GLOBAL HEALTH ECONOMICS

MASTER IN PUBLIC POLICY, S2

HEALTH DETERMINANTS AND HEALTH OUTCOMES

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Outline

1. Introduction
2. Typologies of determinants
3. Health outcome measures
4. Health and wealth
5. Other types of interactions
6. Policy implications

Health and wealth

Evidence on the social gradient: the Whitehall study of British Civil Services

- Prospective cohort study: **wave 1** (1967-1977)

18 000 male civil servants between 20-64

Conclusion:

Social gradient based on seniority/occupation in overall mortality, but also for a range of specific diseases

- Prospective cohort study, **wave 2** (1985 +)

10,308 civil servants between 35-55 (33% female)

Conclusion:

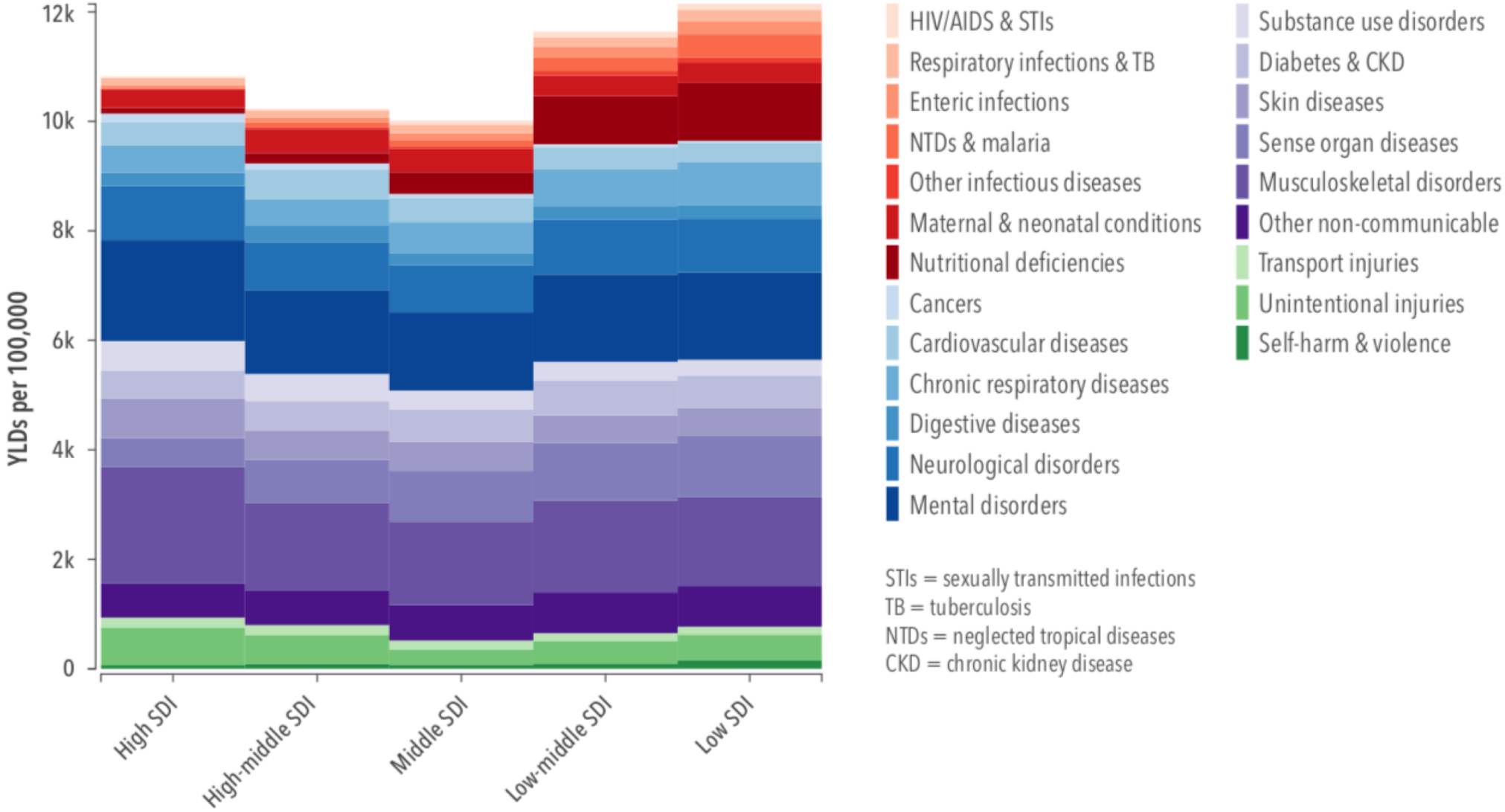
Social gradient in morbidity for men and women

