

The Impact of Tax & Expenditure Policies on Income Distribution:

Evidence from a Large Panel of Countries

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The question

- We have been observing significant changes in income inequality
- We want to know what is the impact of taxation and public expenditure policies on income distribution?
- Do these fiscal policies in reality reduce inequality (or worsen it?) in the distribution of income?
- We look at the role of
 - six tax instruments (PIT, CIT, SS Contributions, VAT, Excises and Customs duties), and
 - four expenditure instruments (Social Protection, Education, Health and Public Housing)

Worldwide scope

- A panel data set covering 150 countries over the period 1970 to 2007
- Inequality is measured by Gini coefficient (gross income, net income and consumption) from UN's World Income Inequality Database (WIID)
- Taxes and public expenditures are measured as collections and spending “as % of GDP”
- Progressivity of the PIT is measured with the comprehensive index by Sabirianova Peter et al.(2008)
- Controlling for other determinants of income distribution (population growth and composition, schooling, unemployment, globalization, corruption, etc.)

WHAT HAS BEEN HAPPENING WITH INCOME DISTRIBUTION TRENDS AND TAX AND EXPENDITURE POLICIES?

A LOOK AT THE RAW DATA

Figure 1. Trends in Income Inequality as Measured by Gini Coefficients, 1970-2006

