

# Expanding access to antiretroviral treatment in the developing world : the economic rationale

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&

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# **A new paradigm about economic issues related to HIV/AIDS**

- Access to ART can be made a rational and efficient economic investment.
- A double standard of judgement about the economic and social feasibility of access to HIV treatment is not acceptable between the North and the South.

# AIDS

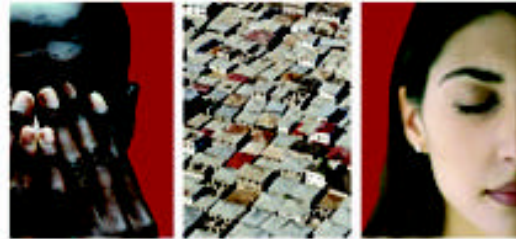
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**The evaluation of the HIV/AIDS  
Drug Access Initiatives in Côte  
D'Ivoire, Senegal and Uganda : how  
access to antiretroviral treatment can  
becom feasible in Africa**

Editors : David Katzenstein  
Marie Laga  
Jean-Paul Moatti

Collection Sciences Sociales et Sida

*Economics of AIDS  
and Access to HIV/AIDS Care  
in Developing Countries.  
Issues and Challenges*



**anRS**  
National agency  
for Aids research

*Eds : Moatti JP., Coriat B., Souteyrand Y.,  
Barnett T., Dumoulin J., Flori YA.*

# The basis for the new economic paradigm about access to ART

- I- Lower differential prices for HIV/AIDS drugs can be obtained through competitive market mechanisms of procurement.
- II- Private interests over intellectual property rights (IPR) must be balanced by societal concerns about public health and global public goods.
- III- HIV prevention and care are no substitutes. They are complementary and synergistic.

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- VI- Economic analysis can help promote equity in access to ART and accountability toward people living with HIV/AIDS.

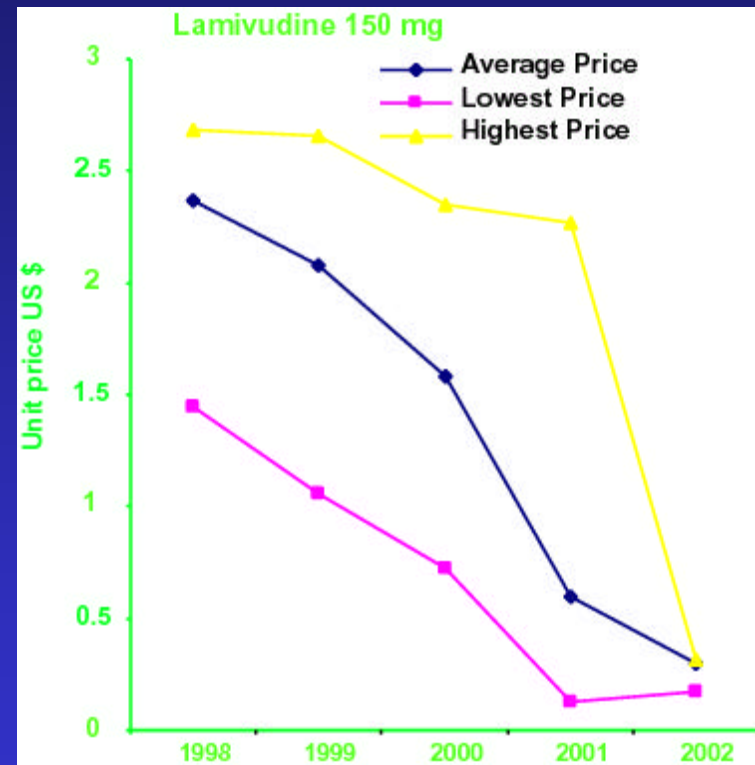
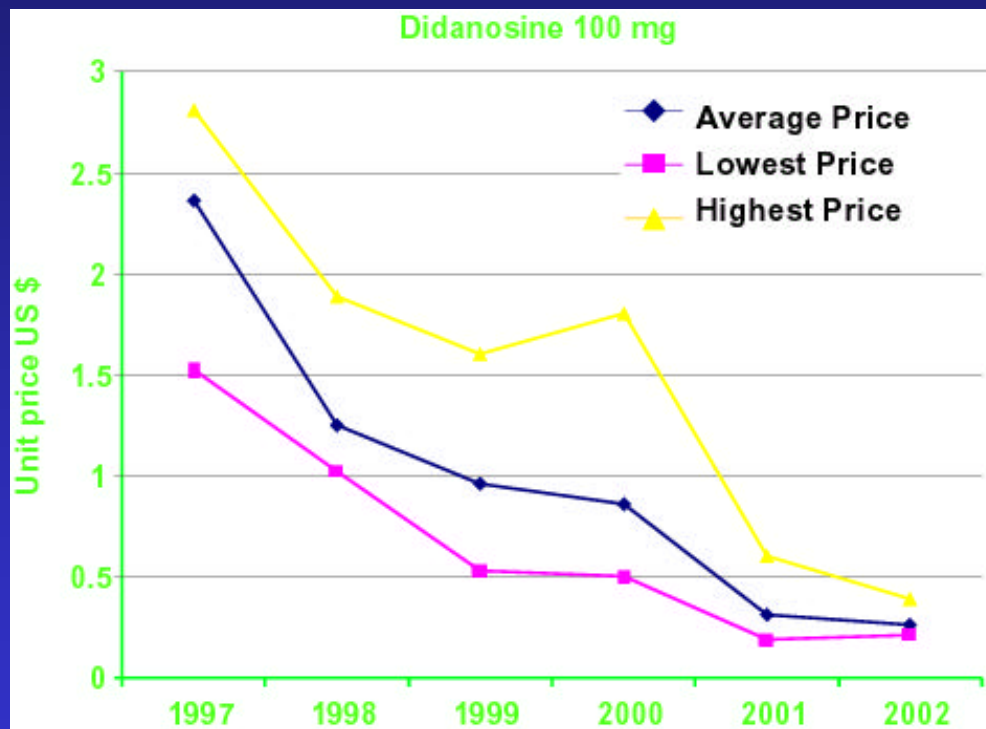
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# Methodology of the ETAPSUD “determinants of drug prices project”

