Income/Consumption Growth Bottom 10%, 20% and 40%			
	IG	All	%	IG	All	%	
P0\$2.15 (5YR)	24	156	15.4	Bottom10 (5Year)	28	155	18.1
P0\$2.15 (10YR)	3	51	5.9	Bottom10 (10Year)	4	51	7.8
P0\$2.15 (Long)	2	44	4.5	Bottom10 (Long)	3	44	6.8
P0\$3.65 (5YR)	30	183	16.4	Bottom20 (5Year)	27	182	14.8
P0\$3.65 (10YR)	3	60	5.0	Bottom20 (10Year)	4	60	6.7
P0\$3.65 (Long)	3	50	6.0	Bottom20 (Long)	4	50	8.0
P0\$6.85 (5YR)	25	192	13.0	Bottom40 (5Year)	26	191	13.6
P0\$6.85 (10YR)	5	65	7.7	Bottom40 (10Year)	5	65	7.7
P0\$6.85 (Long)	5	53	9.4	Bottom40 (Long)	5	53	9.4

Table 7 presents data on the frequency of episodes of immiserizing growth by region. For purposes of comparison, the samples corresponding to the poverty lines of \$2.15/day, \$3.65/day and \$6.85/day (see

table 1) have been matched pairwise with the bottom 10%, 20% and 40%, respectively. Three main findings emerge. First, the regional pattern is quite sensitive to the choice of poverty line, though less so to the choice of poverty measure (the main exception is sub-Saharan Africa at \$2.15/day poverty and the bottom 10%). Second, in absolute terms, episodes of immiserizing growth occur primarily in Latin America and sub-Saharan Africa. Together, they account for 128 of the 160 occurrences in table 7. At poverty lines of \$3.65/day or greater, and population proportions of the bottom 20% or greater, a significant number of cases (18) have also occurred in the Middle East and North Africa. Third, the relative pattern is more mixed. In addition to high proportion of cases found generally in Latin America and sub-Saharan Africa, high proportions are found in East Asia and the Pacific at the lowest poverty line and in the Middle East and North Africa at higher poverty lines. Appendix tables A5 and A6 present the country list of cases at the \$3.65/day poverty line and for the bottom 20%, respectively.

Table 7 Episodes of Immiserizing Growth by Region (5 Year Spell)

	Poverty Incidence \$2.15/day Poverty Line			Income/Cons. Growth Bottom 10%		
	IG	All	%	IG	All	%
	East Asia and Pacific	4	23	17.4	4	23
Europe and Central Asia	2	9	22.2	0	9	0.0
Latin America	11	54	20.4	11	53	20.8
Middle East and North Africa	1	7	14.3	1	7	14.3
South Asia	0	13	0.0	0	13	0.0
Sub-Saharan Africa	6	50	12.0	12	50	24.0
Total	24	156		28	155	
	Poverty Incidence \$3.65/day Poverty Line			Income/Cons. Growth Bottom 20%		
	IG	All	%	IG	All	%
	East Asia and Pacific	3	30	10.0	3	30
Europe and Central Asia	1	13	7.7	0	13	0.0
Latin America	10	57	17.5	9	56	16.1
Middle East and North Africa	6	16	37.5	3	16	18.8
South Asia	0	14	0.0	0	14	0.0
Sub-Saharan Africa	10	53	18.9	12	53	22.6
Total	30	183		27	182	
	Poverty Incidence \$6.85/day Poverty Line			Income/Cons. Growth Bottom 40%		
	IG	All	%	IG	All	%
	East Asia and Pacific	4	34	11.8	3	34
Europe and Central Asia	2	14	14.3	1	14	7.1
Latin America	5	58	8.6	7	57	12.3
Middle East and North Africa	5	19	26.3	4	19	21.1
South Asia	0	14	0.0	0	14	0.0
Sub-Saharan Africa	9	53	17.0	11	53	20.8
Total	25	192		26	191	

Table 8 presents information on the occurrence of episodes of immiserizing growth by decade. Data have been weighted to account for episodes which straddle multiple decades. There are two key findings. First, in relative terms, the decade of the 1990s has had the greatest concentration of episodes hovering at around one quarter of all spells for both poverty measures. For poverty incidence, the proportion fell to around 10% in the 2000s before rising to around 19% in the most recent period. For the bottom 20%, the relative incidence in the two decades from 2000 has been quite similar. Second, in absolute terms, the number of episodes has risen slightly between the 1990s and 2010s after falling in the 2000s. When relying on the bottom 20% as the poverty measure, there has been a decline from the 1990s to the 2010s onward.¹¹

Table 8 Episodes of Immiserizing Growth by Decade (5 Year Spell)

	Poverty Incidence \$2.15/day Poverty Line			Income/Cons. Growth Bottom 10%		
	IG	All	%	IG	All	%
1990s	9.3	35.9	25.9	9.7	34.9	27.8
2000s	5.3	71.5	7.4	10.5	72.3	14.5
2010-Present	9.4	48.6	19.3	7.8	47.7	16.4
	24	156		28	155	