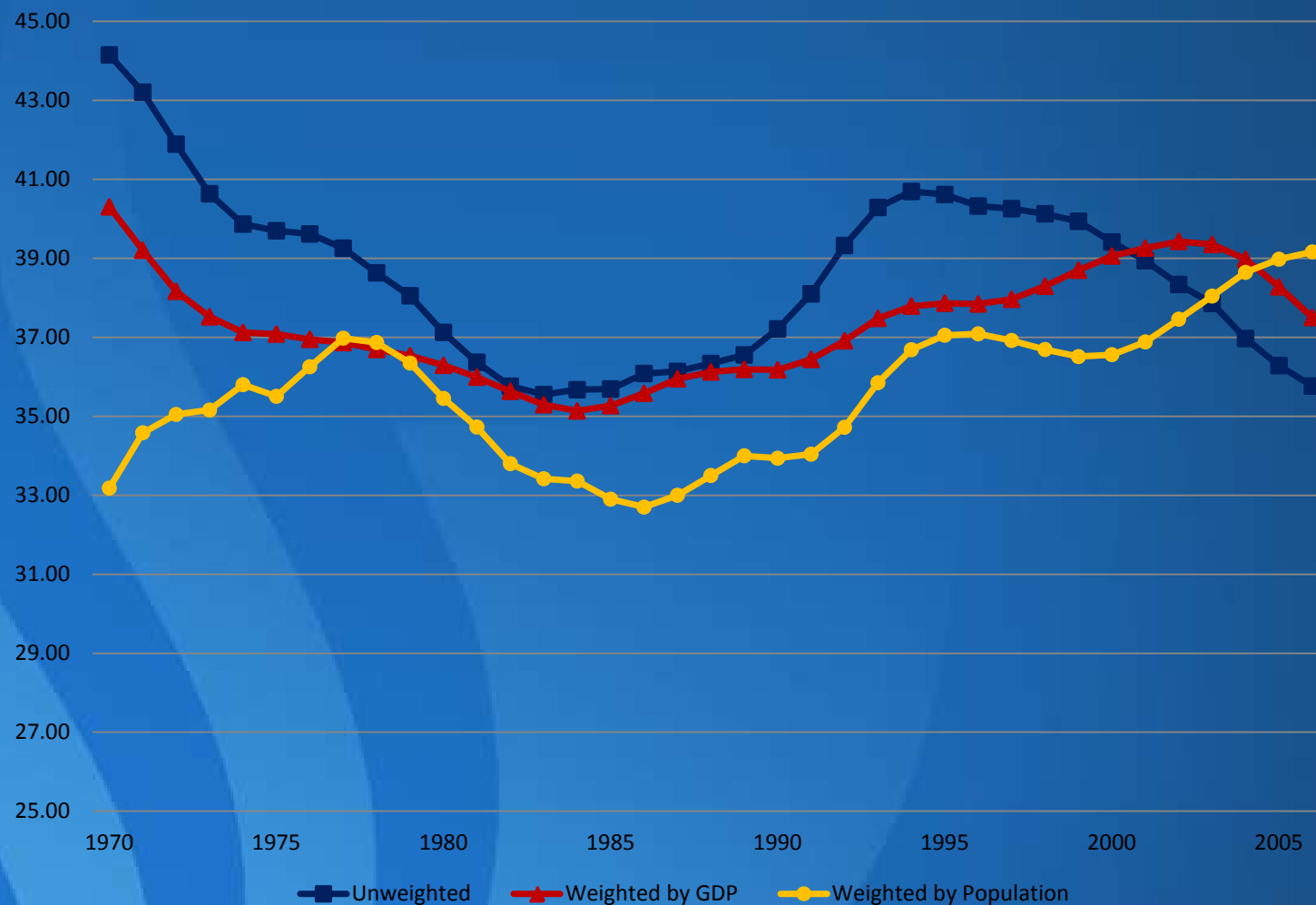


Figure 2. Trends in Income Inequality
(Gini: average weighted by population, in percent), 1970-2006:
Asia Focus