Causal factors identified: lifestyle (smoking, lack of physical activity, obesity, biometric markers), early life factors, the way work is organized, work climate, social influences

Disability and development

Years lived with disability by Socio-demographic Index (SDI) grouping – YLDs per 100,000, age-adjusted, 2017

SDI captures three different aspects of development: income, education, and fertility.



STIs = sexually transmitted infections
TB = tuberculosis
NTDs = neglected tropical diseases
CKD = chronic kidney disease

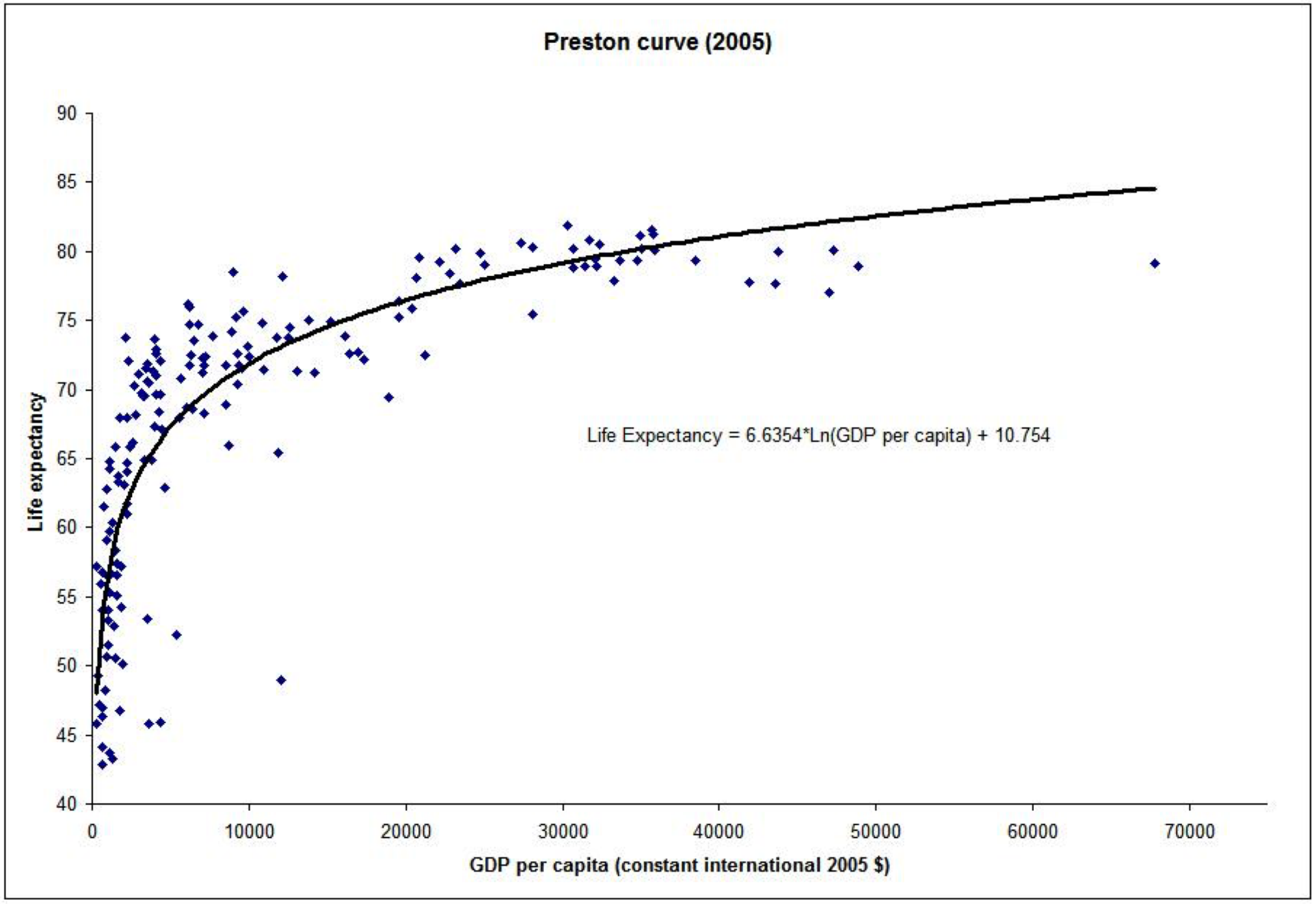
Source: Global Burden of Disease study 2017

