

# Inequality

— measurement, trends, impacts and policies

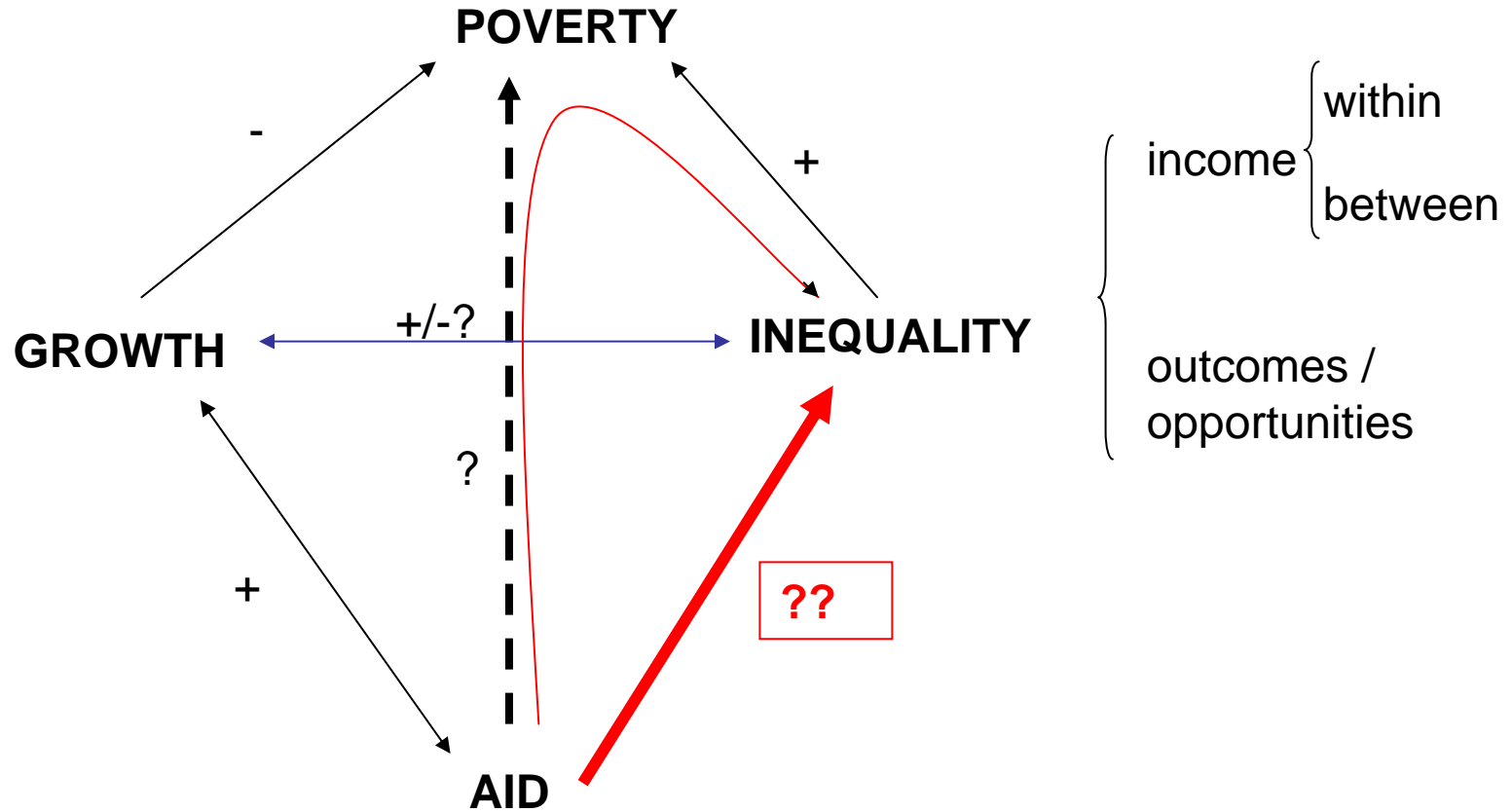


## ***Does aid reduce inequality? Evidence for Latin America***

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# MOTIVATION & FRAMEWORK

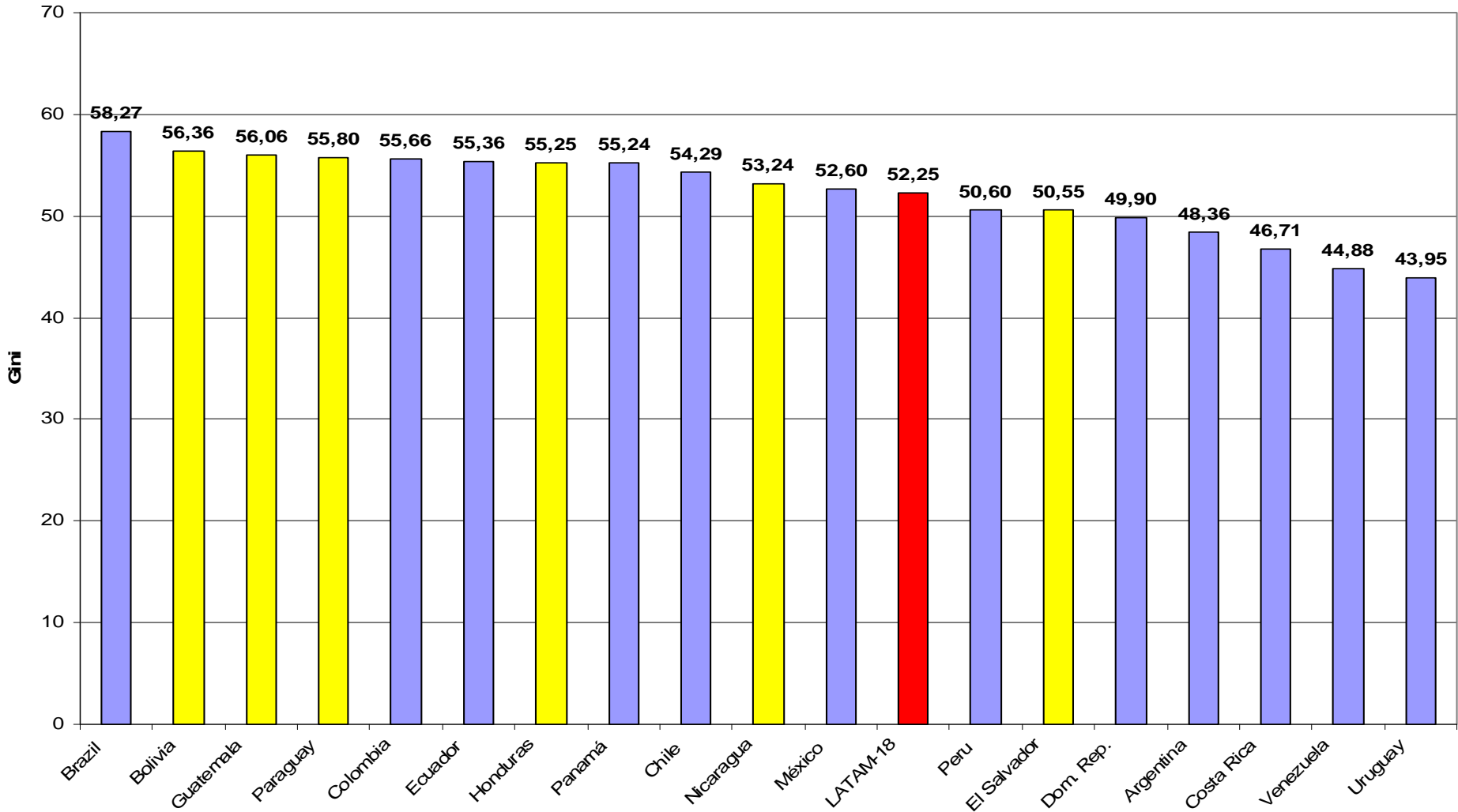


# OUTLINE

- INEQUALITY IN LATAM: LIT. REVIEW
- AID AS POSSIBLE DETERMINANT OF INEQUALITY
  - Lit. review
  - Theoretical channels
- EMPIRICAL EVIDENCE
  - Data and trends (Gini and AID/GDP)
  - Correlation analysis
  - Cross-country evidence
    - Cross-section and pooled
    - Panel data:
      - pooled OLS (triennial data)
      - -System-GMM (triennial & annual data)
- CONCLUSIONS