	Poverty Incidence \$3.65/day Poverty Line			Income/Cons. Growth Bottom 20%		
	IG	All	%	IG	All	%
1990s	10.4	37.9	27.4	9.9	36.9	26.8
2000s	7.9	82.7	9.6	9.5	82.7	11.5
2010-Present	11.7	62.3	18.8	7.6	62.3	12.2
	30	183		27	182	

	Poverty Incidence \$6.85/day Poverty Line			Income/Cons. Growth Bottom 40%		
	IG	All	%	IG	All	%
1990s	9.7	37.9	25.6	9.3	37.5	24.8
2000s	5.7	84.7	6.7	9.5	85.1	11.2
2010-Present	9.7	69.3	14.0	7.1	68.3	10.4
	25.1	192		25.9	191	

Overall then, immiserizing growth is primarily a shorter-term phenomenon, occurring in around a sixth of cases over five year spells. It is concentrated in Latin America and sub-Saharan Africa, and to some extent, in the Middle East and North Africa at higher poverty thresholds. In relative terms, it occurred with greatest frequency in the 1990s, while in absolute terms, no clear trend is evident across the different poverty measures and time periods.

¹¹ This latter finding is sensitive to the choice of population group. When using the bottom 10% or the bottom 40%, there has been an increasing trend between the 1990s and 2000s, followed by a decline.

4.2 Potential causes¹²

Making casual claims about a phenomenon like immiserizing growth is difficult. There are many potentially relevant causal variables which are interacting in ways which are hard to ascertain. Further, there may be lag periods preceding causal effects, bidirectional causality, feedback loops, causal intermediaries and so forth. These problems are compounded by missing, inadequate or poor-quality data on relevant variables.

In this context, there are severe limitations to cross-country analytical techniques to infer causation about immiserizing growth. Cross-country regressions have generally proved disappointing when applied to growth (Durlauf 2009, Rodrik 2012, Ferreira et al. 2018) or poverty reduction (Balakrishnan et al. 2013, Dollar et al. 2013), in that they typically find few statistically significant variables which are robust to specification or data. With respect to immiserizing growth, prior cross-country econometric work has found weak support for corruption, or the interaction of corruption and natural resources, as correlates of immiserizing growth, though results are sensitive to model specification (Shaffer 2023).¹³ Likewise, to date, cross-country application of techniques of Qualitative Comparative Analysis (QCA) to immiserizing growth have failed to generate sufficient conditions which are robust to model specification, and have generated many counter-intuitive findings (Shaffer 2023).¹⁴

Accordingly, the information presented here focuses on processes or mechanisms which impoverish or sustain poverty. Select micro, meso and macro-level processes have been identified. Whether or not these processes lead to episodes of immiserizing growth depends on the magnitude of their effects relative to those which reduce poverty. The analysis draws on four bodies of thought namely: literatures on poverty dynamics (including transitory poverty and poverty traps) and inclusive growth, radical traditions of scholarship and empirical country case studies.

The selection criteria for potential causes of immiserizing growth was based on two main considerations. First, there had to be a body of quality recent empirical evidence in support of the causal claims made. Second, greater weight was attached to empirical evidence presented in the context of country case studies of immiserizing growth (though some of the micro-level processes did not meet this standard). On the basis of these criteria, seven core categories of potential causes of immiserizing growth were identified.

A first potential cause found in the poverty dynamics literature involves *poverty traps*. Poverty traps have been the subject of considerable recent scholarly attention and a large theoretical and empirical literature

¹² This section draws closely on Shaffer (2023).

¹³ Specifically, models were estimated for both the occurrence of an immiserizing growth episode (probit regressions and a maximum likelihood estimator of a binary response model with endogenous regressors) and for immiserizing growth-adjusted growth elasticities of poverty (ordinary least squares and two stage least squares), using different poverty measures. Variables included measures of unemployment, sectoral employment, natural resource rents, corruption, political stability and absence of violence and so on.

¹⁴ QCA techniques aim to identify necessary and/or sufficient conditions of outcomes. In principle, they are well-suited to phenomena like immiserizing growth because they are designed to capture complex configurations of conditions. In practice, they are quite vulnerable to empirical problems of 'limited diversity' in that there may be very few or no empirical cases associated with specific configurations. Analyses conducted to date have been greatly hampered by this problem (Shaffer 2023). Schneider and Wagemann (2012) provide an excellent discussion of the issue.

has arisen.¹⁵ In the context of immiserizing growth, two types of traps are particularly germane.¹⁶ The first involves threshold-based traps due to minimum capital requirements for asset accumulation (and consequent poverty reduction). Examples include farm technologies which require minimum land sizes, minimum herd size requirements to compensate for attrition in the context of migratory herding, cash-in-advance requirements to purchase inputs in production or items of exchange, minimum levels of dietary energy intake to achieve adequate labour productivity, and so on. While threshold-based traps have been difficult to detect empirically (Mckay and Perge 2013), apparent examples include pastoralists in rural Ethiopia (Santos and Barrett 2011) and poor agricultural labourers in Bangladesh (Balboni et al. 2022).