Preston curve (1975)

⇒ Individuals born in richer countries, on average, can expect to live longer than those born in poor countries

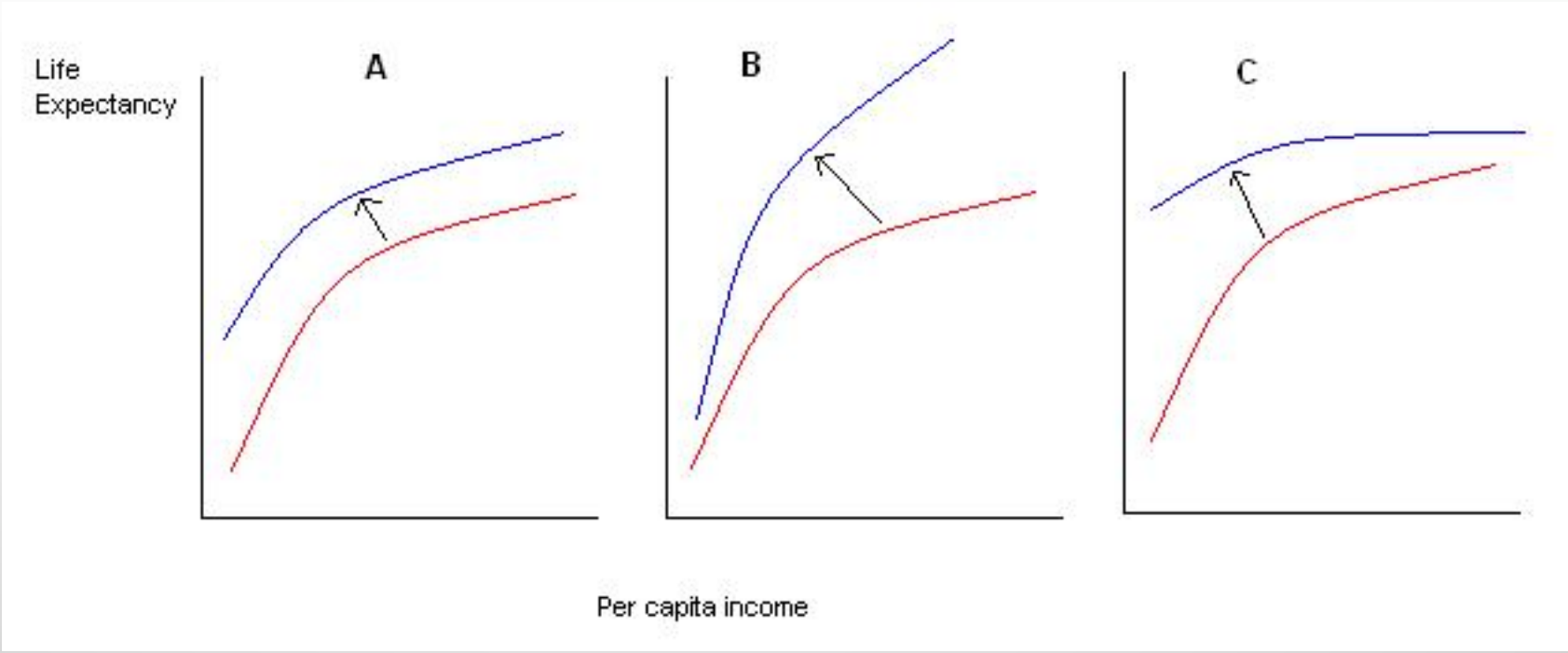
⇒ The link between income and life expectancy flattens out (at low levels of per capita income, further increases in income are associated with large gains in life expectancy, but at high levels of income, increased income has little associated change in life expectancy)

