

# **The Quality of Growth: Fiscal Policies for Better Results**

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Based on joint work with

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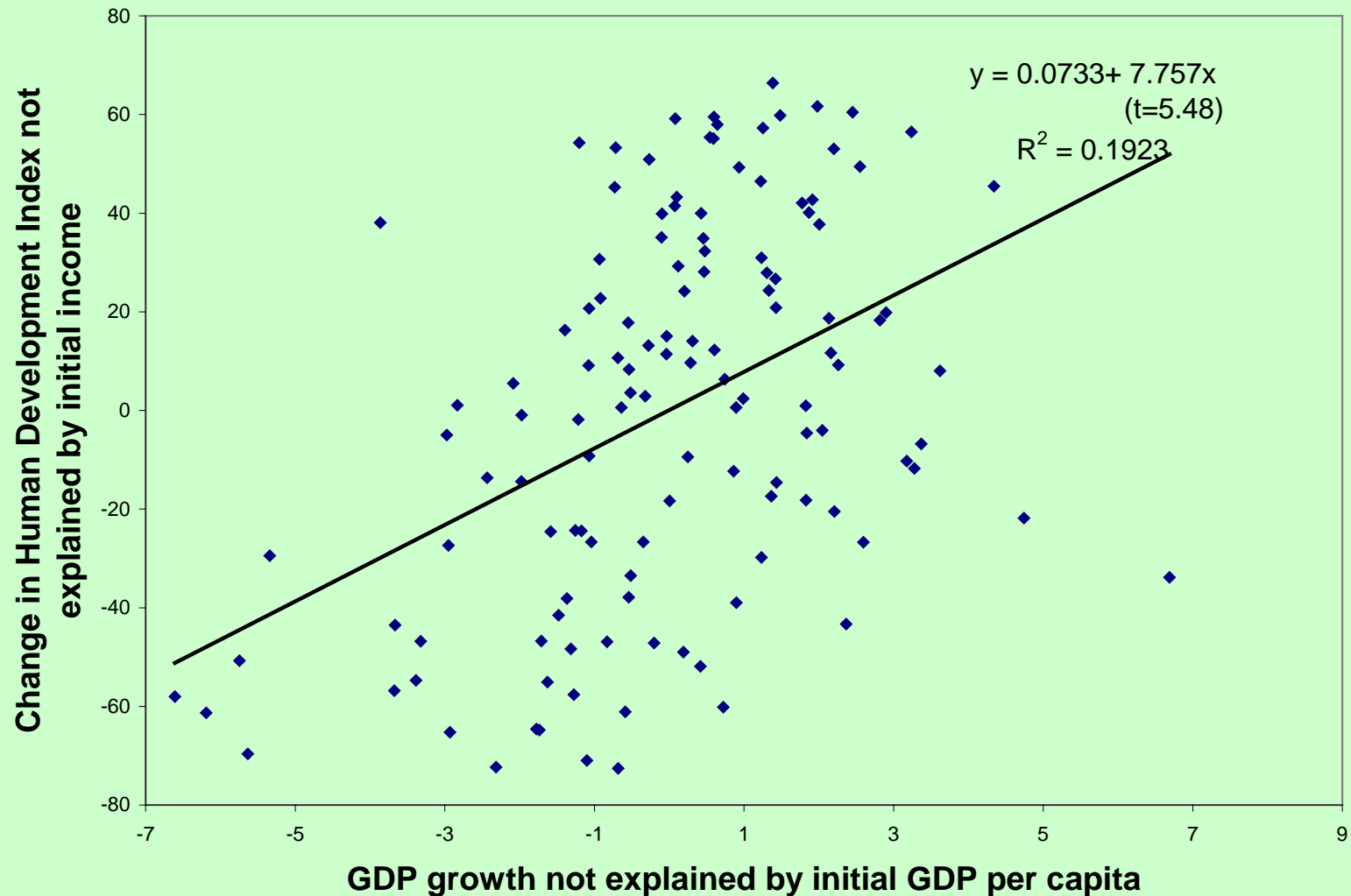
**IEG Working Paper**

***The World Bank***

# Outline

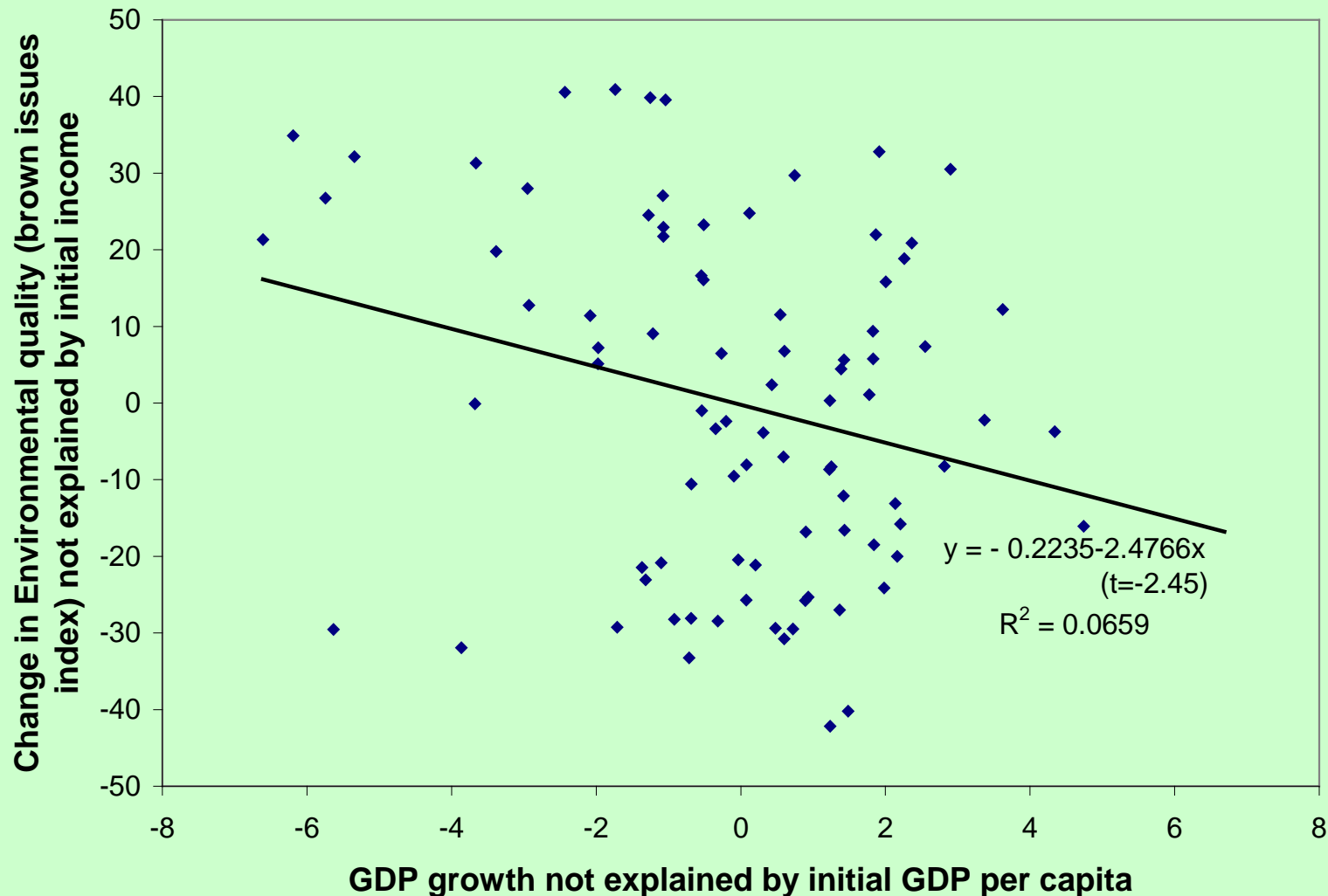
- I. Why the quality of growth? Motivations
- II. A conceptual framework
- III. Cross-country empirical evidence on the association between spending on public goods and faster and cleaner growth
- IV. Implications to developing countries
  - Reducing subsidies to fuel and water
  - Increasing share of spending on public goods
  - Tax loopholes are regressive
  - Obtain a balance btw Indirect tax and direct tax
  - Invest in clean technology (CMM, biomass and wind and solar)
- V. Summary