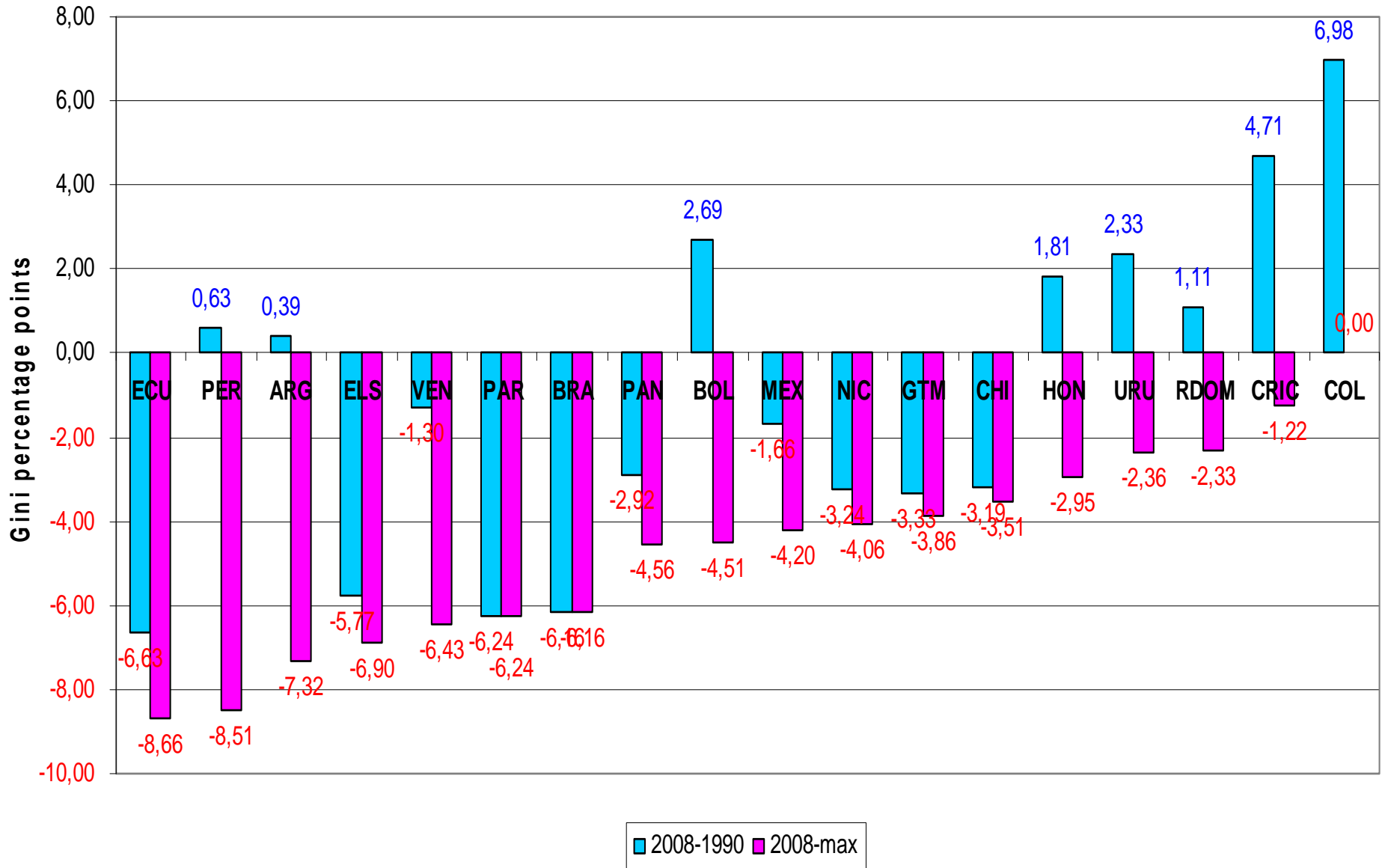
# INEQUALITY in LATAM

Average Gini 1990-2008



Lower Middle Income Countries in yellow

# Changes in Inequality: 1990-2008



# CAUSES

- Macro-policies
  - Trade openness
- Fiscal policy
  - Progressive taxation
  - Conditional cash transfers (focused)
- Lower skilled labour premium
  - Increase average years of schooling
  - Employment for low-skilled workers (*maquiladoras*)
  - Higher minimum wages
- External flows
  - FDI & remittances