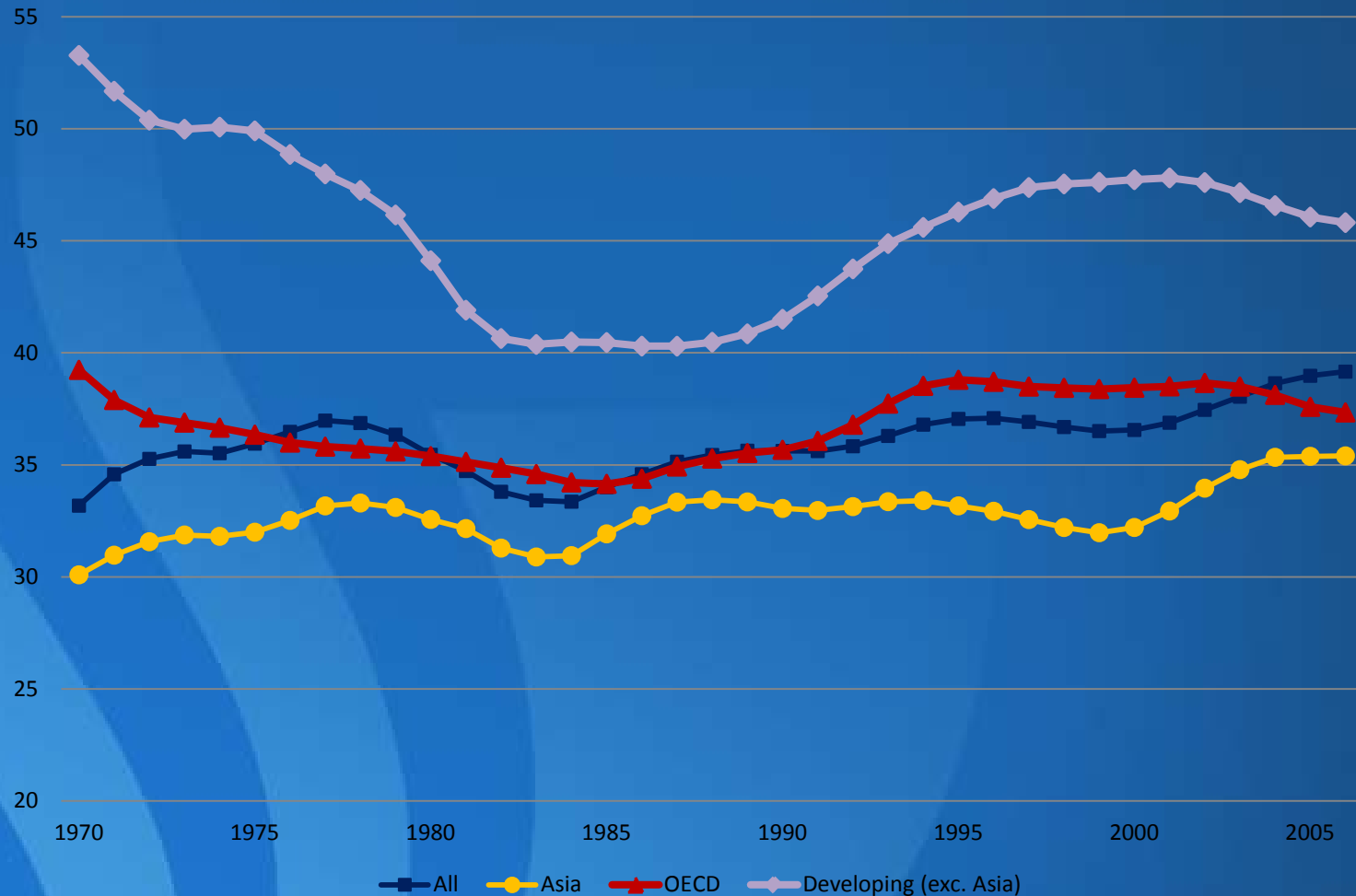


Figure 3. Average Gini Coefficients by Sample Group:
Latin America Focus