# GDP Growth is associated with different HD impact, 1990-2005



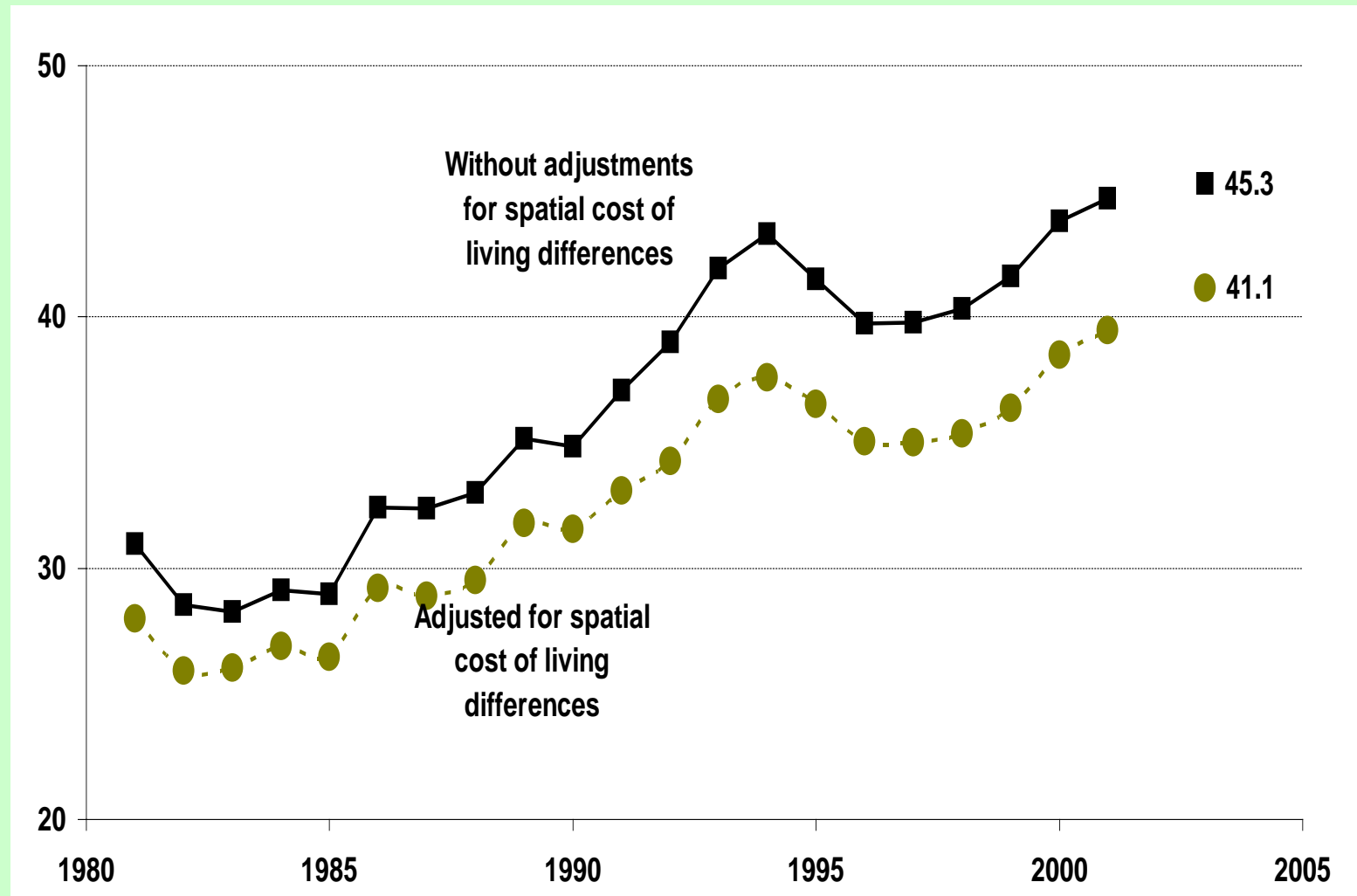
Source: Lopez, Thomas and Wang 2008.

