# Health in Developing Countries

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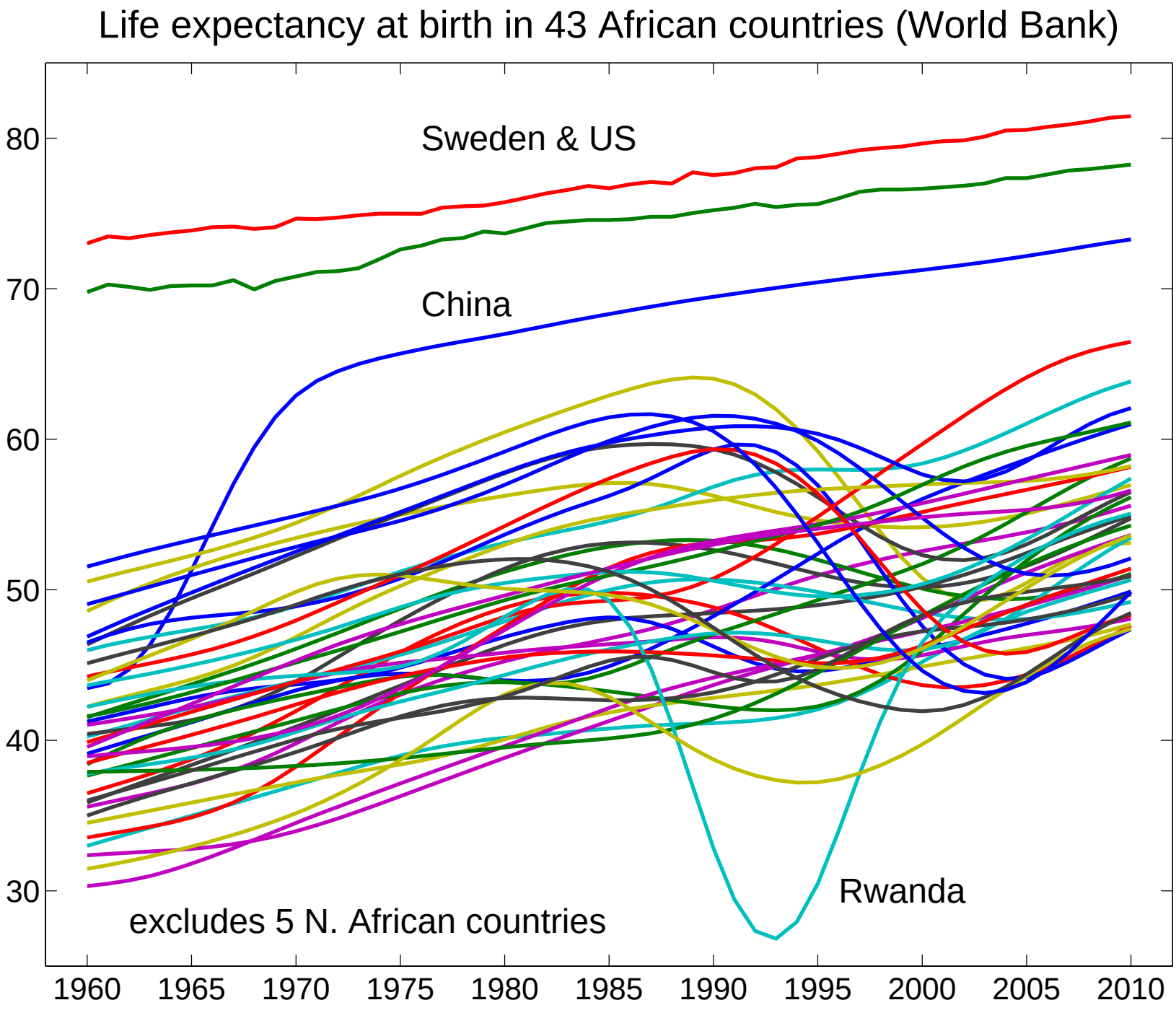
# Introduction

How can economists/economics contribute to improving health in developing countries?

My remarks will look at some of the major health problems in those countries, examine some of the contributions economists have made thus far, and speculate about some possibilities for the future.