# OUR SAMPLE

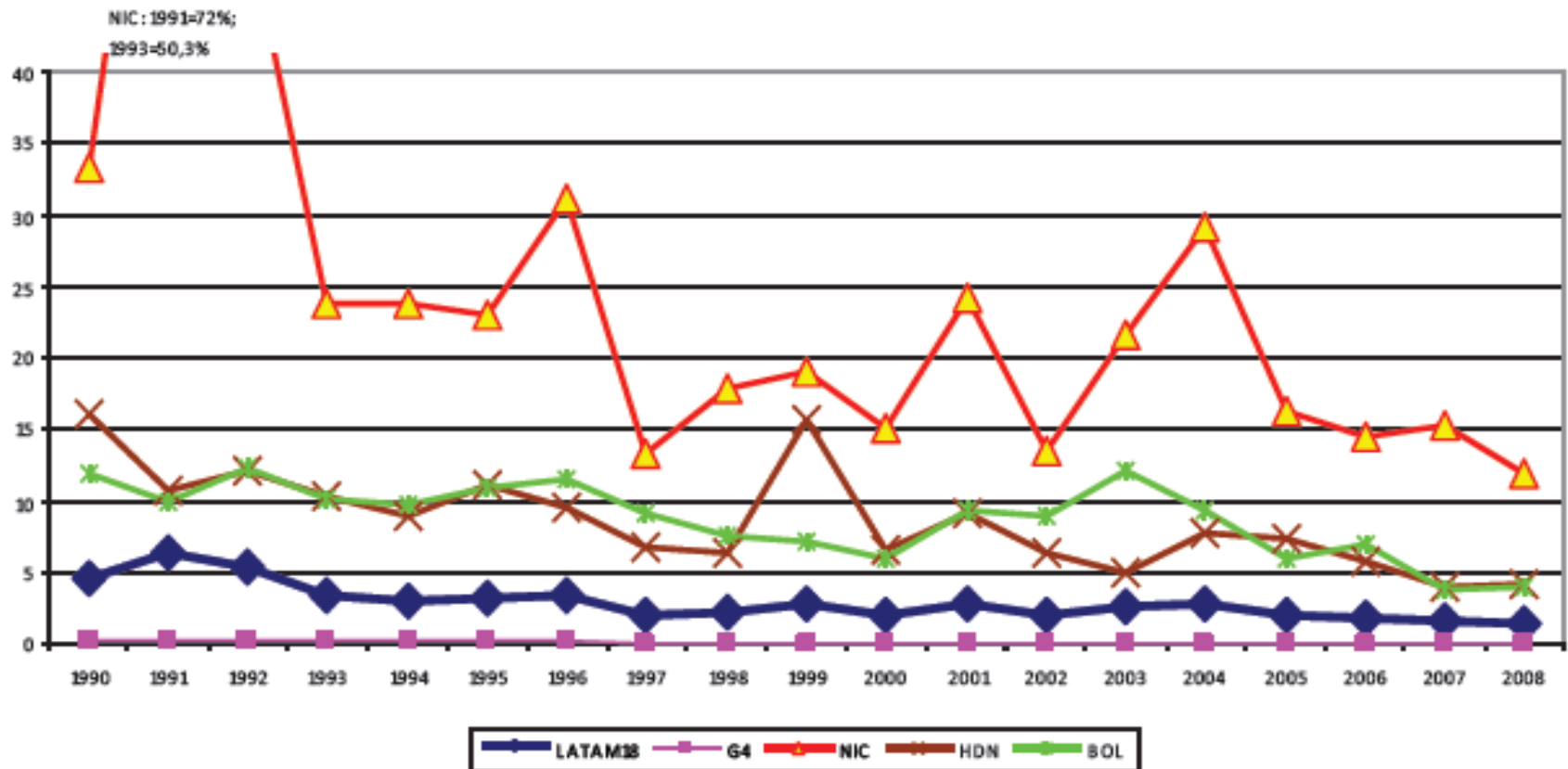
Table 1. Descriptive statistics for Gini coefficients

Country	Obs.	Min.	Mean	Max.	Std. Dev.	Q(1) test
Argentina	19	44,432	48,358	53,264	2,572	13.958
Bolivia	18	49,400	56,359	61,703	3,181	12.06
Brazil	19	54,214	58,269	60,379	1,786	13.948
Chile	19	51,822	54,289	55,451	1,201	15.336
Colombia	19	51,320	55,657	58,900	2,100	12.224
Costa Rica	19	43,956	46,711	49,884	1,925	10.459
Dom. Rep.	19	47,208	49,895	51,998	1,363	6.358
Ecuador	14	50,157	55,360	58,822	2,399	7.469
El Salvador	19	46,102	50,547	53,446	2,128	10.403
Guatemala	17	53,227	56,056	58,221	1,420	6.793
Honduras	19	52,765	55,249	58,252	1,491	2.456
Mexico	19	49,760	52,604	54,717	1,680	17.057
Nicaragua	14	50,220	53,237	56,331	2,141	12.731
Panama	19	52,093	55,235	56,653	1,095	6.27
Paraguay	14	52,139	55,797	58,377	1,763	5.33
Peru	18	46,400	50,604	55,538	3,022	1.695
Uruguay	19	42,114	43,947	47,056	1,541	14.418
Venezuela	19	41,200	44,882	47,633	2,196	8.171
LATAM-18	323	41.200	52.251	61.703	4.643	

# AID in LATAM

Figure 3. Net ODA/GDP

ODA/GDP (%)



Source: Authors' elaboration based on the World Bank, World Development Indicators. OECD-DAC. G4 stands for Argentina, Brazil, Chile and Mexico.