# Why the quality of growth? Same GDP growth but different environmental impact: 1990-2005



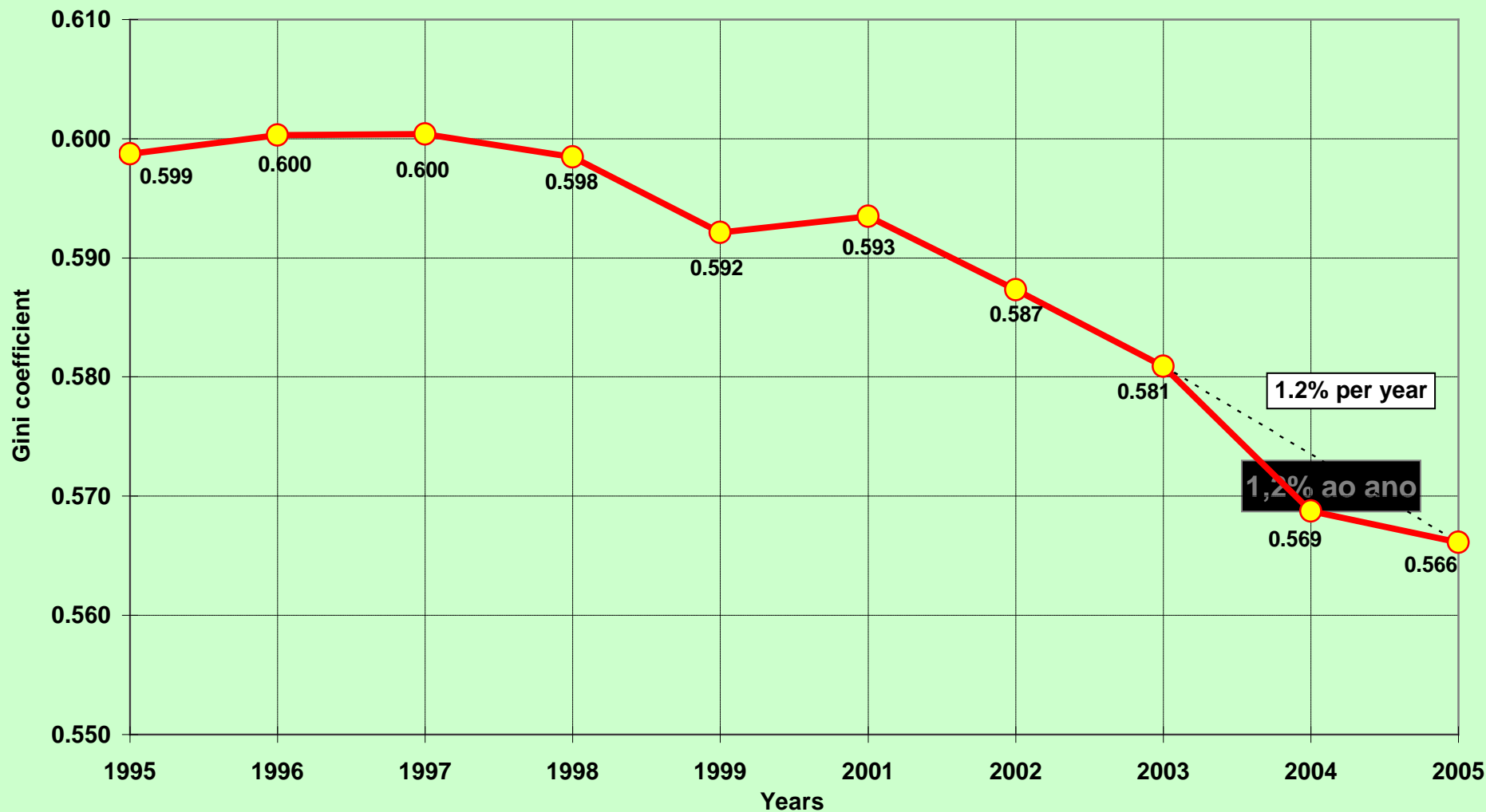
# Income Inequality: Rising in China 1980-2005

## China's income gini index %



Source: Ravallion and Chen (2004); World Bank estimates from NBS 2003 Rural and Urban Household Surveys.

## Evolution of inequality in per capita income: Brazil, 1995-2005 (Gini coefficient)



Source: Estimations with Pesquisa Nacional por Amostra de Domicílios (PNAD) de 1995 a 2005.

**Source: Ricardo Paes de Barros (IPEA). In Brazil, inequality continues to decline in the recent years. *Poverty have declined three times faster than required by the first millennium development goal***

# Impact of pollution on public health

**Box-table 1. Environmental Burden of Disease, per Year**

	<b>DALYs*/1,000 capita</b> (World lowest:14, highest: 316)	<b>Deaths</b>
Brazil	37	233,000
Chile	21	15,000
China	34	2,350,000
India	68	2,628,000

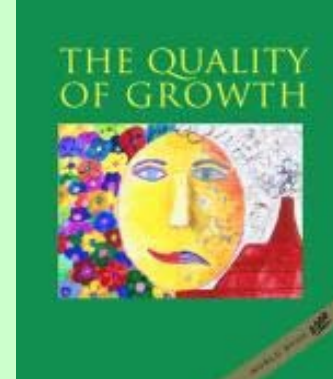
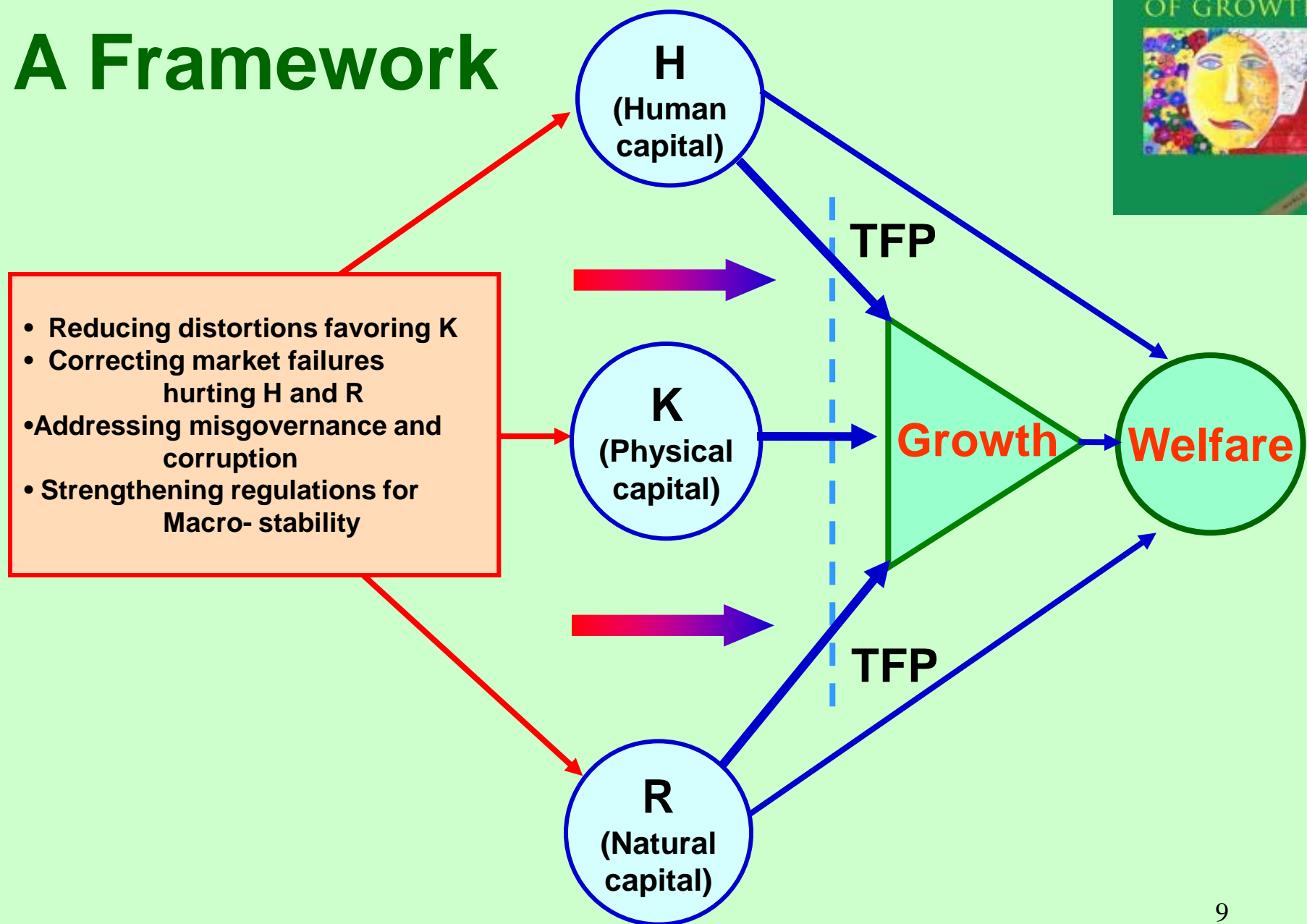
*Note:* Estimated based on regional exposure and national health statistics 2004. \*DALY: Disability Adjusted Life Years is a weighted measure of death, illness, and disability.