Improvements in health over the last 50 years have contributed enormously to welfare throughout the world: see Jones and Klenow (2010) for a quantitative assessment of the gains.

These improvements were not been limited to rich countries: life expectancy grew even in the poorest parts of the world.


Life expectancy at birth in 43 African countries (World Bank)
Sweden & US
China
Rwanda
excludes 5 N. African countries
80
70
60
50
40
30
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010

# Introduction

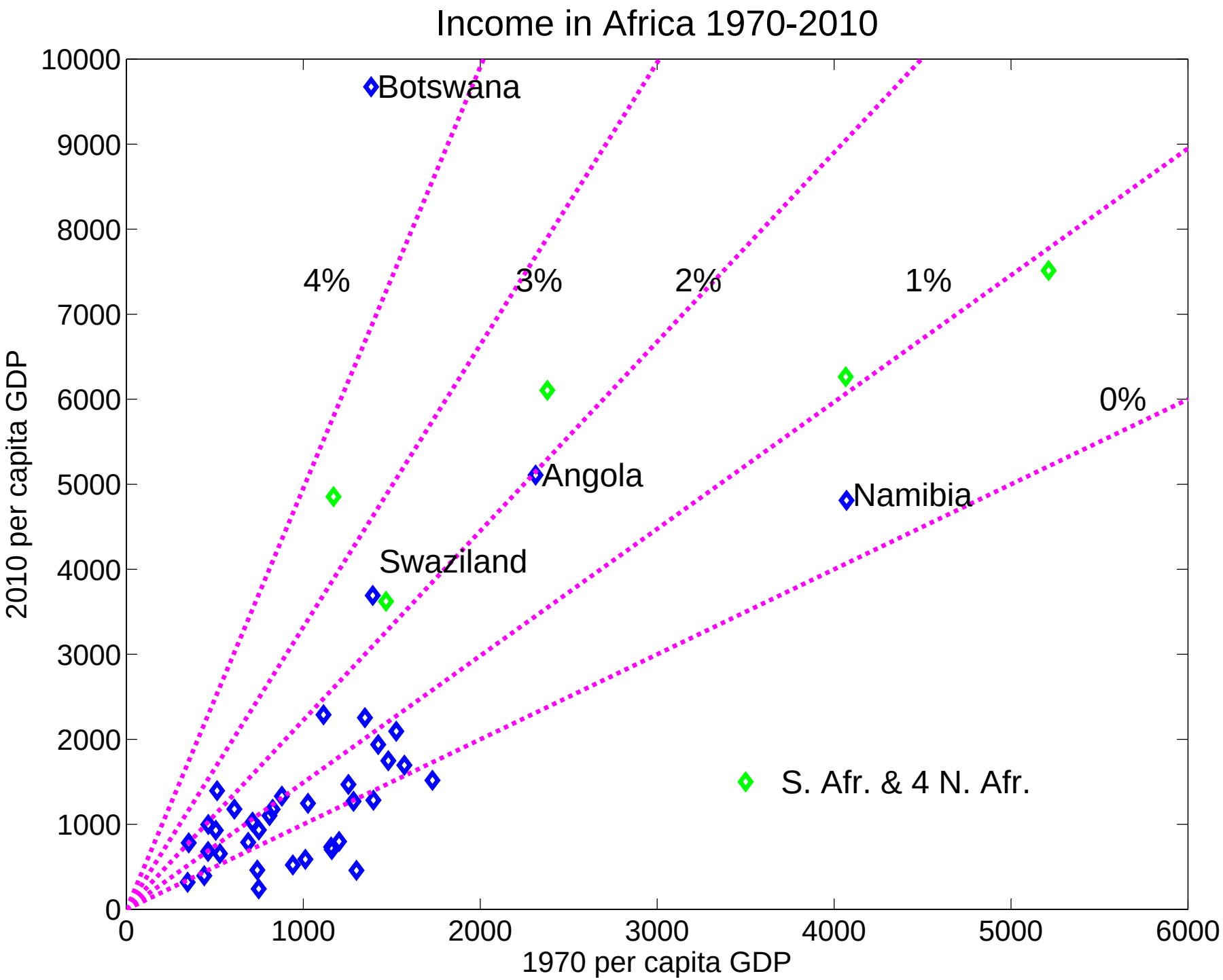
These improvements in life expectancy do not seem to have come from rising incomes.