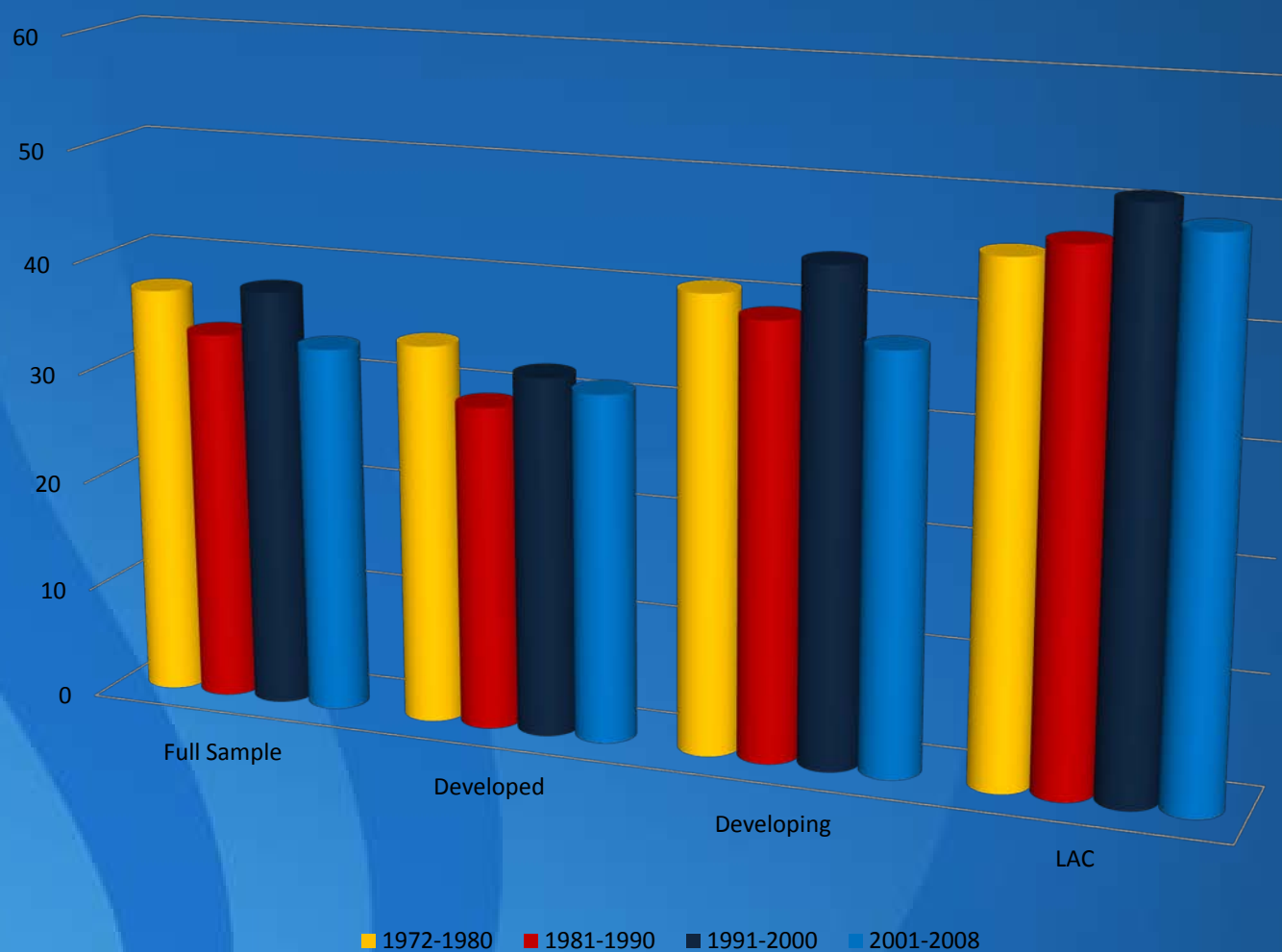


Figure 4. Trends in Personal Income Tax Progressivity Index and Income Inequality (unweighted Gini) , 1980-2005

