Healthcare

Fall semester, 2024

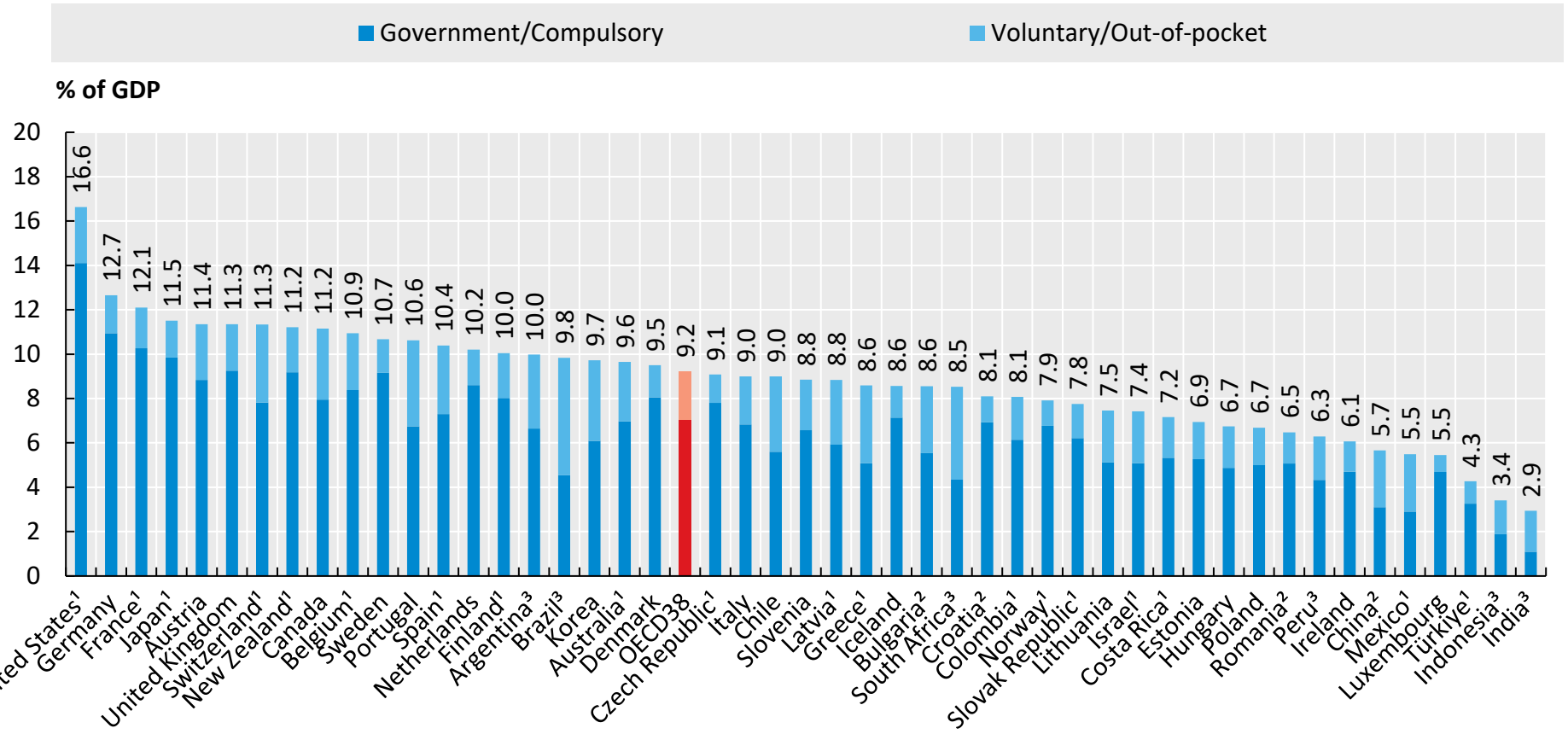
Public Finance

Today's talk

- Overview of healthcare system, health insurance system
- Short history of health insurance system
- Health and government intervention
- Financial situation of public health insurance
- Previous studies on health economics

Health expenditure

- As a share of GDP
  - 4th highest among OECD countries (Health at a Glance)