## II. A Framework for more balanced and sustainable growth

- A country needs at least 3 types of capital for income growth and welfare: physical, human and natural capital
- Investment in H raised the productivity of FDI and other investment, but currently there is an under-investment in H
- Investment in Natural capital (R) and protection of the environment contributed to growth as well as welfare,
- but currently there is an overexploitation of natural capital
- Openness to trade and foreign investment would raise the productivity of K, and H; TFP will be higher
- Improvement of Governance would raise the productivity of all three K, H, and R, and promote growth and poverty reduction



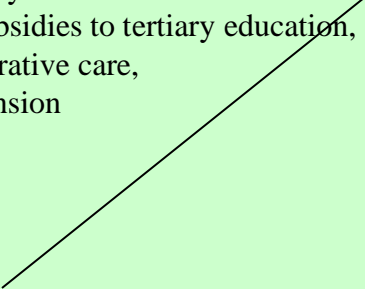
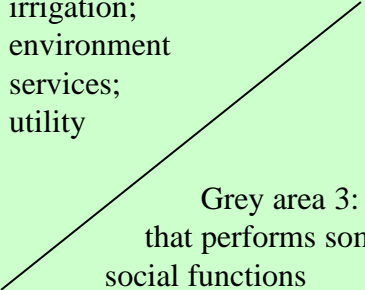
# A Framework



# Hypothesis to be tested in our 2008 study:

- Incomplete markets or market failures lead to underinvestment in human capital and knowledge, and overexploitation of natural capital, Hurting the poor
- Fiscal policy is one of the vital instruments used for correcting market failures.
- Hypothesis: Government spending on public goods is associated with faster, and cleaner growth
- ***Public goods*** are defined broadly to include expenditures that complement rather than substitute for production by the private sector. See table 1

# A taxonomy of public vs private goods

	<b>Public- and semi-public goods</b>	<b>Private goods</b>
<b>Spending that is difficult to be captured by the elite groups</b>	<p>Type A:  R&amp;D, investment in basic education and preventive care; extension services, conditional or unconditional cash transferred to poor households; means-tested low income guarantees, unemployment benefit, medical insurance for the poor, and social security; payments for HH providing environmental services; public order and safety,</p>	<p>Grey area 2  Subsidies to tertiary education, Curative care, Pension</p> 
<b>Spending that is easily captured by elite groups and lobbies</b>	<p>Grey area 1  Communication; roads, dams, irrigation; environment services; utility</p>  <p>Grey area 3: SOEs that performs some social functions</p>	<p>Type B:  Subsidies to private goods, including fuel subsidies, electricity subsidies, water /fertilizer subsidies, commodity subsidies, credit subsidies, grants to corporations, loan guarantees, marketing subsidies, and bailouts of large state-owned enterprises (SOEs), and government sponsored enterprises (GSEs) and private financial institutions.</p>

# Aggregate subsidy estimates for selected economic sectors

Sector	OECD/ world
Agriculture	OECD : USD 261 bn a year (in 2006-8) (OECD 2009) Biofuels: US, EU and Canada €11 bn in 2006 (GSI 2007; OECD 2008b)
Fisheries	World: USD 15-35 billion (UNEP, 2008)
Energy	IEA: \$310bn in 20 largest non-OECD countries in 2007 (IEA 2008)
Transport	World: ~ €179-230 bn/year – of which EHS €130-175 bn (EEA 2005)
Water	OECD: €33.6 bn (Myers and Kent 1998) – including irrigation

**Global Subsidies for petroleum products are projected to reach \$250 bn In 2010. G-20 countries account for 70% of these subsidies. (Coady 2010)**

# **Subsidies to physical capital do not lead to labor –intensive /inclusive growth**

- **Subsidies to physical capital**

- “has resulted in production inefficiencies ranging from 5 to 15 percent for subsidized firms” in Israel (Bregman, Fuss and Regev 1999).
- were not correlated with productivity growth in Korea (Lee 1996) and Sweden (Bergstrom 1998). Their impact on firms’ growth is temporary.
- Increased capital intensity in Malaysia (Lim 1992)
- Reduced employment in Ireland (Harris 1991).

- **Capital subsidies provide fertile ground for corruption**

Existence of subsidies/tax holidays/grants

- give rise to X-inefficiency because managers devote more time in subsidy-seeking rather than in productivity-enhancing activities.
- lead to lobbying groups which could lead to subsidization of inefficient firms, delaying restructuring
- distort the democratic process by increasing the role of money in elections

# III. Cross Country Empirical evidence

## 1, Spending and Long-term growth

- We confirm that government spending on public goods is associated with higher and cleaner growth. This finding is robust under multiple sensitivity tests and when using different data and methods, including cross-country, country-specific, and project analysis.
- This requires reallocating government spending away from subsidizing private goods, which provides perverse incentives for resource depletion, and toward providing more public goods, while keeping the total government expenditure constant.
- This implies reducing perverse subsidies (that hurt the environment) and reallocating public expenditures at the margin to public goods.

# Share of Public Goods Matters for Growth: Three-Stage Least Squares System of Equations

Independent Variable Listed below:	<u>Dependent Variable:</u> Growth of GDP per Capita	Share of Govt. Exp. in Public Goods in Total Govt. Expenditure
Growth of GDP per Capita		2.963**
Share of Govt. Exp. in Public Goods in Total Govt. Expenditure	0.098***	
Total Govt. Consumption over GDP	-0.007	-0.139
Taxes over GDP	-0.078**	0.429**
Total Investment over GDP	0.074**	-0.390*
Log of Initial per Capita GDP	-0.008***	
Inflation (CPI)	-0.001*	0.003
Lag of Log Years of Schooling	0.009	0.002
Years of Democratic Stability	0.002**	-0.002
Corruption		-0.281***
% Land in Tropical Areas	-0.012**	
Malaria Ecological Index		0.064*
Constant	0.037*	0.605***

Note: Estimates include regional and year dummy variables not shown in table;  
no. of countries: 29; obs. = 105.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Source: Lopez and Miller (2008) Fiscal Policy and Economic Growth, Background paper  
for World Bank IEG Study on The Quality of Growth --Fiscal Policy for Better Results

# Indirect Taxes vs Direct Taxes: A Balance is needed

## Indirect Taxes as a Percentage of Total Tax Revenue

Country	2004-05
Brazil	51.4
Chile	68.0
China*	72.0*
India	51.2
OECD Average	32.0

*Note:* This table is only illustrative, because data are based on country studies.