- Focus on **Source prices (Cost Insurance and Freight price, CIF )**
- Longitudinal **observation of 1030 “Real transactions” between 1997 - 2002** : price with quantity purchased and context (tender, negotiation...)
- Collaboration with Brazilian National AIDS program and 13 African countries (Benin, Botswana, Burundi, Burkina Faso, Cameroon, Congo, Côte d’Ivoire, Gabon, Kenya, Malawi, Mali, Nigeria Togo )

# Variability of ARV prices between countries



# Multiple linear regression of prices per daily dose of ARV drugs in 13 African countries and Brazil (0)

- **Dependent variable** = Log of price of daily dose unit in current US \$
- **Adjusted R-sq** = 0.59 (good OLS properties)
- **Macroeconomic variables** (GDP per capita, etc) & **characteristics of health care system** (% of expenditures through public funding, etc) = not selected in final model

# Multiple linear regression of prices per daily dose of ARV drugs in 13 African countries and Brazil (1)

VARIABLES	bestimates	Pr >  t
Year 2001	0.224	0.001
Year 2000	0.816	<0.0001
Year 1999	0.953	<0.0001
Year 1998	1.136	<0.0001
Year 1997	1.271	<0.0001
Nb of units sold	- 1.407 <sup>E</sup> -8	0.0228
PI drugs	0.962	0.0001
NNRTI drugs	0.375	0.0001

# Multiple linear regression of prices per daily dose of ARV drugs in 13 African countries and Brazil (3)

VARIABLES	bestimates	Pr >  t
AAI related transact.	- 0.903	<0.0001
Generic drug	- 1.027	<0.0001
Patent protection In country	0.304	<0.0001

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# The impact of Art on HIV-related risk behaviours (1)

- **Biological and epidemiological evidence :**
  - Probability of HIV transmission per unprotected sexual act
  - Probability of sexual interactions between serodiscordant individuals

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# The impact of Art on HIV-related risk behaviours (1)

- **Socio-behavioural evidence :**
  - « False reassurance » about HIV risks in the general population and high-risk groups of developed countries
  - HIV-related risk behaviours in ART-treated patients of developing countries