A second type of trap concerns so-called neighbourhood effects which include ones' physical surroundings and web of social relations. Examples include geographic poverty traps, due to poor agro-ecological conditions or other features of one's physical environment (Jalan and Ravallion 2002), network-based traps with implications for access to information and social support in times of need, and group membership-based traps, where the peer group effects may contribute to the persistence of poverty (Bowles et al. 2006). Network and group membership-based poverty traps may have particularly harmful effects on population groups defined by ethnicity (South-East Asia), caste (South Asia) or Indigeneity (the Americas), who have been found to be disproportionately represented among the chronically poor in some contexts (Baulch 2011).

Radical traditions of scholarship are the source of a second set of potential causes of immiserizing growth related to *forms of dispossession*. The idea that dispossession is quite integral to economic growth has gained renewed currency in recent years in the context of David Harvey's (2005) 'accumulation by dispossession' thesis. The most important forms of accumulation by dispossession for immiserizing growth concern dispossession from land for which there is a growing body of evidence (Bush et al. 2011). Examples include, (Wehrmann 2008): i) land expropriation by the state from private, common or collective owners (for example, illegitimate appropriation of collectively owned land in peri-urban areas to facilitate urban expansion); ii) violent land acquisition (for example, illegal occupation of individual, common or collective land); iii) dispossession due to environmental degradation of land (for example, salination of irrigated land, contamination due to natural resource extraction or spillage); iv) reversal or perverse effects of land reforms (for example, large farmers illegally repossessing land, receipt of insecure property rights by land reform beneficiaries); v) unauthorised sale, or provision of usufruct rights, of common or collectively owned property (for example, land grabs in sub-Saharan Africa).

A third category of potential causes, which figures centrally in the literature on poverty dynamics, involves *violence and conflict*. There are many variants which range from wars to civil, sectarian, community or domestic conflict. Violence and conflict may serve to impoverish or perpetuate poverty by: dispossessing inhabitants of conflict zones and generating large refugee populations; reducing agricultural production and employment due to destruction of crops; killing and looting of livestock and abandonment of farms; undermining food markets due to looting and disorder; damaging informal social support networks and generally by creating an atmosphere of insecurity and uncertainty (Sinha et al. 2002). All of this may occur in the context of overall economic growth.

Violence and conflict have been central to some of the empirical cases of immiserizing growth in the literature. For example, between 2004/5 and 2011/12 in the Indian state of Chhattisgarh, income of the bottom quintile fell by around nine per cent despite rising mean income. Diwaker et al. (2019) have attributed this episode of immiserizing growth, in part, to violence associated with the Naxalite insurgency,

¹⁵ Surveys of the literature include Bowles, Durlauf and Hoff (eds) (2006), Barrett and Carter (2013), Kraay and McKenzie (2014) and Ghatak (2015).

¹⁶ Other types of traps include institutional traps (Engerman and Sokoloff 2006) and behavioural traps (Mullainathan and Shafir 2013).

itself fuelled by rents from mineral extraction. A second important example is Côte d'Ivoire which figures prominently among country cases of immiserizing growth (it appears across multiple spells and poverty definitions in appendix tables A5 and A6). A critically important factor explaining Côte d'Ivoire's experience was the civil conflict which took place from 1998 to 2012, characterised by attempted coups and political assassinations, civil war, the partition of the country in 2002 and widespread acts of political violence (Shaffer 2023). The conflict had a decided ethnic character, pitting *Akan* and *Kru* communities in the South against the Muslim *Dioula* community from the North, making reconciliation difficult. Insecurity in rural areas led to very low, and falling, crop yields, which in turn spurred rural-urban migration into the low-end service sector, increasing urban poverty. All of this occurred in the context of positive GDP per capita growth.

A fourth set of potential causes of immiserizing growth, which appears prominently in the poverty dynamics literature, concerns '*natural phenomena such as natural disasters, harvest failure, environmental degradation, pandemics and so on*' (Sinha et al. 2002). The term 'natural' is meant to denote the role of bio-physical processes and not to imply that they human action is not implicated. Natural disasters such as droughts, floods, storms, forest fires and landslides among others, may impoverish or perpetuate poverty by dispossessing inhabitants from afflicted areas, destroying livelihoods and homes, contaminating water sources, generating injury and illness and so on. Harvest failure may have the same effect by reducing income from farm production or employment, limiting food consumption as prices spike, generating nutritional deficits and illness and so forth.