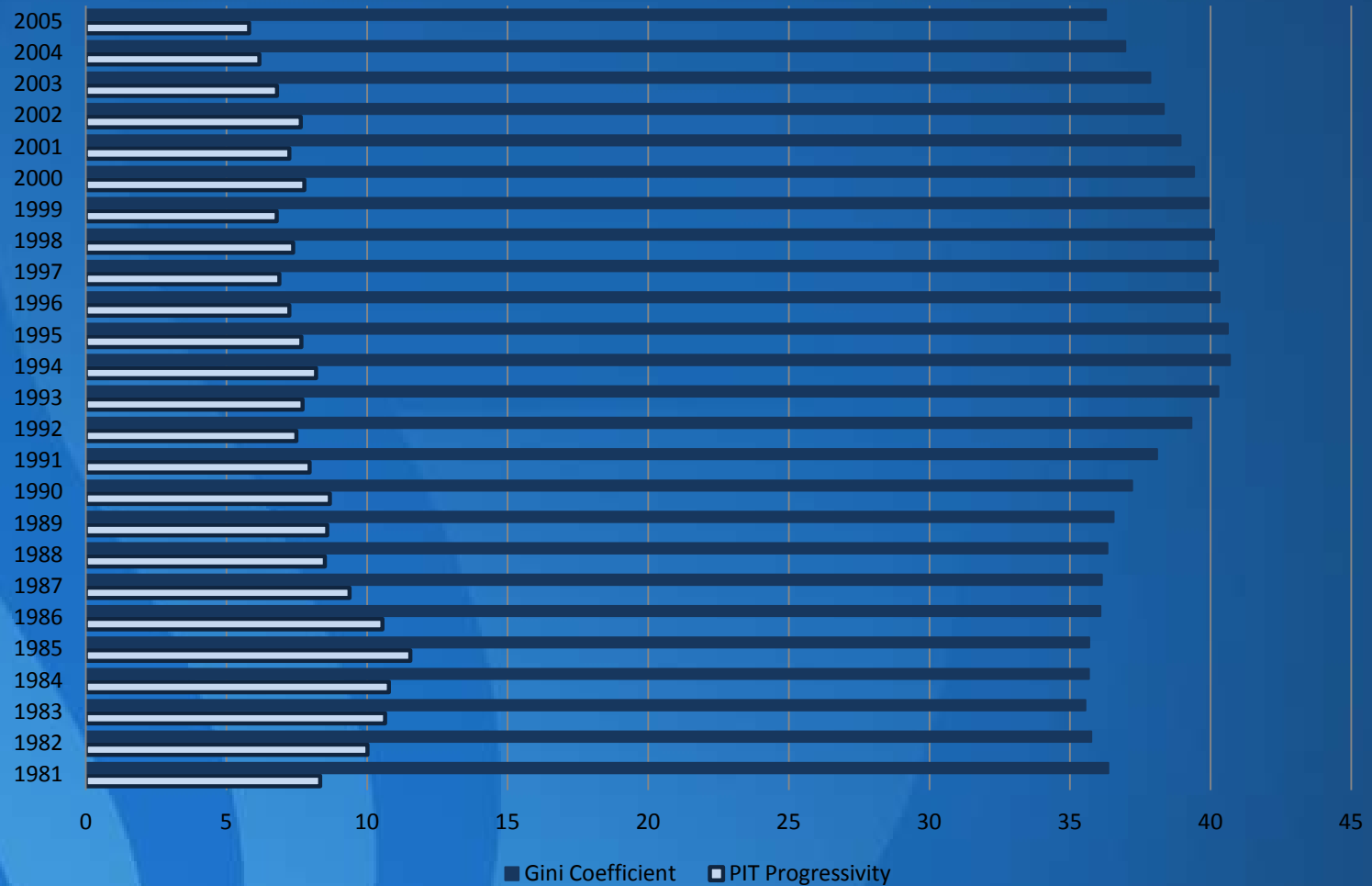


Figure 5. Trends in Taxation
(as % of GDP raised with each