## Sexual behaviours of HIV infected patients in Ivory Coast (Jan 2000 - hospital survey)

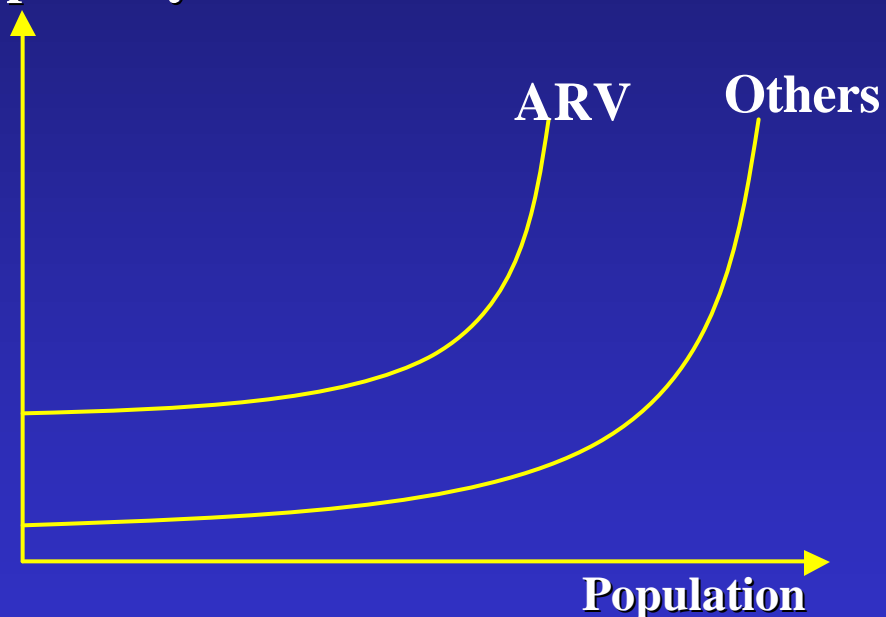
	ARV Treated	Non treated	P
	<i>n=141</i>	<i>n=446</i>	
Has a main partner	70.9%	61.9%	0.1
Does not know main partner HIV serostatus	51.4%	84.1%	0.000
Has informed at least one member of family of HIV serostatus	95.0%	55.1%	0.000
Sexually active in prior 6 months	53.2%	41.7%	0.000
Systematic condom use with main partner (n=305)	77.5%	46.9%	0.009
Systematic condom use with occasional partners (n=115)	63.3%	46.6%	0.05

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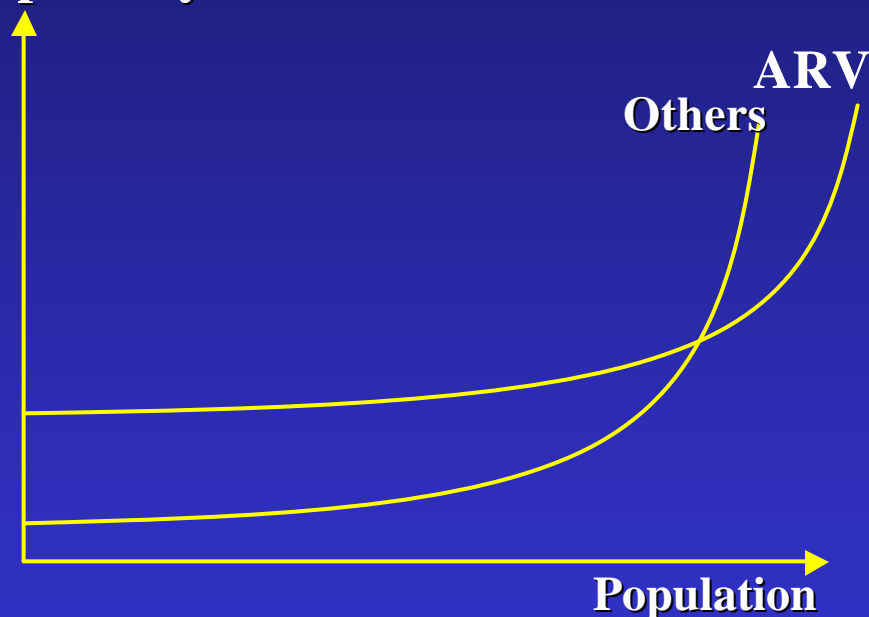
# Cost-effectiveness of ARV therapies versus Alternative strategies for HIV/AIDS care

Marginal cost  
per lifeyear



Hyp : ARVs always dominated

Marginal cost  
per lifeyear



Plausible hyp : ARV cost  
effectiveness ratios intersect those  
of alternative strategies