Natural disasters appear in the country case study literature as well. One example is Zimbabwe where from 2011 to 2017, all poverty indicators worsened and GDP per capita was positive (see appendix tables A5 and A6). One important explanatory factor is the so-called El Niño drought of 2015–2016 which adversely affected maize production and agricultural output along with livestock production. The drought was followed by floods in 2017 which generated widespread crop losses. These natural disasters contributed directly to the rise in poverty and also interacted with other factors to impoverish population groups who were already highly vulnerable (Shaffer 2023).

A fifth category of potential causes found in the literatures on inclusive growth and poverty dynamics, addresses changes in *relative prices or the terms of trade* to the detriment of poor producers or consumers (Eastwood and Lipton 2000). Examples include declining prices of imports relative to import-competing goods produced domestically, increasing costs of purchased inputs relative to outputs in production and increasing prices of basic food items, in particular food. Price spikes of basic consumption items appear as a frequently cited factor in apparent country cases of immiserizing growth including Madagascar in the 1990s (Barrett 1998), Burkina Faso in the 1990s (Grimm and Günther 2007), Mozambique in the 2000s (Cunguara and Hanlon 2012, Arndt, Jones, and Tarp 2016) and the Dominican Republic in the 1980s (Liu et al. 2019).¹⁷

The sixth category concerns of *public action or inaction* which initiates, enables or fails to prevent processes which perpetuate or generate poverty in the context of growth. Examples include corruption (by extorting citizens and diverting public resources from better uses), reduction of minimum wages, dismantling of subsidies on basic goods, anti-poor public expenditure and/or taxation, non-enforcement of anti-corruption or anti-discrimination legislation and so on. In this context, inadequate public provisioning of health care and social protection figures centrally.

Country cases studies have illustrated many of these processes. Nigeria is sometimes regarded as a paradigmatic case of immiserizing growth and a large literature has developed on the so-called Nigerian

¹⁷ Many of these cases are absent from those which appear in appendix tables A5 and A6 as different datasets or poverty definitions have been used.

paradox of growth without poverty reduction (Dauda 2019).¹⁸ Public action and inaction are among the major reasons identified. Specifically, Dauda (2019) attributes Nigeria's poor performance to: i) widespread corruption including massive pilfering of public coffers and other forms of public malfeasance such as fraud, embezzlement, non-remittance or under-remittance of revenue; ii) non-enforcement of anti-corruption legislation; iii) underinvestment in agriculture; iv) inadequate public spending on health and education. Very low levels of spending on social assistance is a common theme of other examples of immiserizing including Côte d'Ivoire and Zimbabwe, discussed previously (Shaffer 2023), Singapore from 1978 to 1983 (Liu et al. 2019) and the Dominican Republic in the 1980s (Liu et al. 2019).

A seventh and final category of potential causes discussed in the inclusive growth literature relates to *sectoral, spatial or other dimensions of growth*. Examples include capital-intensive patterns of growth (reflected in high investment shares of GDP), enclave-based growth with few linkages to the rest of the economy, 'natural resource curse' situations and geographic poverty traps, previously discussed. A number of country case studies have documented these phenomena.

Nigeria was already discussed in the context of public action and inaction. It is also regarded as an example of the natural resource curse where oil exploration has had perverse effects through such channels as the appreciation of the exchange rate, the corruption of political processes, environmental degradation and so on (Dauda 2019). The associated problem of enclave type production, involving mineral extraction or oil, has been identified as a casual factor in Mozambique's experience of immiserizing growth in the 2000s (Dunguara and Hanlon 2012; Arndt, Jones and Tarp 2016). A final country example of low and falling rates of poverty reduction amid growth is Indonesia since the 1990s. Kim et al. (2019) attribute Indonesia's poor performance to the phenomenon of premature industrialization whereby labour is increasingly absorbed in low productivity service jobs rather than manufacturing.

These seven sets of potential causes of immiserizing growth are not meant to constitute an exhaustive account. Nevertheless, they have figured prominently in various literatures related to immiserizing growth and are supported by recent empirical evidence.

5. Conclusion

The analysis in this article was motivated by the primary objective of bringing the issue of immiserizing growth to the attention of a wider audience, examining certain of its key characteristics and potential causes. As a preliminary, it was necessary to reexamine the relationship between growth and poverty reduction in the Global South using comparable household survey data only, along with the recently released 2017 PPP adjustments of income and consumption.

The analysis of the relationship between poverty and growth arrived at four core stylised facts. First, growth reduces poverty on average. This finding holds when using different measures of growth and poverty, different poverty lines, different spell lengths and when accounting for outliers, construct correlation (the fact that growth is constituted, in part, by poverty reduction) and (usually) measurement error in the income data (the main exception involved growth semi-elasticities of poverty when using national accounts consumption growth and the \$2.15/day poverty line which all lose statistical significance). It is not robust to reverse correlation from poverty reduction to growth, when growth is instrumented by its lagged spell

¹⁸ There is some debate about the poverty data in Nigeria. It does not appear among cases of immiserizing growth in Appendix tables A5 and A6, and only one comparable spell between 2010-2015 is in the dataset. Nevertheless, some data do show increasing or stagnant levels of poverty amidst growth from the early 2000s (Dauda 2019).

value. Second, there is large variation in the growth/poverty relationship depending on the growth and poverty measure used, along with other factors found in the broader literature. Third, in most cases, growth 'explains' a relatively small part of poverty reduction, as reflected in low R-squared values. Fourth, there are outliers, or cases of immiserizing growth.