•Some evidence from Brazil shows that while its direct taxes are progressive, indirect taxes are regressive. Adding them together, the total tax burden for households would be regressive: In 2004, families earning up to two times the minimum wage had a total tax burden of 49% of their family income, while the richer households had a total tax burden of 26%.

•In Chile, a resource-rich country, failing to tax resource rents distorts incentives in favor of the resource industries, thus exacerbating the dependence on natural resources for income generation.

•China's indirect tax is high, as compared to other countries.



# Brazil: Taxes are regressive-the poor has heavier tax burden

Table A6.1.1 Direct, Indirect, and Total Tax Incidence on Family Income in 1996 and 2004

Monthly Family Income (minimum wages; MW)	% of Family Income						Change in Tax Incidence 1996–2004 (in percentage points)
	Direct tax		Indirect tax		Total tax		
	1996	2004	1996	2004	1996	2004	
Up to 2 MW	1,7	3,1	26,5	45,8	28,2	48,8	20,6
2 to 3	2,6	3,5	20,0	34,5	22,6	38,0	15,4
3 to 5	3,1	3,7	16,3	30,2	19,4	33,9	14,5
5 to 6	4,0	4,1	14,0	27,9	18,0	32,0	14,0
6 to 8	4,2	5,2	13,8	26,5	18,0	31,7	13,7
8 to 10	4,1	5,9	12,0	25,7	16,1	31,7	15,6
10 to 15	4,6	6,8	10,5	23,7	15,1	30,5	15,4
15 to 20	5,5	6,9	9,4	21,6	14,9	28,4	13,5
20 to 30	5,7	8,6	9,1	20,1	14,8	28,7	13,9
More than 30 MW	10,6	9,9	7,3	16,4	17,9	26,3	8,4

Poorer

The poor Pays more

Richer

Source: Primary data: Instituto Brasileiro de Geografia e Estatística (Brazilian Institute for Geography and Statistics), POF 1995/6, POF 2002/3; Vianna et al. (2000); SRF (Secretary of Federal Revenue), "A progressividade no consumo—tributação cumulativa e sobre o valor agregado." Apud, Zockun et al. (2007).

# Brazil: Tax Exemptions benefit the rich or the poor?

Table A6.1.2 Composition of Brazilian Tax Exemptions, by Type of Function

Government Function	2003		2004		2005	
	US\$	%	US\$	%	US\$	%
Agriculture	385,716,514	2.77	275,776,327	1.33	351,530,571	1.70
Energy	0	0	7,965,061	0.04	145,658,340	0.70
Labor	89,486,993	0.64	1,023,641,193	4.93	1,576,458,303	7.63
Science and technology	146,649,312	1.05	291,675,897	1.40	310,875,289	1.50
Transport	87,792,781	0.63	153,055,106	0.74	129,246,253	0.63
Industry	3,585,572,997	25.78	3,030,471,247	14.59	3,838,503,481	18.57
Commerce and services	2,652,028,860	19.07	3,816,959,890	18.37	3,996,560,503	19.29
Education	357,188,219	2.57	585,100,059	2.82	875,019,429	4.23
Culture	201,235,636	1.45	141,522,623	0.68	233,316,670	1.13
Health	1,190,878,113	8.56	2,439,445,257	11.74	2,479,092,811	11.99
Housing	77,164,449	0.55	309,612,800	1.49	330,664,307	1.60
Social assistance	42,538,900	0.31	531,606,650	2.56	977,341,328	4.73
Pension and retirement system	5,081,562,621	36.54	8,171,150,756	39.33	5,426,179,217	26.25
Rural land organization	10,142,502	0.07	0	0	9,721,903	0.05
<b>Total</b>	<b>13,907,957,896</b>	<b>100</b>	<b>20,777,982,845</b>	<b>100</b>	<b>20,670,168,307</b>	<b>100</b>

Source: Secretaria da Receita Federal (Secretary of Federal Revenue)

Note: Exchange rate: 1 US\$ = R\$2.10; all values are adjusted by using the IPCA price index—R\$ of 2006.

# Chile: Tax Loopholes are regressive!!!

Table A6.2.1 Chile: Distribution of Forgone Personal Income Taxes for Highest Five Percentiles of Income 2004

	Subtotal* Millions US\$	P96	P97	P98	P99	P100	Subtotal**
Special regimes <sup>a</sup>	58	0.4%	0.7%	1.3%	3.2%	38.0%	43.6%
Exemptions <sup>b</sup>	33	0.9%	1.4%	1.7%	3.3%	78.6%	85.9%
Deductions <sup>c</sup>	140	6.4%	7.3%	10.6%	18.5%	27.6%	70.4%
Tax credits <sup>d</sup>	121	1.6%	2.1%	3.6%	5.5%	57.4%	70.2%
Tax deferrals <sup>e</sup>	1426	3.2%	3.4%	4.7%	7.9%	66.6%	85.8%
Total	1777	3.2%	3.5%	4.9%	8.3%	60.8%	80.7%

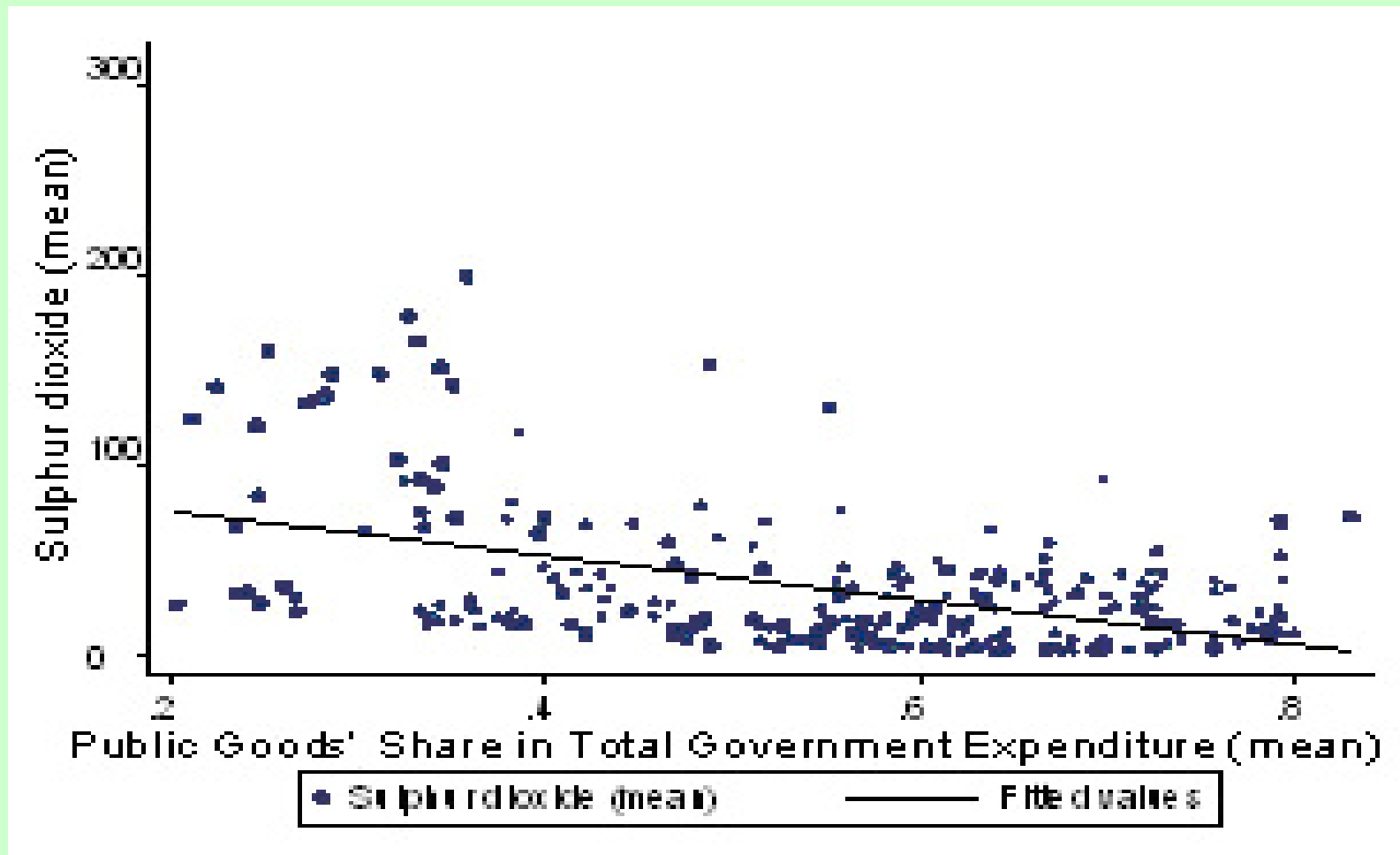
Source: Servicio de Impuestos Internos (Internal Revenue Service; SII) Subdirection of Studies, March 2006.