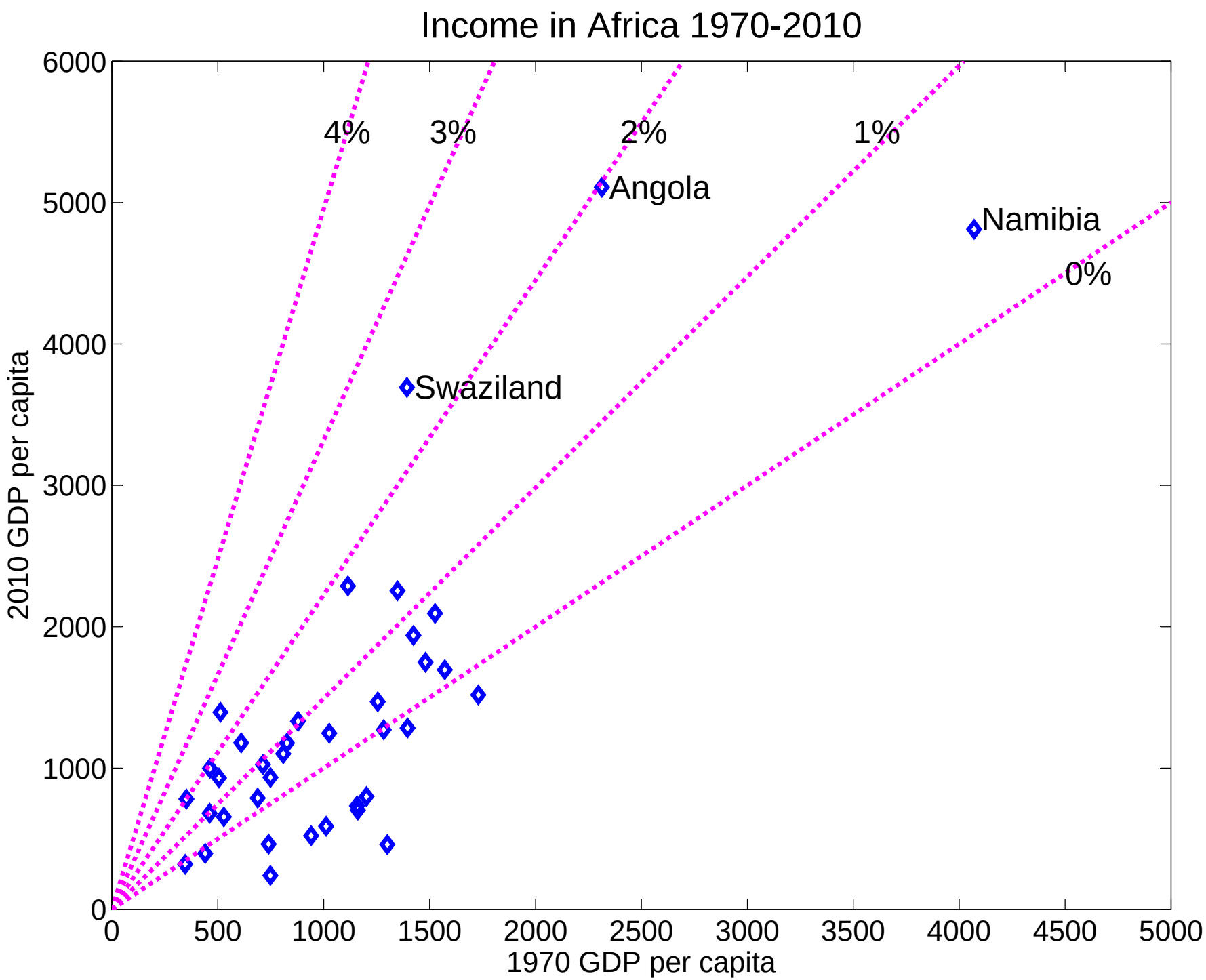
By comparison, GDP per capita in 2010 was

7,000 or 8,000 in China,

41,000 the U.S. and

36,000 in Sweden


Income in Africa 1970-2010
2010 per capita GDP
1970 per capita GDP
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
Botswana
Angola
Namibia
Swaziland
4%
3%
2%
1%
0%
S. Afr. & 4 N. Afr.