⇒ if the relationship is interpreted as being causal, then there are **diminishing returns** to income in terms of life expectancy


Preston curve (2005)
Life expectancy
90
85
80
75
70
65
60
55
50
45
40
Life Expectancy = 6.6354*Ln(GDP per capita) + 10.754
0
10000
20000
30000
40000
50000
60000
70000
GDP per capita (constant international 2005 $)

Shifts of the Preston curve due to exogenous innovation

Improvements in health technology (upwards shifts in the curve) accounted for 75% to 90% of the increase in life expectancy, while income growth (movement along the curve) was responsible for the rest



Source: Handbook of development economics, Volume 4
T. Paul Schultz

A - New health technology is uniformly applicable across countries.
B - New health technology helps rich countries more.
C - New health technology helps poor countries more.

Implications of the Preston curve

- The concavity of the relationship between income and health indicates that a transfer of income from the rich to the poor **would increase the average health of a society**
- This policy outcome holds only if the relationship between income and health is causal (i.e. if higher income causes longer life expectancy)
- If the relationship is driven by other factors (multifactorial) or if it is better health that leads to higher income (endogeneity issue), then this is no longer be true

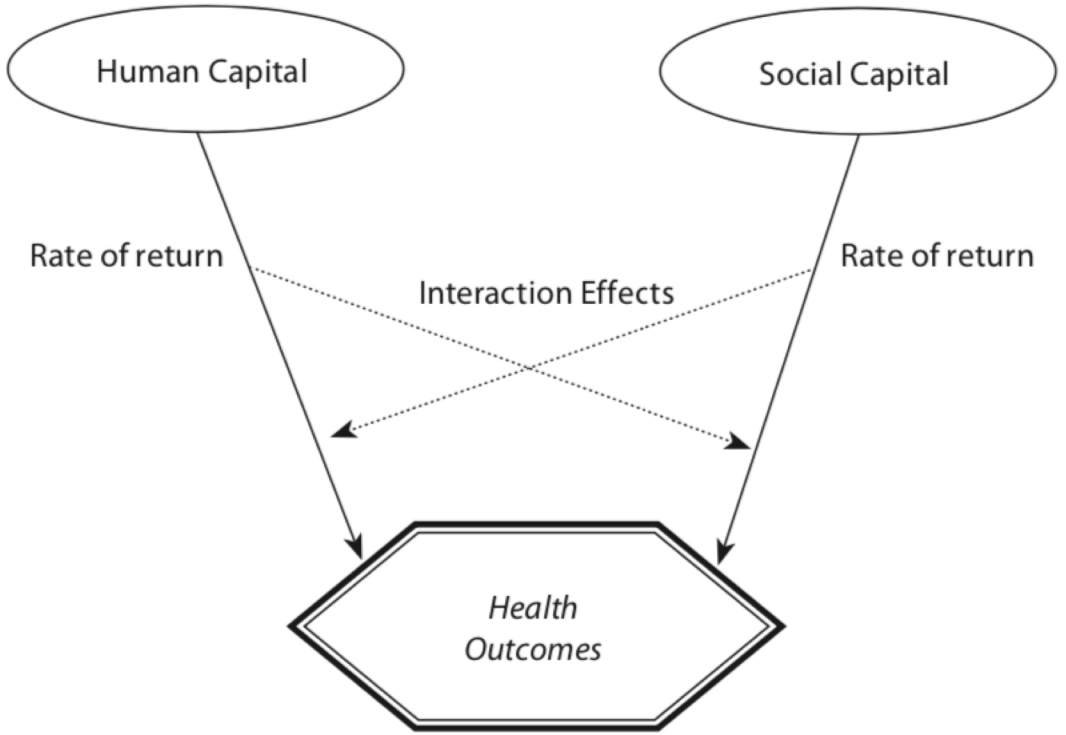
Reverse causality and the Preston curve

- Reverse causality between health and income means that estimates of the impact of income on life expectancy could mistakenly reflect the influence of life expectancy (more generically, health) on income
- Not accounting for this potential two-way causation may overestimate the importance of income for life expectancy
- **Instrumental variables** (IV) allow economists to separate out one effect from another: identification of an "instrument" – i.e. a variable which correlates with per capita income but not with the error term in the linear regression
- Difficult since any variable which is likely to correlate with income is also likely to correlate strongly with health and life expectancy
- Panel data analysis (Erkan et al. 2004) suggests that **in low and middle-income countries, the causality does indeed go from income to health, while the opposite is true for rich countries**

Other types of interactions

Individual level interactions: an example with social capital

Figure 0.2. **Interrelationships among human and social capital and health**



Source: Miller *et al*. (2006), "Social Capital and Health in Indonesia".