# DATA for OUR SAMPLE

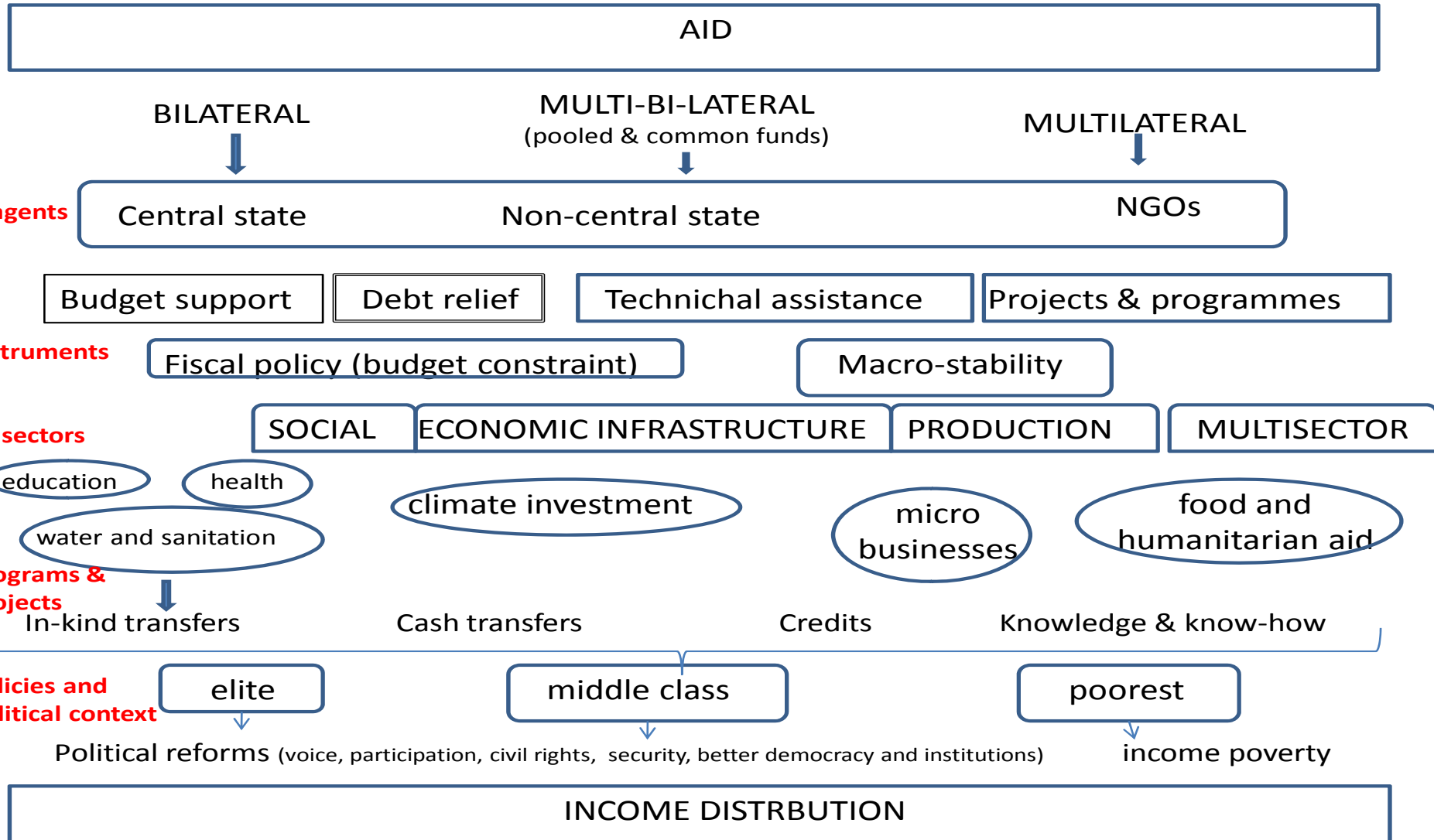
Table 2. Descriptive statistics for net ODA (as a percentage of GDP)

Country	Obs.	Min.	Mean	Max.	Std. Dev.
Argentina	19	0.019	0.065	0.149	0.036
Bolivia	19	3.775	8.731	12.229	2.599
Brazil	19	-0.067	0.028	0.047	0.025
Chile	19	-0.011	0.172	0.378	0.118
Colombia	19	0.093	0.353	0.906	0.200
Costa Rica	19	-0.110	0.542	3.174	0.926
Dom. Rep.	19	-0.015	0.504	1.504	0.329
Ecuador	19	0.434	1.049	2.321	0.561
El Salvador	19	0.445	2.714	7.234	2.108
Guatemala	19	0.919	1.501	2.687	0.425
Honduras	19	3.865	8.578	16.035	3.466
Mexico	19	-0.010	0.045	0.141	0.044
Nicaragua	19	11.938	24.650	72.060	14.743
Panama	19	-0.730	0.548	2.499	0.778
Paraguay	19	0.329	1.132	2.365	0.475
Peru	19	0.263	0.883	1.890	0.424
Uruguay	19	0.073	0.250	0.758	0.206
Venezuela	19	0.011	0.055	0.165	0.033
LATAM-18	342	-0.730	2.878	72.060	6.892

# LIT. REVIEW

- **POSITIVE:**
  - Bornschier et al. 1978; Layton & Nielson 2008; Bjørnskov 2010
  - Herzer & Nunnenkamp 2012 (cointegration)
- **No effect:**
  - Dolan & Tomlin 1980; Chong et al. 2009 (N=112 T=1972-2001)
- **NEGATIVE:**
  - Cuesta et al. 2006; Tezanos et al. 2013