Income in Africa 1970-2010
2010 GDP per capita
1970 GDP per capita
0
1000
2000
3000
4000
5000
6000
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
4%
3%
2%
1%
0%
Angola
Namibia
Swaziland

# Introduction

Instead, much of the improvement seems to have come from deliberate interventions by various governments and NGO's.

I will argue that we can reasonably hope for further improvements by expanding successful programs and devising new ones to address problems where progress thus far has been slow.

Economists can contribute to this agenda by:

—estimating price elasticities

—measuring external effects

—devising and evaluating programs for behavioral modification.

# Introduction

In particular, I will look at three health objectives that are among the UN's Millennium Development Goals:

—reduce child mortality

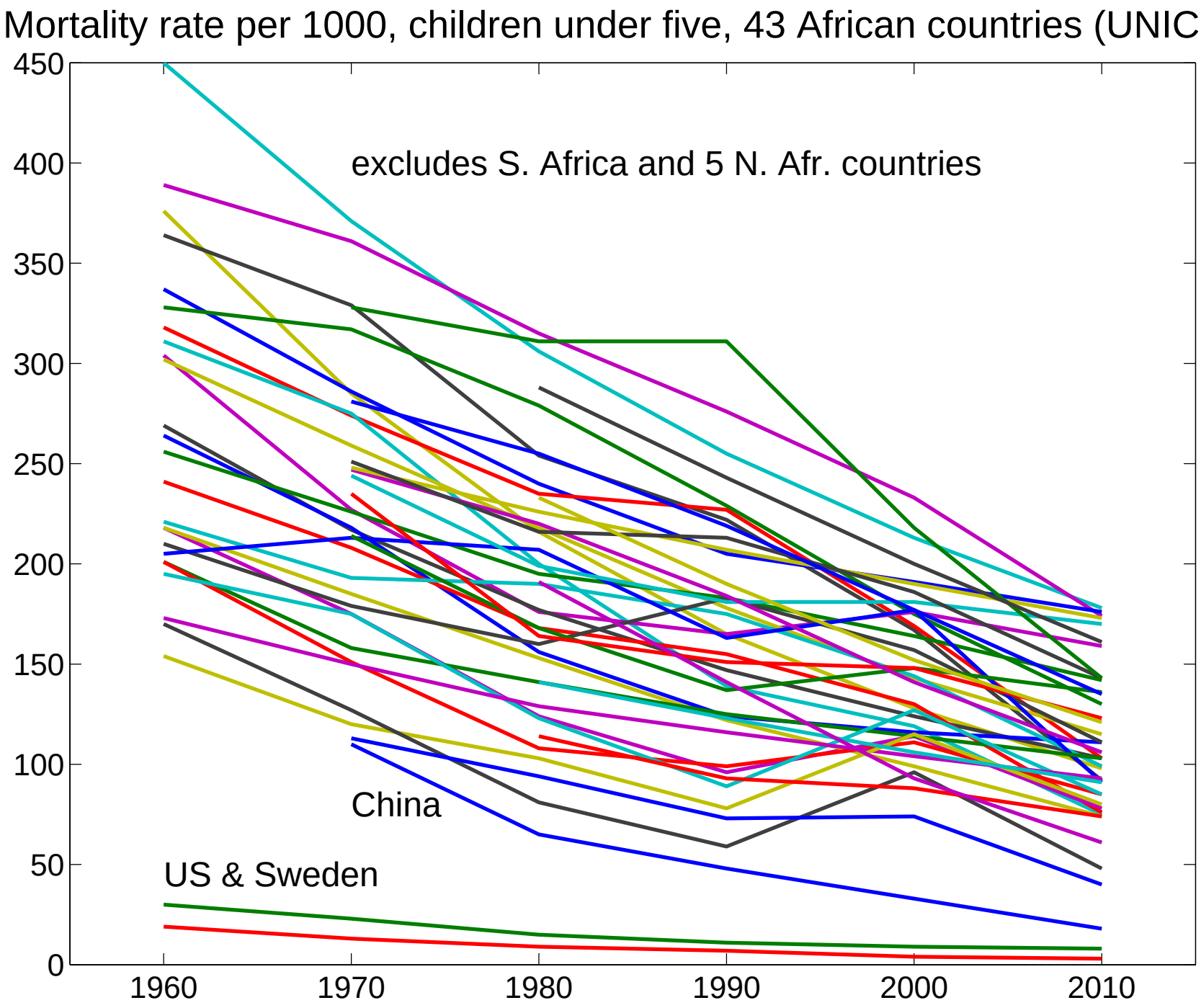
—improve maternal health

—combat HIV/AIDS, malaria, and other diseases.

I will look at data for Africa, but many of the same issues arise in South Asia.

# Child mortality

Much of the gain in life expectancy has come from reductions in infant and early childhood mortality.


Mortality rate per 1000, children under five, 43 African countries (UNICEF)
450
400
350
300
250
200
150
100
50
0
1960
1970
1980
1990
2000
2010
excludes S. Africa and 5 N. Afr. countries
China
US & Sweden

# Child mortality

The trends shown in the figure have come in large part by bringing selective parts of modern medicine to developing countries:

—vaccines against childhood diseases

—rehydration therapy for treating diarrheal diseases

—insecticide treated nets (ITN's) for malaria prevention.

# Child mortality

Other interventions reduce physical and mental stunting in young children and improve health outcomes more generally:

—deworming,

—providing micronutrient supplements (vitamin A, zinc)

—fortification of basic foods (iron, iodine)

—providing chlorine for household water.

Pregnant women are also important targets for nutritional services.

# Health

Economists can help governments and NGO's spend their resources effectively.

Randomized trials can answer critical questions, such as

—how effective are various interventions?

—what is the price elasticity (willingness-to-pay)?

—how much does that elasticity vary across products, across income groups, across geographic regions?

—how large are the external effects?

# Health: how to leverage up limited funds

Limited funds can be leveraged up by exploiting

(a) pricing (co-pays), and (b) external effects.

If the available funds do not permit distribution at a zero price to the entire target population, selling the product or service at a subsidized price can increase the number of people served.

[Although if the price elasticity is too great, selling may not be worthwhile. For ITNs, even a 10% co-pay reduces demand dramatically.]

# Health: externalities

Externalities can also be exploited.

There is also a substantial positive (local) externality from ITN's, since the nets actually kill mosquitoes that land on them.