Macro level interactions:

The macro-economic determinants of health and health inequalities: umbrella review protocol

Yannish Naik, Peter Baker, Ian Walker, Taavi Tillmann, Kristin Bash, Darryl Quantz, Frances Hillier-Brown and Clare Bambra

Research question:

What are the macro-economic factors, strategies, policies and interventions that affect health outcomes and health inequalities?

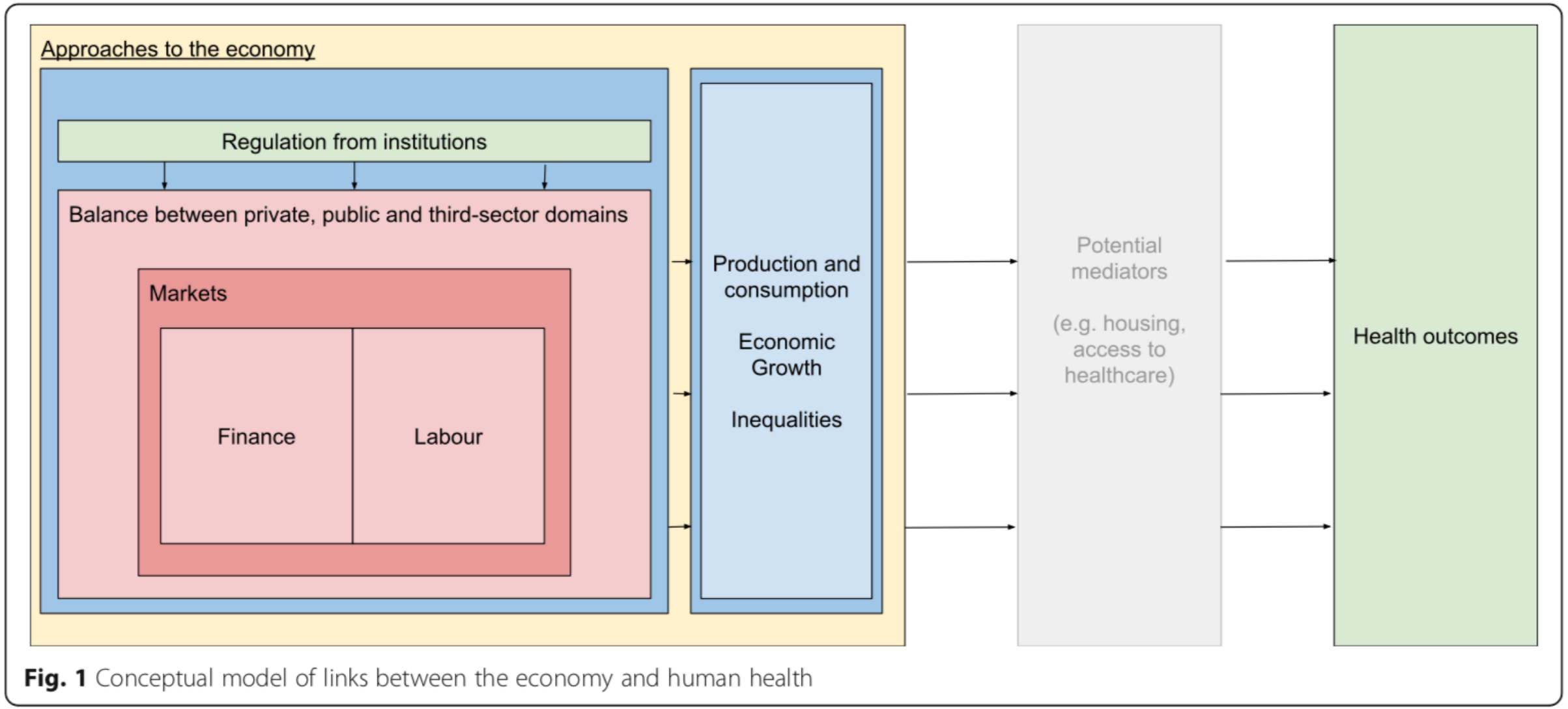


Fig. 1 Conceptual model of links between the economy and human health

Source: Naik et al. Systematic Reviews (2017) 6:222

Table 1 Matrix of economic factors at local, national and international level

	Local level	National	nternational	Illustrative example of impact on health (if known)
Category 1: market regulation		Competition including legislation, consideration of externalities in pricing, fiscal measures, e.g. tax, market structure	Trade policy	Regulation of the tobacco market, via taxation and restrictions on advertisement and right to trade with tobacco has been associated with a range of benefits such as reduced heart disease [25]
Category 2: institutions		Central bank, banks, micro-finance, mortgages, startups. Legislation and regulation of organisations	nternational organisations, e.g. International Monetary Fund, World Bank, multinational firms, World Trade Organisation	Loans issued by the IMF and subsequent tuberculosis mortality [26]
Category 3: supply of money, finance and loans	Local currencies, debt	Interest rates, inflation, deflation, wages, supply of money or credit, macro-economic policy, fiscal policy, financial crises, monetary policy, structural adjustment policies, natural resources	nternational lending, foreign aid, financial transactions tax, capital controls	Financial crises and suicide rates [27]
Category 4: balance between public, private and third sector	Land tenure Informal economies, shadow economies, social enterprises and cooperatives	Structure and scope of government, privatization and nationalization, taxation, tax avoidance, government expenditure and welfare provision, property rights		Mass privatization and mortality in the former Soviet Union [28]
Category 5: labour	Firm governance, structure, ownership, behavior,	Trade unions, employment, unemployment, minimum wage, labor force size and structure		Unemployment and suicide [29] OR Overwork and stroke [30]
Category 6: production and consumption	Income, wealth, distribution	Industrialisation, economic growth and aggregate productivity		Income inequality and mortality [31]