## 2, Evidence on Spending and Pollution

- Our new study evaluates econometrically the effects of the size and composition of government expenditure on various components of air pollution using a new dataset, containing 31 developing and developed countries, with annual data for about 300 sites in 86 cities over 1985–2000. The analysis considers five major air pollutants, sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), lead, carbon monoxide (CO), and air particles (PM<sub>10</sub>).
- A major finding is that both total government consumption and the share of public goods in total government spending tend to be positively associated with air quality, as measured by the five pollutants. After controlling for per capita household income, the level of total GDP (normalized by the area of the country), the growth rate of GDP, and unobserved site-fixed effects, the two fiscal policy indicators are negatively associated with concentrations of air pollutants.
- Source: Background paper by López and Islam for the QoG project, using GEMS a city-level database.

# Spending on public goods is associated with reductions in air pollution, 1

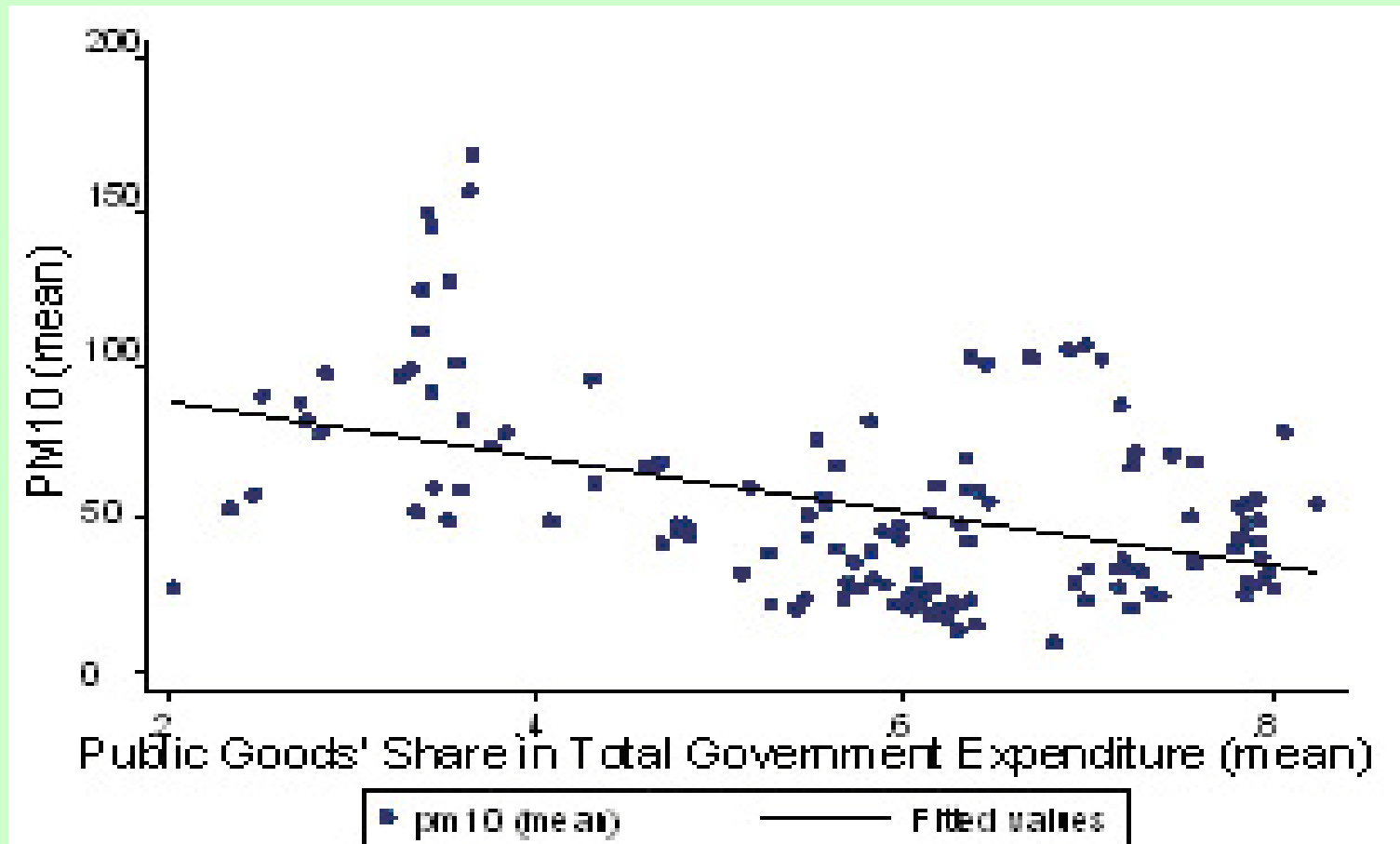
(SO<sub>2</sub>, 1986–99)



Source: López and Islam for QoG project; based on data from the new GEMS dataset.

# Spending on public goods is associated with reductions in air pollution, 2

(PM10, 1986-1999)



Source: López and Islam for this QoG project; based on data from the new GEMS dataset.