The analysis of immiserizing growth identified three of its defining characteristics. First, it is primarily a shorter-term phenomenon, occurring in around a sixth of cases over five-year spells. Second, it has been concentrated in Latin America and sub-Saharan Africa, and to some extent, in the Middle East and North Africa at higher poverty thresholds. Third, in relative terms, it occurred with greatest frequency in the 1990s, while in absolute terms, no clear trend is evident across the different poverty measures and time periods.

In terms of potential causes, seven sets of factors were identified, drawing on literatures on poverty dynamics (including transitory poverty and poverty traps) and inclusive growth, radical traditions of scholarship and empirical country case studies. I refer specifically to: i) poverty traps; ii) forms of dispossession; iii) violence and conflict; iv) 'natural' phenomena, such as natural disasters, harvest failure and environmental degradation; v) changes in relative prices or the terms of trade; vi) public action or inaction and vii) sectoral, spatial or other dimensions of growth. All of these items have figured prominently in diverse literatures and were supported by recent empirical evidence.

A final point concerns the relevance of all this. Does the analysis of immiserizing growth matter given that it is usually a shorter-term phenomenon, and that growth reduces poverty on average anyway? There are three reasons to answer in the affirmative. First, the key policy-relevant question is not whether growth reduces poverty on average (it does) but why some countries have performed better than others at reducing poverty or converting growth into poverty reduction. In this context, immiserizing growth is simply a limit case of non-inclusive or anti-poor growth. Second, immiserizing growth brings to the fore different types of issues which have not typically figured in the literature on inclusive growth, in particular those related to forms of dispossession, conflict and violence. Third, it is somewhat cold comfort to inform those who have been harmed by growth, or failed to benefit from it, for upwards of five years, that growth reduces poverty on average, over time. For all of these reasons, immiserizing growth matters.

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Appendix Tables

Table A1 Growth Semi-Elasticities of Poverty: Outlier Correction

VARIABLES	PO\$2.15 PPTChg (5YR)	PO\$2.15 PPTChg (5YR)	PO\$2.15 PPTChg (10YR)	PO\$2.15 PPTChg (10YR)	PO\$2.15 PPTChg (Long)	PO\$2.15 PPTChg (Long)
Survey Mean Growth	-0.273*** (0.0173)		-0.281*** (0.0287)		-0.199*** (0.0287)	
GDP/cap Growth		-0.169*** (0.0299)		-0.132*** (0.0326)		-0.0874*** (0.0240)
Constant	-0.0540 (0.0774)	-0.186 (0.130)	-0.141 (0.130)	-0.371** (0.172)	-0.261** (0.126)	-0.419*** (0.152)
Observations	160	156	51	51	44	44
R-squared	0.613	0.171	0.662	0.249	0.533	0.241
VARIABLES	PO\$3.65 PPTChg (5YR)	PO\$3.65 PPTChg (5YR)	PO\$3.65 PPTChg (10YR)	PO\$3.65 PPTChg (10YR)	PO\$3.65 PPTChg (Long)	PO\$3.65 PPTChg (Long)
Survey Mean Growth	-0.339*** (0.0145)		-0.249*** (0.0271)		-0.196*** (0.0256)	
GDP/cap Growth		-0.197*** (0.0293)		-0.169*** (0.0279)		-0.0923*** (0.0199)
Constant	-0.117* (0.0639)	-0.321** (0.127)	-0.299*** (0.110)	-0.440*** (0.144)	-0.395*** (0.111)	-0.527*** (0.121)
Observations	187	183	59	60	50	50
R-squared	0.747	0.200	0.598	0.387	0.550	0.309
VARIABLES	PO\$6.85 PPTChg (5YR)	PO\$6.85 PPTChg (5YR)	PO\$6.85 PPTChg (10YR)	PO\$6.85 PPTChg (10YR)	PO\$6.85 PPTChg (Long)	PO\$6.85 PPTChg (Long)
Survey Mean Growth	-0.310*** (0.0163)		-0.242*** (0.0315)		-0.154*** (0.0274)	
GDP/cap Growth		-0.145*** (0.0313)		-0.127*** (0.0384)		-0.0599** (0.0247)
Constant	-0.176** (0.0710)	-0.392*** (0.134)	-0.300** (0.143)	-0.572*** (0.195)	-0.387*** (0.120)	-0.626*** (0.148)
Observations	197	192	66	65	54	53
R-squared	0.650	0.101	0.481	0.149	0.376	0.103
VARIABLES	POHyb PPTChg (5YR)	POHyb PPTChg (5YR)	POHyb PPTChg (10YR)	POHyb PPTChg (10YR)	POHyb PPTChg (Long)	POHyb PPTChg (Long)
Survey Mean Growth	-0.395*** (0.0188)		-0.333*** (0.0315)		-0.259*** (0.0427)	
GDP/cap Growth		-0.146*** (0.0531)		-0.169** (0.0721)		-0.143** (0.0628)
Constant	-0.0721 (0.0806)	-0.604*** (0.218)	-0.231 (0.146)	-0.672** (0.316)	-0.461** (0.170)	-0.627** (0.301)
Observations	104	102	33	33	26	26
R-squared	0.812	0.070	0.783	0.151	0.605	0.178