# **Impact of Brazil MOH ARV Drug policy (1996 - 2002)**



**Mortality reduction ➤ 40 - 70%**

**Morbidity reduction ➤ 60 - 80%**

**Occurrence of new AIDS cases ➤ 58,000 avoided cases & Occurrence of AIDS related deaths ➤ 90,000 avoided deaths**

**7 fold Reduction in Hospitalization needs ➤ 358.000 avoided admissions (1997- 2001)**

**Estimated Savings ➤ U\$ 2.2 billions  
(Hospital and Ambulatory Care)**

# Cost-effectiveness Criterion in rich countries

- Marginal cost per lifeyear gained

< 2 x GDP/cap => accepted

> 6 x GDP/tête => rejected

OCDE countries GDP/cap = 28,000 US\$

- Marginal health care cost per lifeyear gained of HAART vs Non HAART =  
 $14,000\text{US\$} \leq \text{MC} \leq 26,000\text{US\$}$

*Freedberg KA, et al., N Engl J Med 2001;344:824-31.*

- HAART cost-saving when indirect costs are included

# Why not a similar criterion in developing countries ?

Cost per additional life year saved (LYS)

- MTCT prevention

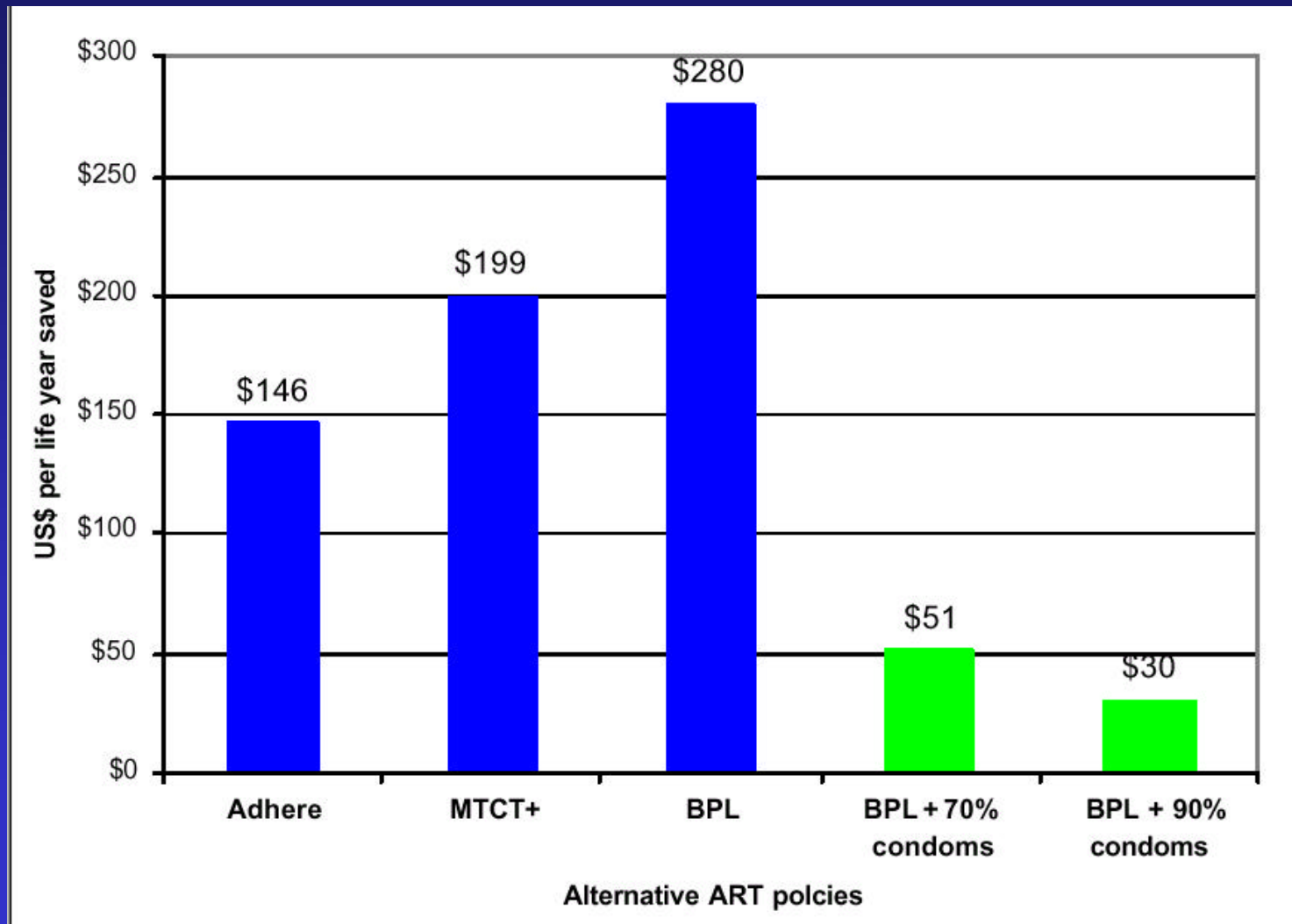
Nevirapine                      \$5/LYS                      Marseille et al, 1999