# AID & INEQUALITY: CHANNELS



# SELECTED CHANNELS

- Focus on the poorest zones, groups, sectors
- Better governance: trade unions -> minimum wages, collective negotiations...
- Macro-stability: multilateral programmes
  - Lower inflation
  - Better real exchange rate & terms of trade
  - Attract FDI
- Debt relief frees-up resources
- Direct Budget Support (CCTs programmes)
- Technical cooperation (fiscal reforms)

# CORRELATION

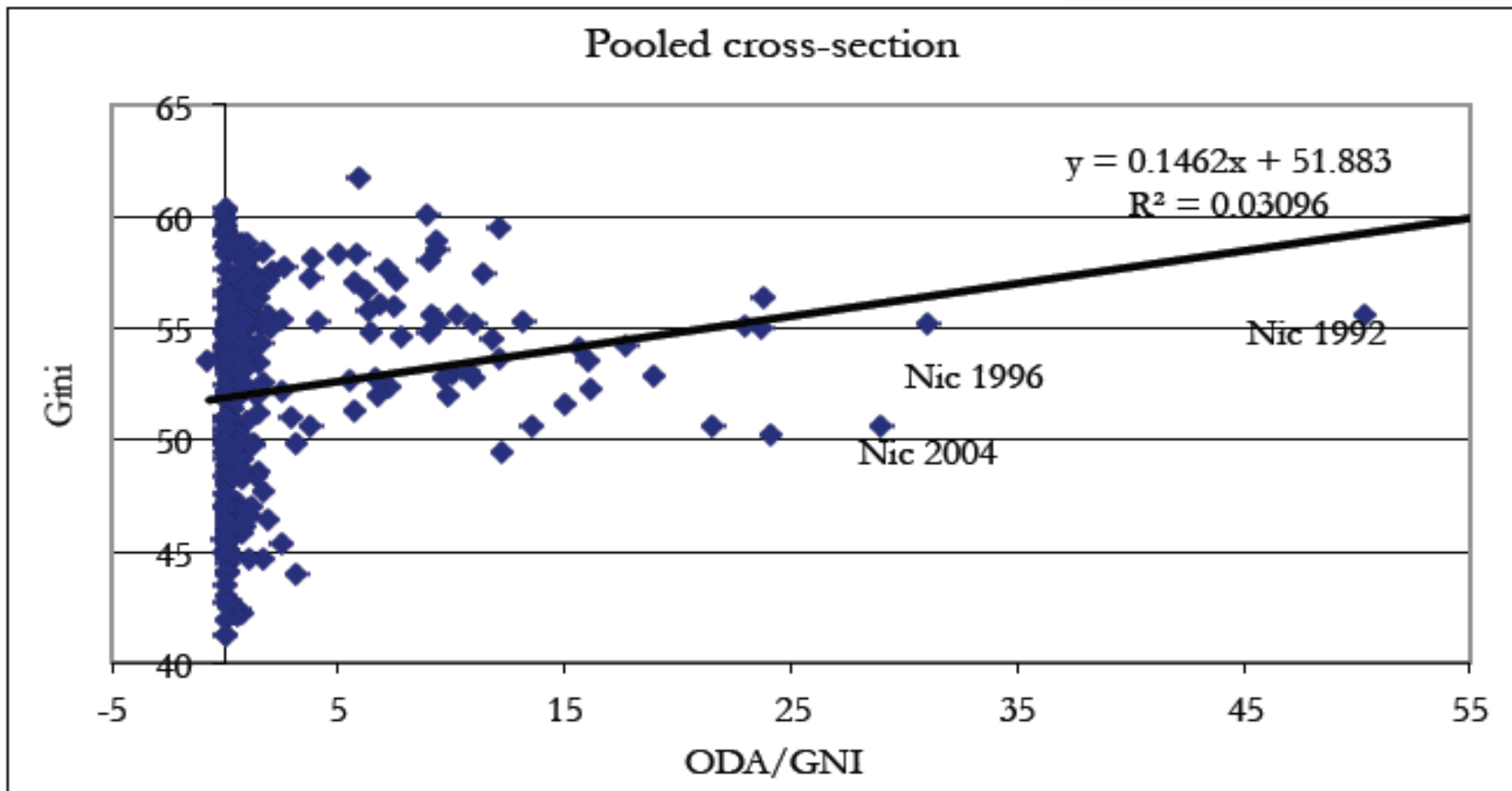
By country:

8 cases  $<0$  URU=-5.1  
( $R^2=0.45$ )

Brazil  $\approx 0$

9 cases  $>0$  ECU=+6.4  
( $R^2=0.46$ )

Figure 4. ODA and inequality in Latin America: 1990-2008



Source: Authors' elaboration with data from the IDLA dataset (Martorano and Cornia 2011).

# OUR MODEL

$$G_i = \alpha + X_i\gamma + \beta_1(aid_i) + \varepsilon_i$$

- **CONTROLS:**

- Chong et al. (2009):

- inflation; liquid liabilities; literacy; GDPpc; agriculture and industry (%V.A.)