# Why this significant result?

- Increasing the share of gov't expenditure on public goods will increase the size of the service sector (social and public services), increasing human welfare (education and health) and inducing a cleaner economy with generally less pollution, as the results show.
- Similarly, increasing the share of public goods in total government expenditures may increase the government's provision of environmental protection and pollution regulation / abatement, -- two important public goods.
- And because a large part of the subsidies to private goods (energy, heavy industry) is environmentally damaging-providing incentive to pollute; thus a shift from subsidies to public goods may reduce the incentives to pollute.

# Trade-off or no trade-off?

- Trade-off: Policymakers everywhere may face a tough choice: can we afford to lose growth in order to reduce greenhouse gas emissions and prevent further global warming?
- The results from our econometric analysis, however, show that that the right fiscal policy—more spending on public goods—can help alleviate this trade-off.
- With technological progress and well-advised policies, including reducing subsidies to fuel, increasing spending on public goods (R&D, social services etc), and those proposed by the Stern report (market-based pricing and taxing policy, such as carbon trade and financing, and a carbon tax), the sacrifices in growth and welfare may or may not be so large, or necessary.
- However, more studies are needed for carbon tax....



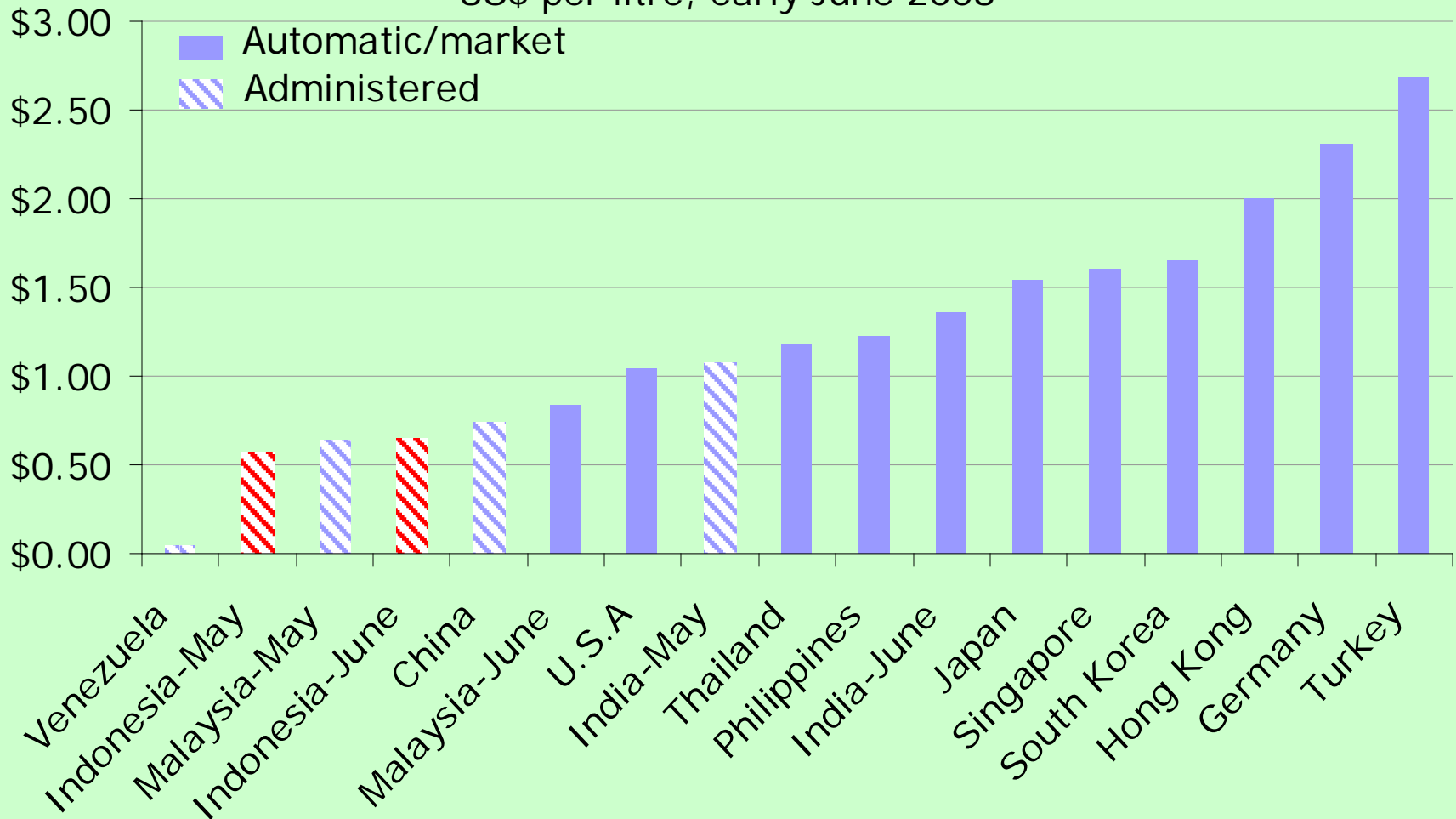
# Fuels still subsidized in many countries

- Fossil fuel consumption subsidies (including petroleum, coal and electricity) are estimated at around \$410 billion worldwide (IEA 2010).
- These cause triple losses: bad for the environment (around 5% of emissions), bad for fiscal positions, and bad for income distribution - as they benefit the rich.
- Eliminating these subsidies can benefit in all three aspects: the fiscal position, the environment, and distribution.