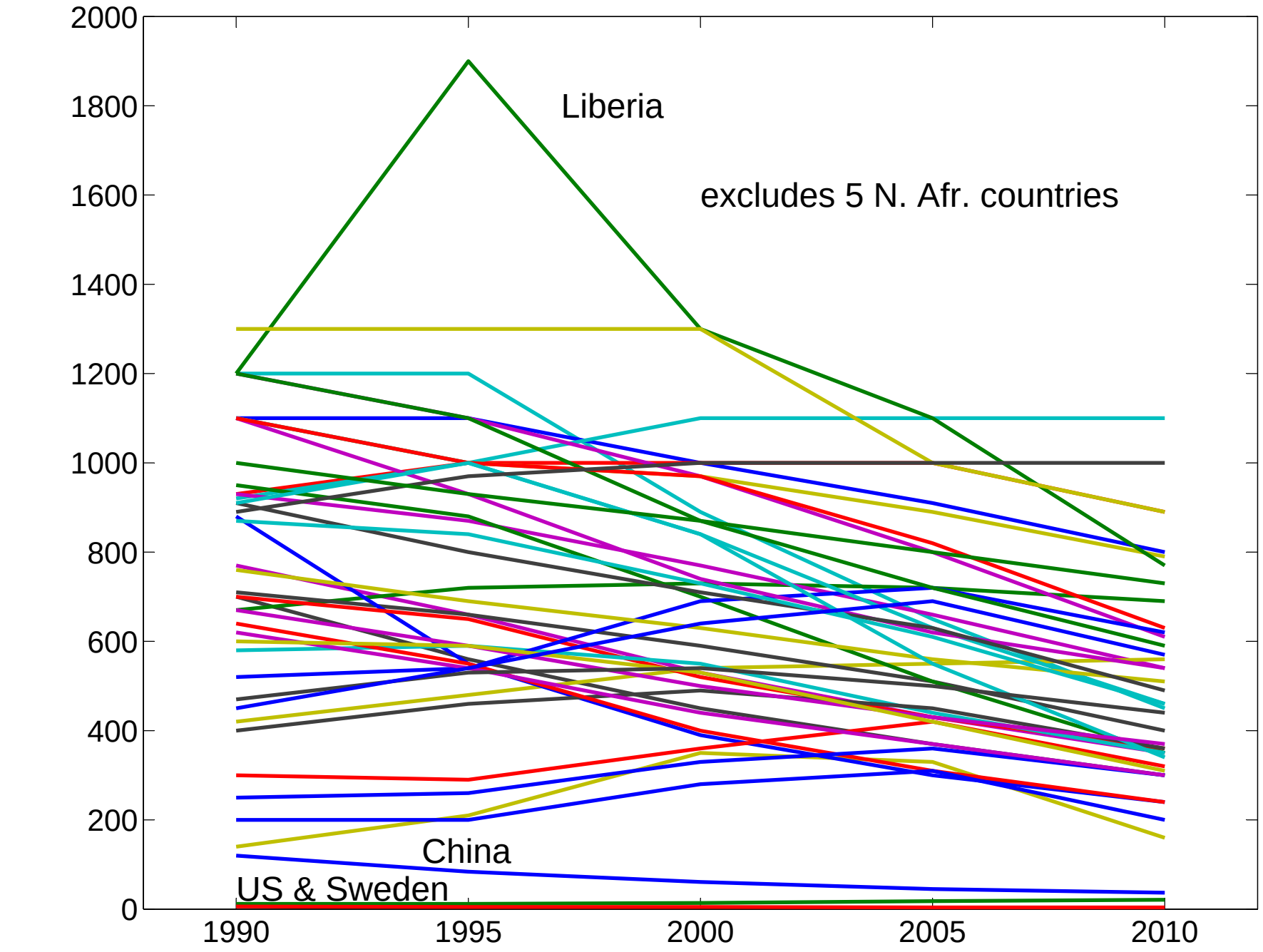
A study by Hawley et. al (2003) in Kenya finds that if 50% of families close by use nets, the non-users are almost as well protected.

In this case the goal (with limited funds) should be to reach a 50% take-up rate in every village, and cover more villages.

# Maternal health

The second MDG involved maternal health.

Here there has been less progress overall.


Maternal mortality rate per 100,000 live births in 43 African countries, (World Bank)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1990
1995
2000
2005
2010
Liberia
excludes 5 N. Afr. countries
China
US & Sweden

# Maternal health

1. Maternal deaths can often be averted with simple surgical procedures performed by trained health workers (not necessarily doctors).

Well designed field experiment would be useful in assessing the costs and effectiveness of such programs.

2. Low Birth Weight (LBW) puts both mother and child at risk, so measures that reduce LBW also reduce maternal and child mortality.

For example, informational campaigns that encourage women:

—to delay marriage and child bearing (for very young women)