tax), 1972-2009

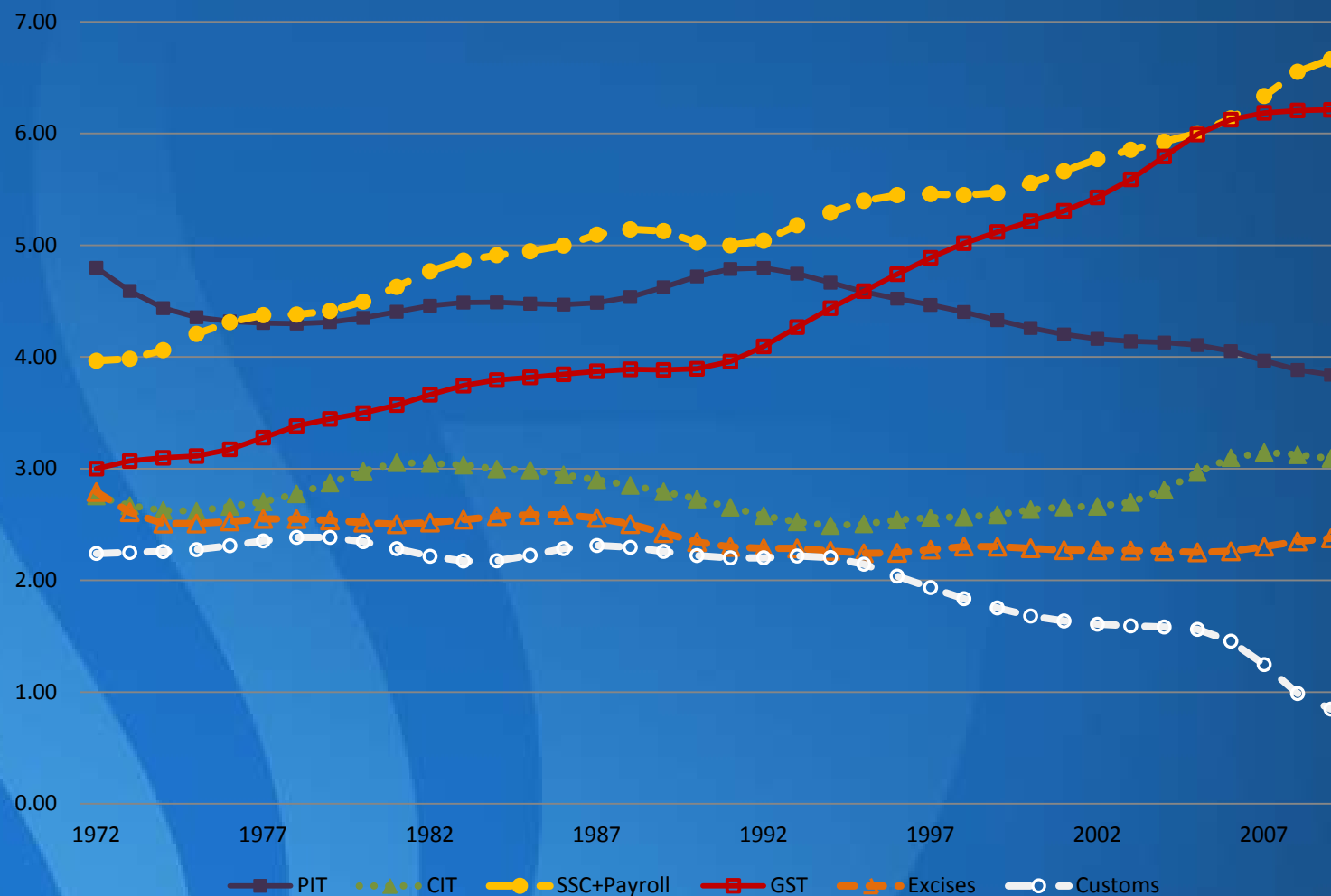
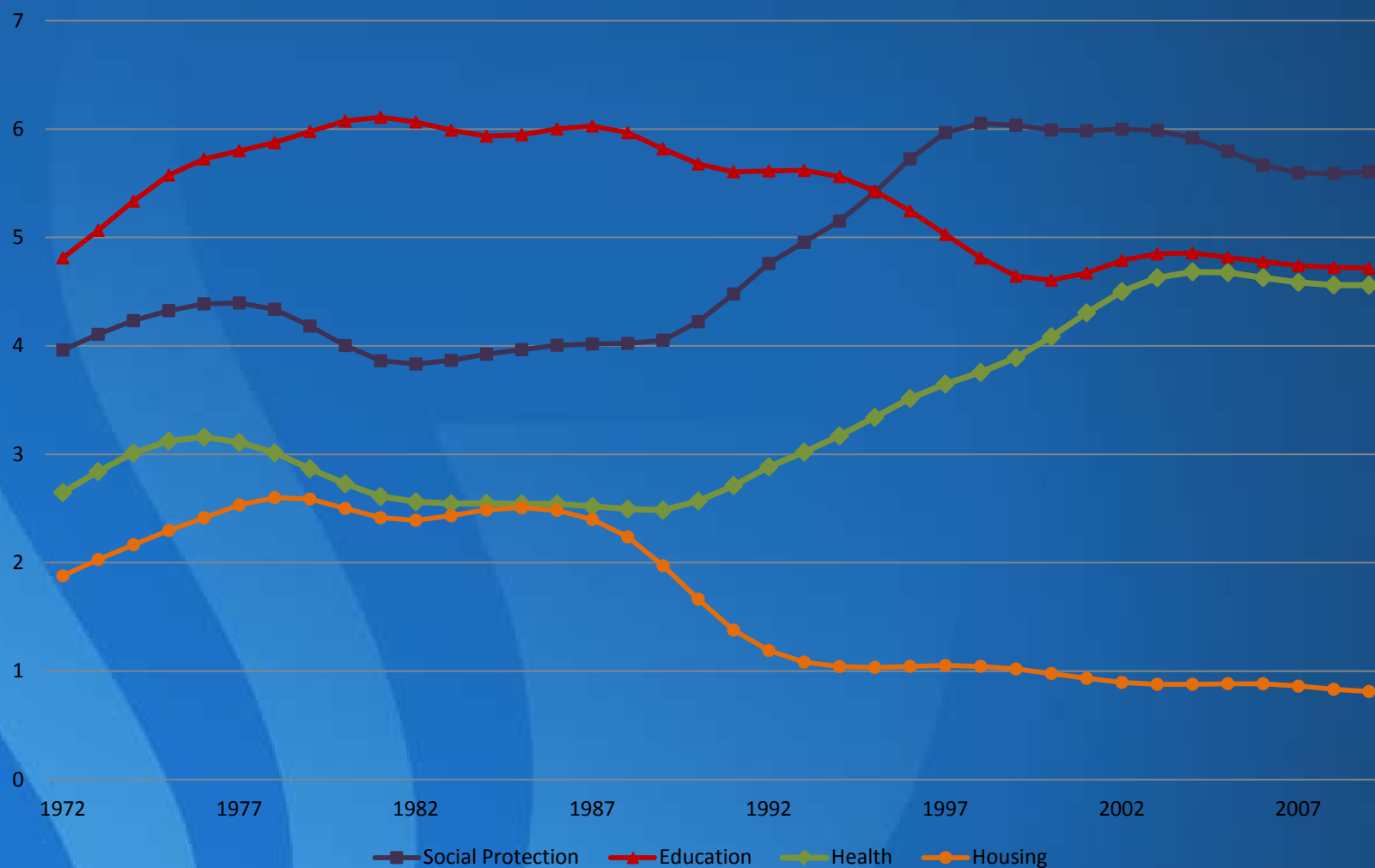