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A2 – Growth Elasticities of Poverty: Outlier Correction

	Bottom10 Growth (5YR)	Bottom10 Growth (5YR)	Bottom20 Growth (5YR)	Bottom20 Growth (5YR)	Bottom40 Growth (5YR)	Bottom40 Growth (5YR)
VARIABLES						
Survey Mean Growth	0.853*** (0.0703)		0.900*** (0.0586)		0.936*** (0.0453)	
GDP/cap Growth		0.468*** (0.125)		0.462*** (0.114)		0.487*** (0.103)
Constant	0.00788*** (0.00259)	0.0144*** (0.00451)	0.00716*** (0.00216)	0.0151*** (0.00412)	0.00617*** (0.00167)	0.0136*** (0.00371)
Observations	196	191	196	191	196	191
R-squared	0.432	0.069	0.549	0.080	0.687	0.106
	Bottom10 Growth (10YR)	Bottom10 Growth (10YR)	Bottom20 Growth (10YR)	Bottom20 Growth (10YR)	Bottom40 Growth (10YR)	Bottom40 Growth (10YR)
VARIABLES						
Survey Mean Growth	0.867*** (0.119)		0.878*** (0.0934)		0.903*** (0.0737)	
GDP/cap Growth		0.467*** (0.168)		0.507*** (0.146)		0.565*** (0.131)
Constant	0.0119*** (0.00399)	0.0208*** (0.00614)	0.0110*** (0.00314)	0.0186*** (0.00533)	0.00940*** (0.00248)	0.0158*** (0.00480)
Observations	66	65	66	65	66	65
R-squared	0.455	0.109	0.580	0.160	0.701	0.227
	Bottom10 Growth (Long)	Bottom10 Growth (Long)	Bottom20 Growth (Long)	Bottom20 Growth (Long)	Bottom40 Growth (Long)	Bottom40 Growth (Long)
VARIABLES						
Survey Mean Growth	0.767*** (0.119)		0.777*** (0.0938)		0.822*** (0.0725)	
GDP/cap Growth		0.314* (0.176)		0.374** (0.155)		0.450*** (0.142)
Constant	0.0122*** (0.00339)	0.0209*** (0.00583)	0.0112*** (0.00268)	0.0185*** (0.00515)	0.00933*** (0.00207)	0.0152*** (0.00471)
Observations	54	53	54	53	54	53
R-squared	0.445	0.059	0.569	0.102	0.712	0.164

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A3 Growth Semi-Elasticities of Poverty (Consumption Only)