Category 7: approaches to economy	Regional economics	Capitalist, socialist, transitional, Keynesian, Marxian, neoclassical, ecological economics		Political traditions more committed to redistributive economic policies may lead to improvements in the health of populations [32]

Some factors could be in multiple categories. They have been assigned to the most relevant category

Policy implications

Four types of government interventions

1 - Increasing healthy options, where the market fails to provide (eg improving school meals, improving public transport);

2 - Influencing preferences:

- providing information, such as improved food labelling, personalized health-related advice, and social marketing approaches;
- incentives: some experiments have been effective, such as the Conditional Cash
- Transfer experiments that offer small but meaningful cash rewards for compliance with preventive initiatives or enrolment in school
- insights from behavioural economics, there is increased interest in 'liberal paternalism', under which peoples preferences might be influenced by the manner in which options are presented to them

3 - Controls prices, subsidies and consumption taxes 'sin taxes'

4 - Restrictions and bans

Source: York university working paper, 2009, n°52

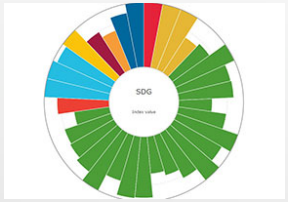
United Nations Development Goals

- **Millennium Development Goals (MDGs) by 2015**

Signed in 2000 to combat poverty, hunger, disease, illiteracy, environmental degradation and discrimination against women

- **Sustainable Development Goals (SDGs), by 2030**

Signed in 2015 by193 member states, with 17 sustainable development goals (SDGs) and a complement of 169 targets and 231 indicators for measuring progress in meeting the targets



Institute for Health metrics and evaluation (IHME) in charge of measurement, with contributions from World Bank and OECD

https://www.un.org/sustainabledevelopment/sustainable-development-goals/

Findings: OECD study (2019) of 35 member countries stand / SDGs found that they had travelled 70% of the way to Goal 3 (health) and Goal 6 (water and sanitation) and 50% of the way to Goal 1 (poverty), Goal 2 (food), Goal 7 (energy), Goal 11 (safe sustainable cities and settlements), and Goal 14 (sustainable use of oceans and seas)

http://www.oecd.org/publications/measuring-distance-to-the-sdg-targets-2019-a8caf3fa-en.htm