- Domestic redistributive policies:

- Public expenditure (and social exp.)

- Labour institutions and education

- Minimum wages (formal); unemployment; Gini-education

- External redistributive flows:

- Terms of trade; FDI; remittances

- Political context:

- polity 2

# CORRELATION MATRIX

Table 3. Correlation matrix

	gini	aid	inflation	m2	GDP p.c.	agr	ind	pub_exp	mw	un	tot
gini	1.000										
aid	0.149	1.000									
inflation	0.076	-0.057	1.000								
m2	0.348	0.053	-0.114	1.000							
GDP p.c.	-0.338	-0.777	0.005	-0.046	1.000						
agr.	0.227	0.688	-0.060	-0.044	-0.821	1.000					
ind.	-0.347	-0.089	0.148	-0.343	0.208	-0.280	1.000				
pub_exp	0.403	-0.047	0.052	0.322	0.052	-0.091	-0.150	1.000			
mw	-0.337	-0.297	-0.094	0.207	0.571	-0.406	0.212	0.083	1.000		
un	-0.130	-0.094	-0.094	0.007	0.077	-0.182	0.018	0.048	0.037	1.000	
tot	0.015	-0.061	-0.133	0.081	0.003	-0.018	-0.052	0.015	0.065	0.011	1.000
polity2	-0.183	0.016	-0.007	0.293	0.154	0.026	0.001	0.185	0.286	0.044	0.113
literacy	-0.332	-0.794	0.010	0.069	0.765	-0.731	0.174	0.138	0.343	0.110	0.073

Note: Annual data for the 18 countries in the sample. 258 observations. 52 observations for literacy.

# RESULTS: cross-section

Dependent variable: gini

Variable	1	2	3	4	5	6
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
aid	-0.1804 <i>0.194</i>	-0.4156** <i>0.180</i>	-0.5509*** <i>0.087</i>	-0.5316*** <i>0.133</i>	-0.5717*** <i>0.091</i>	-0.5927*** <i>0.079</i>
inflation rate	-0.0007 <i>0.001</i>	-0.0009** <i>0.000</i>	-0.0003** <i>0.000</i>	-0.0004* <i>0.000</i>	-0.0003* <i>0.000</i>	-0.0004** <i>0.000</i>
liquid liabilities	-0.1723 <i>0.136</i>	-0.1965 <i>0.133</i>				
literacy rate	-0.0859 <i>0.132</i>	-0.1547 <i>0.095</i>	-0.1623* <i>0.077</i>	-0.1881** <i>0.070</i>	-0.1792** <i>0.072</i>	-0.2574*** <i>0.062</i>
GDP per capita	-6.459* <i>3.005</i>	-7.4851* <i>3.491</i>	-6.7534** <i>2.163</i>	-6.5213** <i>2.612</i>	-7.0129** <i>2.176</i>	-7.6249*** <i>2.258</i>
agriculture, v.a.	-0.1117 <i>0.167</i>	-0.0746 <i>0.128</i>				
industry, v.a.	-0.1124 <i>0.121</i>	-0.1262 <i>0.078</i>				
pub_exp		0.8334*** <i>0.162</i>	1.0429*** <i>0.135</i>	0.9810*** <i>0.107</i>	0.9780*** <i>0.089</i>	0.8450*** <i>0.150</i>
mw_shareformal			-0.0469*** <i>0.012</i>	0.0516** <i>0.017</i>	-0.0500** <i>0.017</i>	-0.0572*** <i>0.017</i>
polity2			-0.8515*** <i>0.209</i>	-0.9287*** <i>0.192</i>	-0.9022*** <i>0.193</i>	-0.8361*** <i>0.201</i>
soc_exp			-0.1006 <i>0.085</i>			
tot				-0.0378 <i>0.089</i>		
fdi					0.0070 <i>0.053</i>	
rem						-0.3366* <i>0.180</i>
Constant	124.924***	130.795***	121.891***	118.604***	125.628***	140.123***
Obs.	18	18	18	18	18	18
R-Square	0.395	0.692	0.886	0.883	0.881	0.905

Estimation by OLS

Robust standard errors in cursive. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1