AZT/3TC                      \$14/ LYS                      Soderlund et al, 1999

- Adult ART

d4T/3TC/NVP                      \$700-1400/ LYS                      Boulle et al.2003

# Cost-effectiveness of alternative ART scenarios in India



Note : Costs and effects are discounted at 10%

Source : Over M, Heywood P, Kurapati S. et al., 2003

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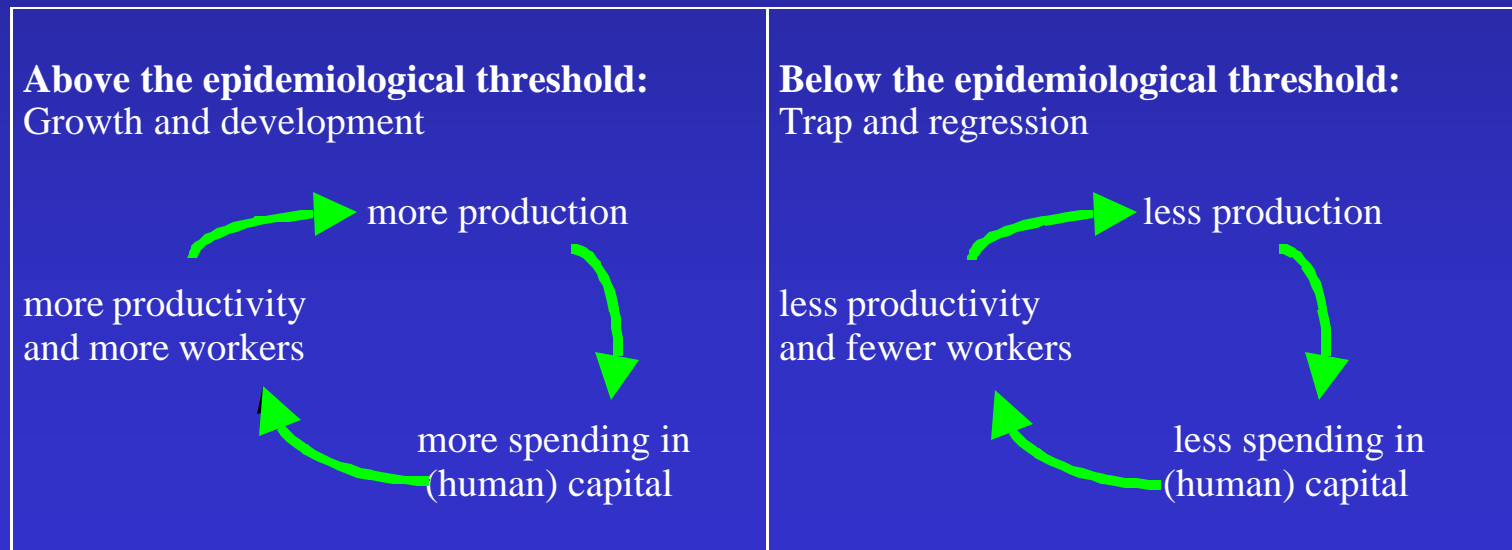
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# Previous macro-economic estimations of reduction in GNP attributable to HIV/AIDS

Country	Average reduction in GNP (in annual growth points)	Period	Year	Sources/authors
30 sub-Saharan African countries	0.8%- 1.4%	1990-2025	1992	Over (1992)
Cameroon	2%	1987-1991	1992	Kambou et <i>alii</i> (1992)
Zambia	1%-2%	1993-2000	1993	Forgy (1993)
Tanzania	0.8% 1.4%	1991-2010	1991	Cuddington (1992)
Kenya	1.5%	1996-2005	1996	Hancock et <i>alii</i> (1996)
Mozambique	1%	1997-2020	2001	Wils et <i>alii</i> (2001)