	PO\$2.15 PPTChg (5YR)	PO\$2.15 PPTChg (5YR)	PO\$2.15 PPTChg (10YR)	PO\$2.15 PPTChg (10YR)	PO\$2.15 PPTChg (Long)	PO\$2.15 PPTChg (Long)
VARIABLES						
Survey Mean Growth	-0.374*** (0.0373)		-0.289*** (0.0287)		-0.201*** (0.0336)	
National Accounts Growth		-0.0322 (0.0553)		-0.0876* (0.0475)		-0.0339 (0.0654)
Constant	0.0240 (0.122)	-1.034*** (0.276)	-0.320** (0.144)	-0.931*** (0.317)	-0.416** (0.156)	-0.921** (0.343)
Observations	106	78	33	23	30	21
R-squared	0.652	0.004	0.731	0.102	0.600	0.017
<hr/>						
	PO\$3.65 PPTChg (5YR)	PO\$3.65 PPTChg (5YR)	PO\$3.65 PPTChg (10YR)	PO\$3.65 PPTChg (10YR)	PO\$3.65 PPTChg (Long)	PO\$3.65 PPTChg (Long)
VARIABLES						
Survey Mean Growth	-0.325*** (0.0333)		-0.272*** (0.0390)		-0.209*** (0.0333)	
National Accounts Growth		-0.148*** (0.0516)		-0.198*** (0.0315)		-0.140*** (0.0425)
Constant	-0.196** (0.0938)	-0.702*** (0.209)	-0.322** (0.143)	-0.429** (0.202)	-0.413*** (0.115)	-0.548** (0.202)
Observations	126	96	41	30	35	25
R-squared	0.637	0.116	0.652	0.460	0.647	0.259
<hr/>						
	PO\$6.85 PPTChg (5YR)	PO\$6.85 PPTChg (5YR)	PO\$6.85 PPTChg (10YR)	PO\$6.85 PPTChg (10YR)	PO\$6.85 PPTChg (Long)	PO\$6.85 PPTChg (Long)
VARIABLES						
Survey Mean Growth	-0.199*** (0.0329)		-0.189*** (0.0432)		-0.160*** (0.0344)	
National Accounts Growth		-0.171*** (0.0429)		-0.234*** (0.0364)		-0.192*** (0.0557)
Constant	-0.322*** (0.0837)	-0.401** (0.166)	-0.357*** (0.129)	-0.136 (0.155)	-0.315*** (0.104)	-0.171 (0.150)
Observations	128	98	42	31	36	26
R-squared	0.363	0.176	0.375	0.458	0.390	0.278
<hr/>						
	POHyb PPTChg (5YR)	POHyb PPTChg (5YR)	POHyb PPTChg (10YR)	POHyb PPTChg (10YR)	POHyb PPTChg (Long)	POHyb PPTChg (Long)
VARIABLES						
Survey Mean Growth	-0.377*** (0.0399)		-0.286*** (0.0505)		-0.251*** (0.0400)	
National Accounts Growth		-0.0436 (0.0667)		-0.157* (0.0815)		-0.174* (0.0829)
Constant	-0.154 (0.101)	-1.101*** (0.288)	-0.460** (0.170)	-0.795** (0.353)	-0.492*** (0.152)	-0.709** (0.332)
Observations	90	69	29	22	24	18
R-squared	0.702	0.007	0.649	0.171	0.643	0.237

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A4 Growth Elasticities of Poverty (Consumption Only)

VARIABLES	Bottom10 Growth (5YR)	Bottom10 Growth (5YR)	Bottom20 Growth (5YR)	Bottom20 Growth (5YR)	Bottom40 Growth (5YR)	Bottom40 Growth (5YR)
Survey Mean Growth	0.659*** (0.174)		0.757*** (0.118)		0.841*** (0.0754)	
National Accounts Growth		0.263* (0.142)		0.286** (0.129)		0.312*** (0.116)
Constant	0.0118** (0.00546)	0.0224*** (0.00553)	0.00888** (0.00370)	0.0214*** (0.00512)	0.00639*** (0.00240)	0.0199*** (0.00470)
Observations	128	98	128	98	128	98
R-squared	0.282	0.033	0.461	0.048	0.661	0.069
VARIABLES	Bottom10 Growth (10YR)	Bottom10 Growth (10YR)	Bottom20 Growth (10YR)	Bottom20 Growth (10YR)	Bottom40 Growth (10YR)	Bottom40 Growth (10YR)
Survey Mean Growth	0.805*** (0.120)		0.821*** (0.0935)		0.851*** (0.0681)	
National Accounts Growth		0.603*** (0.177)		0.622*** (0.147)		0.640*** (0.123)
Constant	0.0112*** (0.00388)	0.0170** (0.00761)	0.0105*** (0.00322)	0.0155** (0.00644)	0.00890*** (0.00255)	0.0135** (0.00551)
Observations	42	31	42	31	42	31
R-squared	0.513	0.294	0.616	0.365	0.745	0.441
VARIABLES	Bottom10 Growth (Long)	Bottom10 Growth (Long)	Bottom20 Growth (Long)	Bottom20 Growth (Long)	Bottom40 Growth (Long)	Bottom40 Growth (Long)
Survey Mean Growth	0.742*** (0.127)		0.758*** (0.105)		0.802*** (0.0824)	
National Accounts Growth		0.450 (0.274)		0.471** (0.228)		0.510** (0.189)
Constant	0.00944** (0.00378)	0.0168* (0.00882)	0.00902*** (0.00320)	0.0156** (0.00738)	0.00780*** (0.00258)	0.0138** (0.00622)
Observations	36	26	36	26	36	26
R-squared	0.480	0.140	0.592	0.194	0.744	0.281

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A5 Country List of IG Cases, Growth Semi-Elasticities (\$3.65 Poverty Line, Annualised Change)