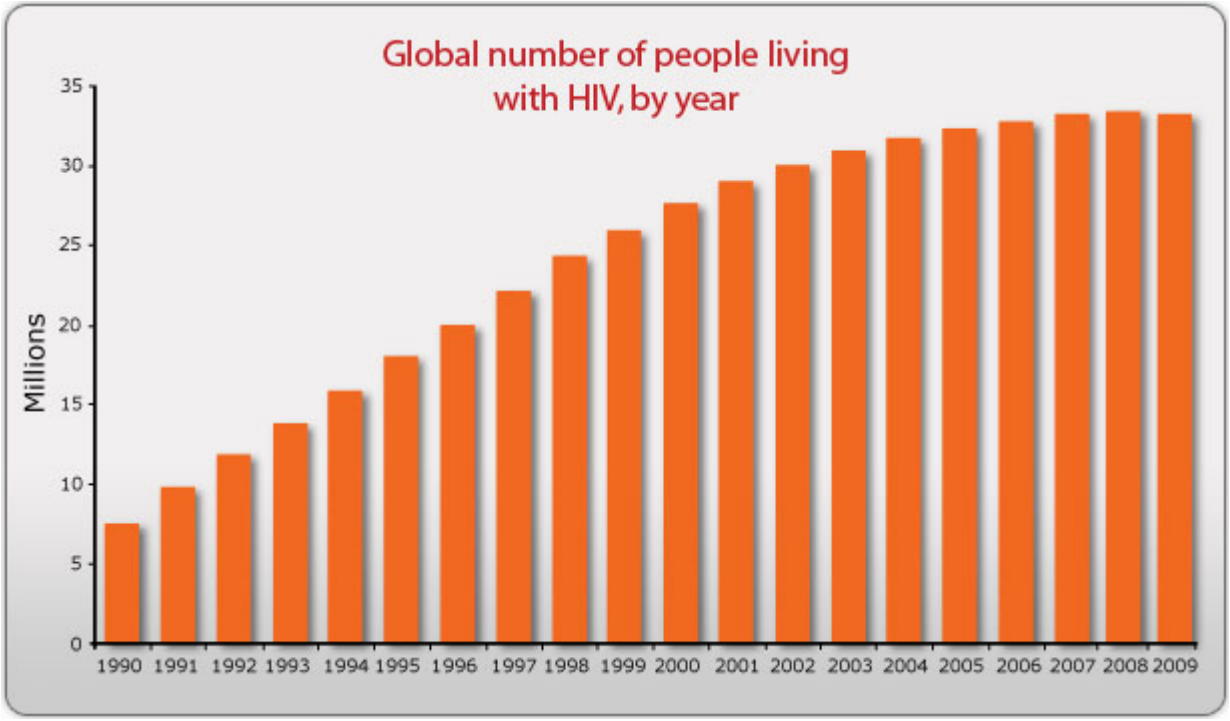
—to space births (for all women).

Economists can be useful in designing and assessing such campaigns.

# Communicable diseases

The third MDG concerns communicable diseases that affect both men and women: HIV/AIDS, tuberculosis, and malaria.

The next figure shows the prevalence of HIV/AIDS.


Global number of people living with HIV, by year
Millions
0
5
10
15
20
25
30
35
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009

# Communicable diseases

34 million people were living with HIV/AIDS and 1.8 million died.

Of those, 22.9 million and 1.2 million were in Africa.

8.8 million people worldwide fell ill with TB and 1.4 million died.

(About a quarter of HIV related deaths are from TB.)

216 million cases (very roughly) of malaria worldwide, and

655 thousand deaths.

(90% of the deaths were in Africa, mostly children under 5.)

[All figures are for 2010.]

# Communicable diseases

Many of the programs designed to slow the spread of HIV/AIDS involve behavior modification: persuading people to avoid high-risk behaviors.

Since TB is highly contagious, treating the infected is critical, as is insuring that the treated take their entire course of drugs.

Economists are well equipped to help devise and evaluate the effectiveness of programs to achieve these goals.

# Communicable diseases

Drug resistance is a problem, and finding ways to prevent the sale of cheap therapies that exacerbate drug resistance is critical.

Kenneth Arrow's work developing and promoting the approach in Affordable Medicines Facility-malaria—AMFm has provided a big step forward for malaria.

Can it also provide a model for dealing with drug-resistant TB?

# Ideas for future experiments

If the goal is to promote acceptance of a useful (and benign) product,

like ITNs or vitamin supplements, perhaps it is not inappropriate to think about how for-profit companies market products.

Price is only one instrument.

We may not understand, in terms of a theoretical model of household

behavior, why shoes named for Lebron James are more attractive.

Does Nike care? Are ITNs any different?

# Conclusions

Going forward, there seem to be many potential interventions to reduce mortality and improve health in developing countries, and several avenues along which economists can contribute.