# Subsidies to Gasoline: need to reform

## Gasoline prices across Asia and major economies

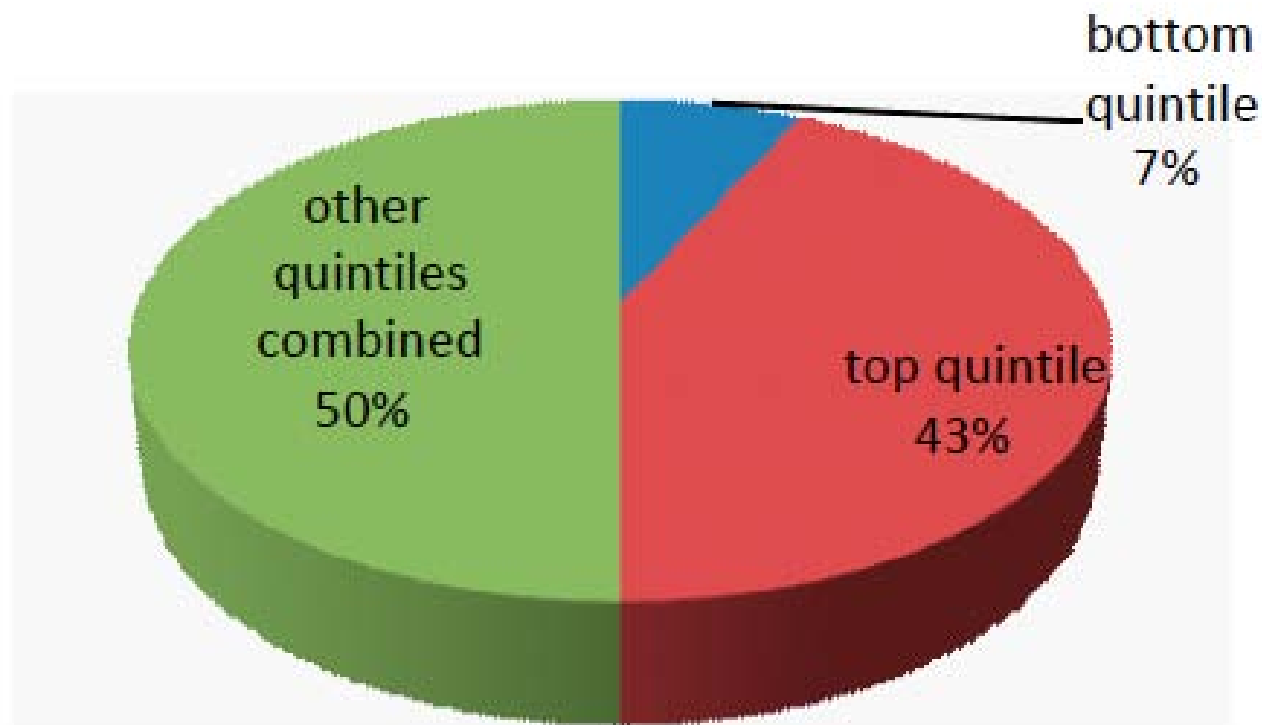
US\$ per litre, early June 2008



Source: World Bank calculations based on various national sources, Financial Times and CEIC.

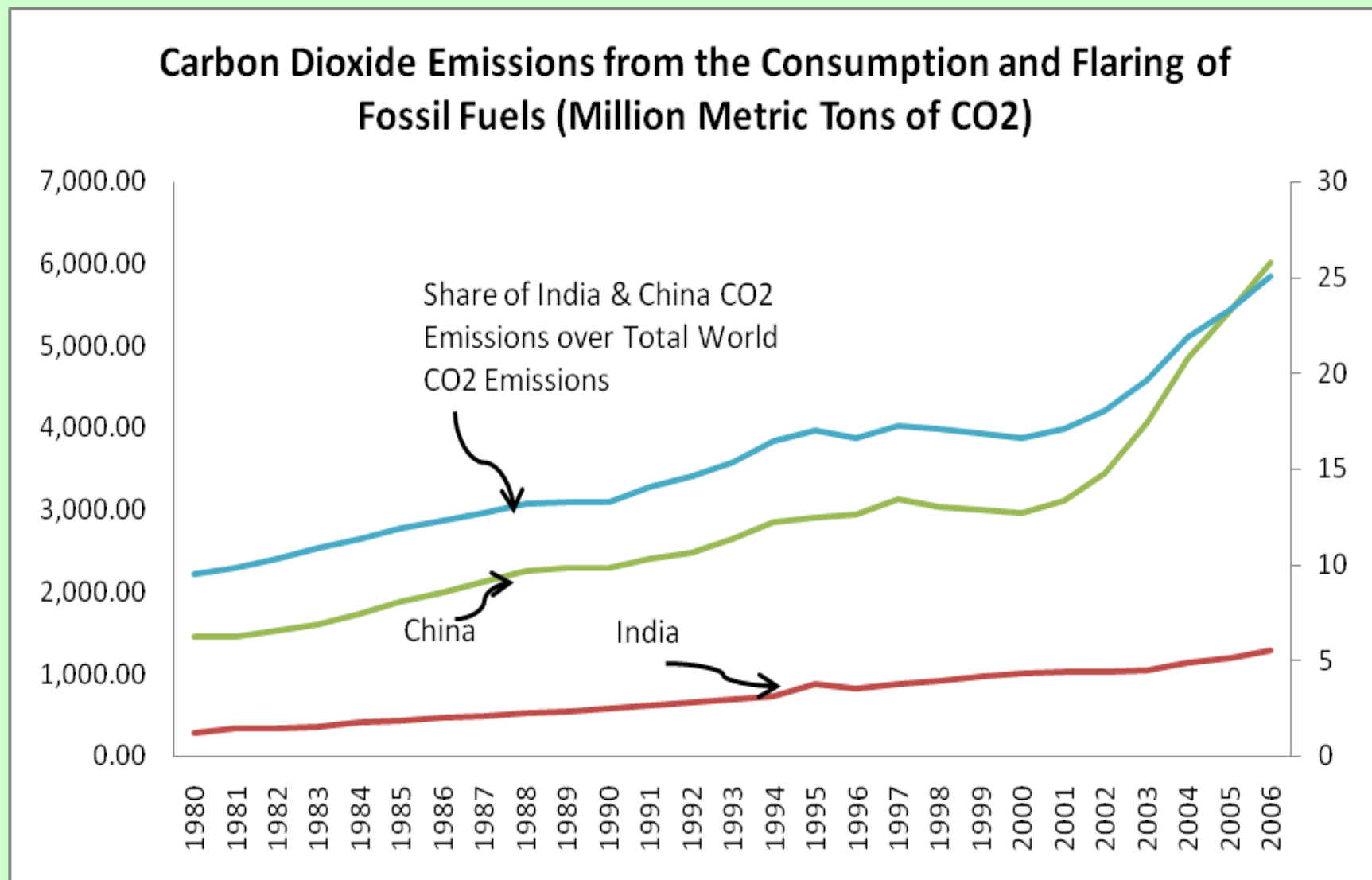
# Fuel subsidies benefits the non-poor

Fuel Subsidy Benefits by Income Group (end 2008 to end-2010)



Source: IMF 2010b, FAD.

# China and India Carbon Dioxide Emissions



# Summary: Fiscal Policy for More Equitable and Sustainable Growth

- Pay attention to the quality of growth: --a type of growth that is equitable, stable and sustainable over time.
- Fiscal policies may be reformed:
  - To reduce subsidies on fuel which provide incentive to pollute and benefit the rich,
  - To reduce other subsidies that are environmentally damaging such as water, and fertilizers
  - To increase spending on public goods and social services; and compensation for eco services
  - To plug tax loopholes which benefit the rich.
  - To maintain a balance between indirect taxation versus direct taxation
  - More studies are needed on carbon tax

# Policies for High Quality Growth

- Investing in human capital. Focuses on rural health and education, rural-urban migration and equal job opportunities are key.
- Public investment would be more effective if it focuses on Agricultural R&D, and education, health and clean technology, alternative fuel, and environmental protection.
- Targeted Programs /conditional cash transfers to support the poor such as Mexico's oportunidades (or PROGRESA) and Brazil's Bosa Familia can be expanded.
- Payment to Ecological Services (PES) such as "returning cropland to forest" has achieved good impacts, and should be expanded.

# **Policy measures for a Green Economy**

- Allow prices and taxes to reflect environmental externalities
- Set higher standards for cars, buildings
- Compact urban development, public transport and limitations on private automobiles
- Support to clean technologies (CMM, wind, biomass)
- Rebalance economy away from heavy industries

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