Figure 6. Trends in Public Spending
(as % of GDP spent on each category), 1972-2009



EMPIRICAL RESULTS

- FOR TAXES ONLY
- FOR EXPENDITURES ONLY
- FOR TAXES AND EXPENDITURES JOINTLY (SKIPPED)

The Impact of Tax & Expenditure Policies on Income Distribution: Evidence from a Large Panel of Countries

Taxation and Income Inequality – Control Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gini ₁	-0.061*	0.019***	-0.069***	0.048	0.009	-0.156***	-0.066*	0.110***
	(0.033)	(0.005)	(0.010)	(0.051)	(0.035)	(0.036)	(0.036)	(0.015)
Net	5.164***	5.281***	4.893***	-0.810	4.608***	5.170***	4.762***	2.173
	(1.010)	(0.509)	(0.292)	(4.261)	(0.937)	(1.103)	(1.396)	(2.273)
Gross	5.424***	5.593***	4.179***	0.300	4.824***	6.091***	5.159***	3.290
	(1.236)	(0.508)	(0.343)	(3.799)	(1.179)	(1.469)	(1.677)	(2.409)
Pop. growth	0.593***	0.479***	0.113	0.338	0.486**	0.126	0.473**	0.124
	(0.203)	(0.126)	(0.205)	(0.259)	(0.192)	(0.290)	(0.192)	(0.316)
Age Dep. Youth	0.122***	-0.040**	-0.078***	0.105**	0.127***	0.159**	0.190***	-0.074
	(0.041)	(0.020)	(0.017)	(0.044)	(0.044)	(0.062)	(0.061)	(0.062)
Age Dep. Elderly	-0.498***	-0.028	-0.272**	-0.621***	-0.404***	-0.363***	-0.706***	-0.102
	(0.128)	(0.079)	(0.138)	(0.178)	(0.124)	(0.140)	(0.138)	(0.160)
Schooling	-0.787***	-0.390***	-0.244***	-0.559***	-0.782***	-0.462**	-0.428**	-1.139***
	(0.159)	(0.077)	(0.049)	(0.201)	(0.222)	(0.208)	(0.205)	(0.222)
Unemployment	0.133***	0.153***	0.098***	0.105***	0.139***	0.147***	0.130***	0.121*
	(0.020)	(0.007)	(0.019)	(0.031)	(0.028)	(0.027)	(0.022)	(0.066)
GDP pc growth	0.011	-0.009**	-0.008	0.021	0.011	0.010	0.016	-0.042**
	(0.009)	(0.004)	(0.005)	(0.014)	(0.011)	(0.009)	(0.011)	(0.018)
Globalization	0.113***	0.083***	0.082***	0.080***	0.106***	0.069***	0.089***	0.035
	(0.017)	(0.011)	(0.022)	(0.024)	(0.015)	(0.021)	(0.019)	(0.028)
Corruption	0.203***	0.173***	0.337***	0.274***	0.233***	0.326***	0.211***	0.009
	(0.064)	(0.057)	(0.031)	(0.064)	(0.067)	(0.081)	(0.074)	(0.194)
Total Revenues	-0.020	-0.027***	0.005	-0.069*	-0.059***	0.019	-0.006	
	(0.021)	(0.007)	(0.023)	(0.036)	(0.022)	(0.023)	(0.020)	

The Impact of Tax & Expenditure Policies on Income Distribution: Evidence from a Large Panel of Countries

Taxation and Income Inequality – Tax Variables

	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PIT	-0.094** (0.043)						-0.105 (0.098)
PIT*Progressivity	-0.005*** (0.001)						-0.004 (0.003)
CIT		-0.703*** (0.109)					-0.925** (0.397)
CIT*Globalization		0.009*** (0.002)					0.013** (0.006)
SSC+Payroll			0.720*** (0.168)				0.234 (0.168)
GST				0.485*** (0.154)			0.314 (0.343)
Excise					0.258 (0.195)		0.988*** (0.301)
Customs						0.130 (0.178)	-0.497 (0.393)
Constant	30.658*** (1.848)	38.326*** (1.917)	39.337*** (5.696)	32.397*** (3.994)	35.120*** (4.698)	30.118*** (4.372)	35.716*** (3.720)
Observations	713	834	873	908	834	871	634
Number of id	69	75	74	78	71	75	56
Sargan	58.41	66.80	37.12	35.21	35.74	39.58	37.69
AR2	0.857	0.727	0.950	0.798	0.960	0.992	1.153

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The Impact of Tax & Expenditure Policies on Income Distribution: Evidence from a Large Panel of Countries