	Spell	Poverty (t0)	Poverty (t1)	Percentage Point Change	Survey Mean Growth	GDP/cap Growth
Five Year Spell						
Botswana	2009-2015	36.7	38.0	0.2	-3.3	2.8
Brazil	2012-2017	10.6	11.0	0.1	0.6	-1.2
Cameroon	2001-2007	55.8	58.5	0.4	-0.9	1.8
Colombia	1992-1999	23.9	38.2	2.0	-1.9	0.7
Costa Rica	2010-2015	4.1	4.4	0.1	1.5	2.7
Costa Rica	2015-2020	4.4	6.0	0.3	-2.2	0.9
Cote d'Ivoire	1992-1998	55.4	64.5	1.5	-1.6	1.2
Cote d'Ivoire	2008-2015	62.9	63.2	0.0	-0.2	3.7
Egypt	1990-1995	33.9	33.9	0.0	-0.6	1.1
Gambia, The	2015-2020	44.6	47.0	0.5	-0.1	1.4
Guatemala	2000-2006	23.4	25.2	0.3	0.4	1.2
Guatemala	2006-2014	25.2	25.9	0.1	-2.8	1.7
Honduras	2001-2006	34.0	35.1	0.2	0.3	3.0
Honduras	2011-2016	28.1	28.3	0.1	-1.0	1.7
Indonesia	1993-1998	87.5	90.7	0.6	-2.3	1.1
Iran	2013-2018	2.8	4.6	0.4	0.9	0.7
Iraq	2006-2012	2.1	2.4	0.1	1.0	4.5
Israel	2006-2012	1.2	1.5	0.1	2.8	2.1
Lao PDR	1992-1997	62.5	78.7	3.2	-4.7	4.8
Mexico	1992-1998	20.8	27.8	1.2	-3.1	1.3
Morocco	1990-1998	24.5	31.7	0.9	-1.8	1.8
Mozambique	1996-2002	91.8	92.5	0.1	1.9	7.6
Paraguay	1990-1995	4.7	23.5	3.8	-1.2	1.9
Senegal	2005-2011	70.4	71.0	0.1	0.2	0.0
Tonga	2009-2015	9.6	13.9	0.7	-3.4	2.2
Uganda	1992-1999	87.9	88.1	0.0	-0.3	5.0
Uzbekistan	1998-2003	82.3	94.6	2.5	-6.9	3.0
West Bank & Gaza	2010-2016	2.0	3.1	0.2	-0.6	3.2
Zambia	1998-2004	70.5	78.6	1.4	-3.1	2.5
Zimbabwe	2011-2017	47.9	61.6	2.3	-3.2	2.4
Ten Year Spell						
Costa Rica	2010-2020	4.1	6.0	0.2	-0.4	1.9
Guatemala	2000-2014	23.4	25.9	0.2	-1.5	1.6
Lao PDR	1992-2002	62.5	65.3	0.3	-0.6	5.1
Long						
Guatemala	2000-2014	23.4	25.9	0.2	-1.5	1.6
Iran	2005-2019	5.7	6.0	0.0	-1.0	0.4
Malawi	2004-2019	88.8	89.1	0.0	-0.4	2.6

Table A6 Country List of IG Cases, Growth Elasticities (Annualised Change)

	Spell	Bottom20 Growth	Survey Mean Growth	GDP/cap Growth
Five Year Spell				
Brazil	2012-2017	-0.3	0.6	-1.2
Burundi	2006-2013	-1.8	2.0	0.3
Cameroon	2001-2007	-1.8	-0.9	1.8
Chile	1996-2003	0.0	-1.3	2.9
Colombia	1992-1999	-7.4	-1.9	0.7
Costa Rica	2015-2020	-3.1	-2.2	0.9
Cote d'Ivoire	1992-1998	-0.7	-1.6	1.2
Eswatini	2000-2009	-0.7	0.6	3.2
Ethiopia	2004-2010	-1.2	1.4	9.7
Gambia, The	2015-2020	-2.3	-0.1	1.4
Guatemala	2000-2006	-1.4	0.4	1.2
Honduras	1991-1996	-1.0	4.3	1.3
Honduras	2001-2006	-2.9	0.3	3.0
Indonesia	1993-1998	-2.2	-2.3	1.1
Iran	2013-2018	-2.1	0.9	0.7
Lao PDR	1992-1997	-5.0	-4.7	4.8
Malawi	2004-2010	-2.9	0.7	4.1
Mexico	1992-1998	-4.1	-3.1	1.3
Morocco	1990-1998	-1.9	-1.8	1.8
Paraguay	1990-1995	-12.3	-1.2	1.9
Senegal	2005-2011	-0.2	0.2	0.0
Togo	2006-2011	-3.3	1.0	1.3
Tonga	2009-2015	-1.5	-3.4	2.2
Uganda	1992-1999	-0.9	-0.3	5.0
West Bank & Gaza	2010-2016	-0.9	-0.6	3.2
Zambia	1998-2004	-5.5	-3.1	2.5
Zimbabwe	2011-2017	-2.9	-3.2	2.4
Ten Year Spell				
Cameroon	2001-2014	-0.8	1.8	1.4
Costa Rica	2010-2020	-1.3	-0.4	1.9
Cote d'Ivoire	2002-2015	-0.8	-0.4	1.4
Lao PDR	1992-2002	-0.2	-0.6	5.1
Long				
Cameroon	2001-2014	-0.8	1.8	1.4
Cote d'Ivoire	2002-2015	-0.8	-0.4	1.4
Iran	2005-2019	-0.2	-1.0	0.4
Malawi	2004-2019	-0.3	-0.4	2.6