# MACRO-ECONOMIC IMPACT OF AIDS : THE THREAT OF AN EPIDEMIOLOGICAL TRAP FOR DEVELOPMENT

Intensity of the crisis and/or weakness of the health policy response

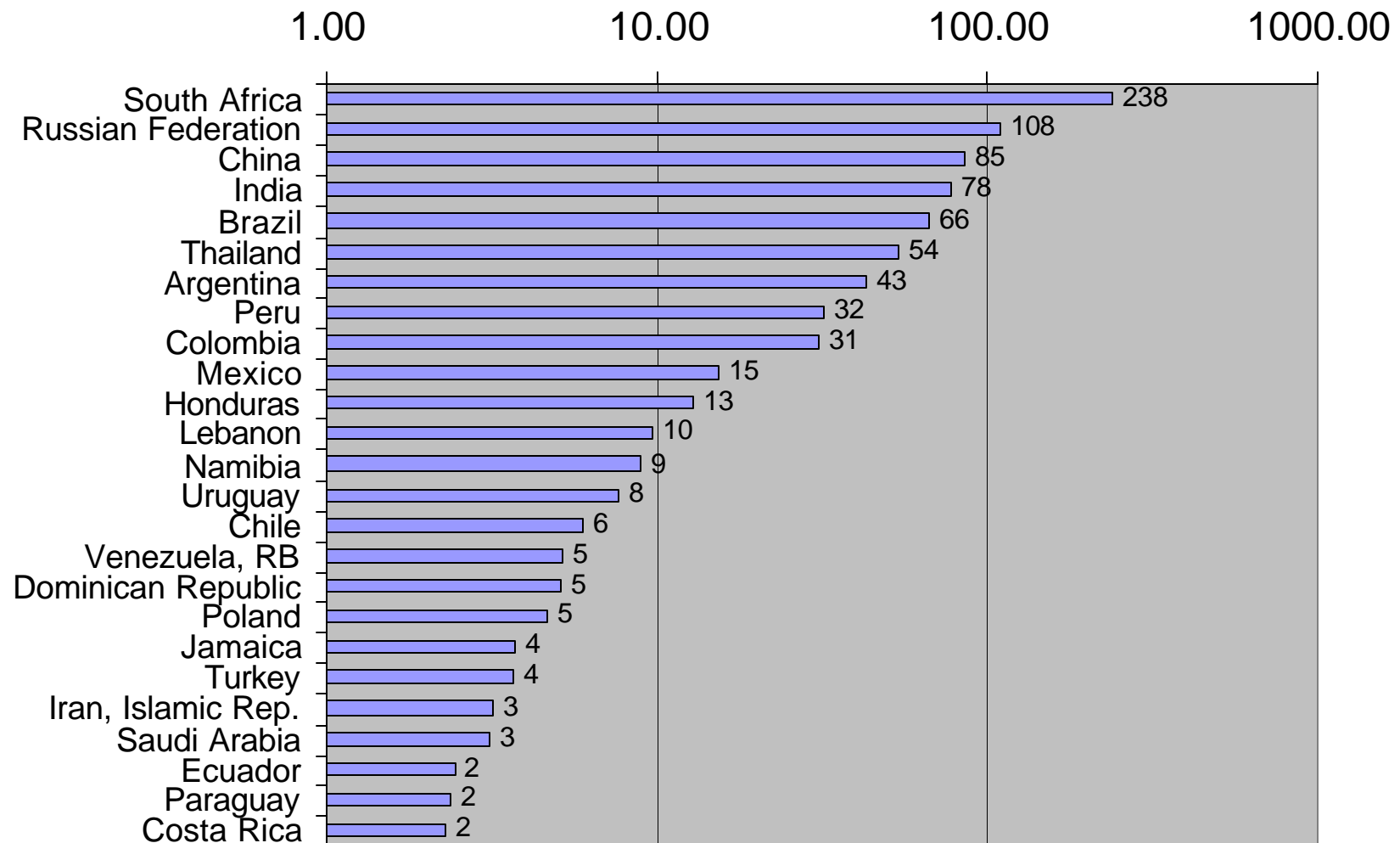


Source : Drouhin N., Touzé V., Ventelou B., 2003



“Sure, we need more \$\$ for care, prevention, and treatment, but where is the money going to come from?”

# Out of pocket HIV/AIDS spending, selected countries, year 2000 (log scale)



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# Conclusions about equity

- **Improve ability to pay for ARVs**
  - ⇒ Support ART coverage by health care insurance and private companies
- **Target public subsidies for ART and care on the poor**
  - ⇒ Involve PLWHA in priority setting
- **Increase accountability**
  - ⇒ of HIV programmes toward donors & governments
  - ⇒ of donors, governments and health care professionals toward PLWHA

« Through each individual act we accomplish as human beings, we create the image of humanity as we think it should be »

*Jean-Paul Sartre (1945)*

« We are the champions of the world »

*Freddy Mercury (1977)*