# Results: pooled cross-section

Dependent variable: gini

Variable	1 Coeff.	2 Coeff.	3 Coeff.	4 Coeff.
aid	-0.1272 <i>0.099</i>	-0.2558*** <i>0.089</i>	-0.1461** <i>0.057</i>	-0.2461*** <i>0.074</i>
inflation rate	0.0083*** <i>0.001</i>	0.0039*** <i>0.002</i>	0.0056*** <i>0.002</i>	0.0073*** <i>0.002</i>
liquid liabilities	0.0559** <i>0.027</i>	-0.0252 <i>0.028</i>	0.0507* <i>0.027</i>	0.1009*** <i>0.022</i>
literacy rate	-0.0504 <i>0.050</i>	-0.1314** <i>0.053</i>	-0.0164 <i>0.046</i>	-0.1096** <i>0.054</i>
GDP per capita	-4.5693*** <i>1.535</i>	-4.3487*** <i>1.484</i>	-1.8572 <i>1.417</i>	-1.4684 <i>1.556</i>
agriculture, v.a.	-0.0491 <i>0.123</i>	-0.016 <i>0.120</i>	0.197 <i>0.117</i>	0.029 <i>0.129</i>
industry, v.a.	-0.1768*** <i>0.052</i>	-0.1587*** <i>0.053</i>	-0.1266** <i>0.056</i>	-0.2730*** <i>0.043</i>
pub_exp		0.4811*** <i>0.094</i>	0.7357*** <i>0.126</i>	0.7338*** <i>0.144</i>
mw_shareformal			-0.0052 <i>0.018</i>	0.008 <i>0.017</i>
un			-0.1466 <i>0.070</i>	0.0561 <i>0.072</i>
polity2			-0.3705* <i>0.205</i>	-0.3177* <i>0.182</i>
soc_exp			-0.3637*** <i>0.079</i>	-0.5125*** <i>0.093</i>
tot				-0.0034 <i>0.015</i>
fdi				0.1172*** <i>0.018</i>
rem				-0.3151*** <i>0.081</i>
Time dummies	YES	YES	YES	YES
Constant	99.567***	100.227***	69.298***	77.393***
Obs.	108	108	108	108
R-Square	0.403	0.484	0.614	0.723

Estimation by OLS

Robust standard errors in cursive. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1

# Results: SYS-GMM

Variable	1 Coeff.	2 Coeff.	3 Coeff.	4 Coeff.	5 Coeff.
L.gini	0.6614*** <i>0.181</i>	0.705*** <i>0.179</i>	0.523*** <i>0.122</i>	0.802*** <i>0.215</i>	0.549*** <i>0.130</i>
aid	-0.1876*** <i>0.061</i>	-0.196*** <i>0.057</i>	-0.313*** <i>0.104</i>	-0.300* <i>0.171</i>	-0.406*** <i>0.130</i>
inflation rate	0.0017 <i>0.002</i>	0.0002 <i>0.002</i>	0.001* <i>0.001</i>	0.0007 <i>0.001</i>	0.0007 <i>0.001</i>
liquid liabilities	0.0128 <i>0.023</i>	0.0055 <i>0.025</i>	0.0260 <i>0.027</i>	-0.0050 <i>0.038</i>	0.044** <i>0.020</i>
literacy rate	-0.0138 <i>0.052</i>	-0.0386 <i>0.048</i>			
gini_edu			9.5122 <i>6.545</i>	-3.1683 <i>7.967</i>	12.701** <i>4.978</i>
GDP per capita	-2.8402** <i>1.250</i>	-2.3134* <i>1.259</i>	-4.4439*** <i>1.358</i>	-1.3734 <i>2.902</i>	-5.3450*** <i>1.643</i>
agriculture, v.a.	-0.0812 <i>0.071</i>	-0.0626 <i>0.064</i>	-0.1405 <i>0.085</i>	0.0419 <i>0.138</i>	-0.1990* <i>0.110</i>
industry, v.a.	-0.0687 <i>0.042</i>	-0.0518 <i>0.040</i>	-0.0709 <i>0.043</i>	0.0059 <i>0.063</i>	-0.0991* <i>0.057</i>
pub_exp		0.1461 <i>0.088</i>		0.5004* <i>0.275</i>	
soc_exp				-0.4330 <i>0.307</i>	
tot					-0.0043 <i>0.071</i>
fdi					0.0341*** <i>0.011</i>
rem					-0.1644** <i>0.060</i>
Time dummies	YES	YES	NO	NO	NO
Constant	45.640**	38.768*	63.262***	22.529	70.233***
Obs.	90	90	188	182	184
ar1 p-value	0.091	0.079	0.026	0.023	0.026
ar2 p-value	0.974	0.991	0.899	0.604	0.287
Hansen J p-value	0.519	0.511	0.725	0.279	0.722

Estimation by System GMM. Lags 2 and 3 as instruments for endogenous variables (*gini*, *aid* and *soc\_exp*)

Robust standard errors in cursive. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1

Columns 3, 4 and 5 are estimated with annual, rather than triennial, data.

# ROBUSTNESS

- Gini:
  - 2008 vs average
  - SEDLAC: Gini, Theil, Atkinson, E(0) but 230 observations vs our 323 (correlation=0.992)
- Aid
  - Per capita vs ODA/GDP(%)
  - Gross disbursements (with & without debt relief)

# CONCLUSION

- Consider aid as an egalitarian external flow
- Multiple channels:  
types, donors, instruments, sectors.
- Complex transmissions
- Caveats:
  - Measurement errors (Gini annual)
  - Overall effect vs. Country specific effect