Public Expenditures and Income Inequality – Control Variables

	(1)	(2)	(3)	(4)	(5)	(6)
Gini _t	-0.061*	-0.066***	-0.152***	-0.088***	-0.197***	-0.097**
	(0.033)	(0.009)	(0.011)	(0.006)	(0.016)	(0.040)
Net	5.164***	5.748***	4.672***	5.140***	5.379***	5.951***
	(1.010)	(1.189)	(0.524)	(0.395)	(0.394)	(1.224)
Gross	5.424***	4.783***	2.987***	3.762***	3.977***	3.499*
	(1.236)	(1.219)	(0.833)	(0.687)	(0.496)	(1.951)
Pop. growth	0.593***	0.726***	0.239***	0.334***	1.160***	1.489***
	(0.203)	(0.254)	(0.091)	(0.074)	(0.254)	(0.554)
Age Dep. Youth	0.122***	-0.046***	-0.076***	-0.009	0.184***	0.203**
	(0.041)	(0.018)	(0.027)	(0.015)	(0.025)	(0.086)
Age Dep. Elderly	-0.498***	-0.118	-0.315***	-0.257***	-0.324	-0.449**
	(0.128)	(0.110)	(0.070)	(0.066)	(0.217)	(0.192)
Education	-0.787***	0.027	-0.014	-0.167**	-0.417***	-0.142
	(0.159)	(0.047)	(0.078)	(0.069)	(0.093)	(0.191)
Unemployment	0.133***	0.119***	0.097***	0.062***	0.112***	0.188***
	(0.020)	(0.013)	(0.011)	(0.007)	(0.012)	(0.032)
GDP pc growth	0.011	-0.007*	0.003	-0.022***	-0.006	0.008
	(0.009)	(0.004)	(0.007)	(0.004)	(0.005)	(0.008)
Globalization	0.113***	0.090***	0.120***	0.164***	0.260***	0.213***
	(0.017)	(0.014)	(0.014)	(0.010)	(0.016)	(0.023)
Corruption	0.203***	0.415***	0.392***	0.369***	0.169***	0.163
	(0.064)	(0.030)	(0.029)	(0.015)	(0.027)	(0.134)
Total Revenues	-0.020	-0.063***	-0.085***	-0.040***	-0.002	
	(0.021)	(0.017)	(0.016)	(0.007)	(0.013)	

Public Expenditures and Income Inequality – Expenditure Variables

	(2)	(3)	(4)	(5)	(6)
Social Protection	-0.139*** (0.038)				-0.123 (0.097)
Education		-0.134** (0.058)			0.038 (0.175)
Health			-0.695*** (0.030)		-0.415* (0.230)
Housing				-0.768*** (0.068)	-0.139 (0.168)
Constant	33.828*** (1.923)	42.334*** (1.755)	35.543*** (1.525)	24.468*** (4.247)	21.441** (9.714)
Observations	604	643	694	503	410
Number of id	65	67	72	61	54
Sargan	51.23	55.81	55.92	48.34	41.62
AR2	0.988	0.746	0.816	0.650	1.071

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

WHAT DOES ALL THIS MEAN?

QUANTIFYING THE IMPACT OF TAXES AND
PUBLIC EXPENDITURES ON INCOME
INEQUALITY

Economic Effects of Taxation and Public Expenditures

Policy Instrument	Estimated Marginal Effect	Increase (+)/Reduction(-) between 1990 and 2005 (percentage points)	Resulting increase (+)/reduction(-) of income inequality (Gini), ceteris paribus (percentage points)
Personal Income Tax	-0.09	-0.61	0.04
Personal Income Tax * Progressivity	-0.01	1.76	
Corporate Income Tax	-0.70	0.24	
Corporate Income Tax * Globalization	0.01	3.84	-0.13
Social Security and Payroll Taxes	0.72	0.98	
Taxes on Goods and Services	0.49	2.10	
Excises	0.26	-0.09	-0.02
Customs Duties	0.13	-0.66	-0.09
Total Effect of Taxes			1.53
Social Protection Expenditures	-0.14	1.57	-0.22
Education Expenditures	-0.13	-0.86	0.12
Health Expenditures	-0.70	2.11	-1.46
Housing Expenditures	-0.77	-0.78	0.60
Total Effect of Expenditures			-0.97

Note: All policy instruments are expressed as % of GDP

In conclusion

- From a policy perspective, we can observe that taxes and public expenditures policies cannot be identified as strictly substitute or complement instruments toward redistribution goals; the use of instruments has been mixed... After all, there are other government objectives besides redistribution
- It is notable that overall impacts of tax and public expenditure policies have been quite similar. Our results would not lead us to conclude that expenditure policies have been more effective overall than taxes in affecting income distribution.
- It is significant that at a global scale the overall impact of fiscal policy as a whole is quite limited. Over the 1990-2005 period, the net effect of tax policies was to increase inequality by 1.53 of the Gini while the impact of expenditure policies was to decrease inequality by 0.97 of the Gini.