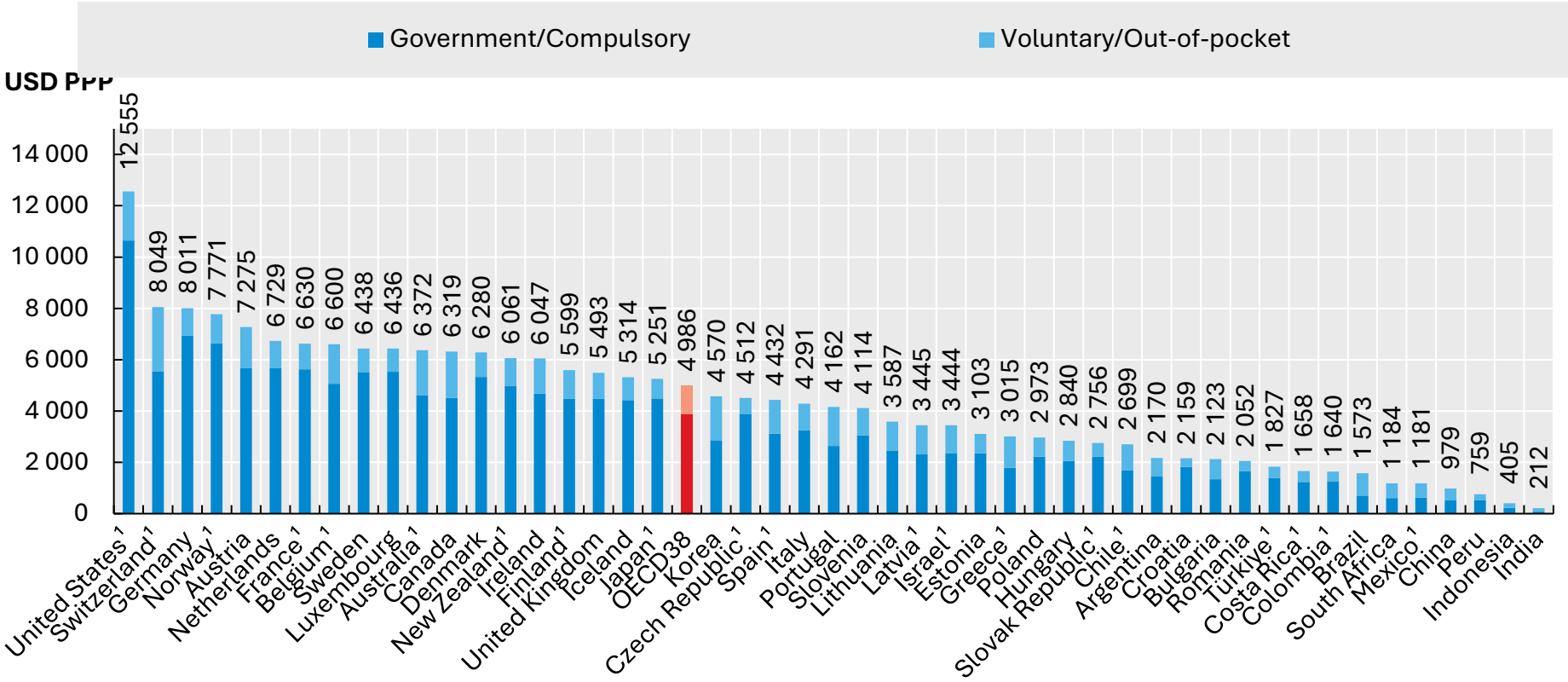


Source: Health at a Glance 2023, Figure 7.1

Note: 1. OECD estimate for 2022. 2. Refers to 2021. 3. Refers to 2020.

Health expenditure

- Per capita
  - Slightly larger than OECD average



Source: Health at a Glance 2023, Figure 7.4
Note: 1. OECD estimates.

International comparison (around 2019)

- Japan has many hospital beds but few doctors.
  - Long hospital stay
  - Medical expenses are low as the population ages
  - https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryou/iryouhoken/iryouhoken11/index.html

	US	UK	Germany	France	Sweden	Japan
Total number of hospital beds per 1,000 people	2.8	2.5	7.9	5.8	2.1	12.8
Number of acute care beds per 1,000 people						
Number of clinical physicians per 1,000 people	2.6	3.0	4.4	3.2	4.3	2.5
Number of clinical nursing staff per 1,000 population	12.0	8.2	14.0	11.1	10.9	11.8
Average length of stay	6.1	6.9	8.9	8.8	5.6	27.3
Number of outpatient consultations per capita	4.0		9.8	5.9	2.6	12.5
Medical expenses per person (US$)	10948.5	4500.1	6518.0	5274.3	5551.9	4691.5
Out-of-pocket medical expenses per person (US$)	1238.4	714.3	827.6	488.5	770.4	592.4
Total medical expenditure as a percentage of GDP (%)	16.8	10.2	11.7	11.1	10.9	11.0
Average life expectancy (male) (years)	76.3	79.6	79.0	79.9	81.5	81.4
Average life expectancy (female) (years)	81.4	83.3	83.7	85.9	84.8	87.4
Number of MRI scanners per 10M population	40.4	7.4	34.5	15.4	16.6	55.2
Number of MRI tests per 1,000 patients	128.0	67.7	145.1	123.1		112.3

Evaluation of Japan's healthcare

- Not so bad
  - OECD "Health at a Glance"
- Health expenditure as a share of GDP is 4th highest
  - Many outpatient visits, high elderly ratio, …
- # of beds per capita is 3 times larger than average
  - More burden on hospitals, fewer doctors
  - Many expensive medical device, many pharmacist
- Less preventive care
  - Smoking prevalence (average), low vaccination rates
- Good access to healthcare, small out-of-pocket spending
  - Less data on quality of care
  - Less digitalization, digital health

Features of Japanese healthcare

- Universal health insurance
  - Since 1961 (established in pre-war period?)
  - Mandatory, but more than 3,000 insurers
    - Based on job, region and age
  - “Mixed” medical care is prohibited
  - Reimbursement based on fee schedule
- Free entry of medical institutions
  - Finance by public, delivery by private
  - Regulations on the number of beds, no regulations on entry
    - Some regulations on the head of medical corporation
- “Free access”: patients can choose where to visit
  - No gatekeeper, no official home doctor

Overview of healthcare sy

Hospitals: beds 20+
Clinics: beds -19

Patient/insured

Copayment cap

Preschool: 20%
Aged 6-69: 30%
Aged 70-74: 20%
Aged 75-: 10%

visit

service

Providers

Hospitals	8,156
Beds	1,492,957
Clinics	105,182
Beds	80,436
Dental clinics	67,755
Pharmacy	62,375

tax

contribution

Medical cost:
JPY45tr.

Central
Prefectures
Municipalities

Insurers

National HI (1,716), 25.4 mil
Japan HI Association (1), 40.3 mil
Corporate HI associations (1,388) 28.4 mil
Mutual aid association(85) 8.7 mil
Elderly Medical Service System (47), 18.4 mil.

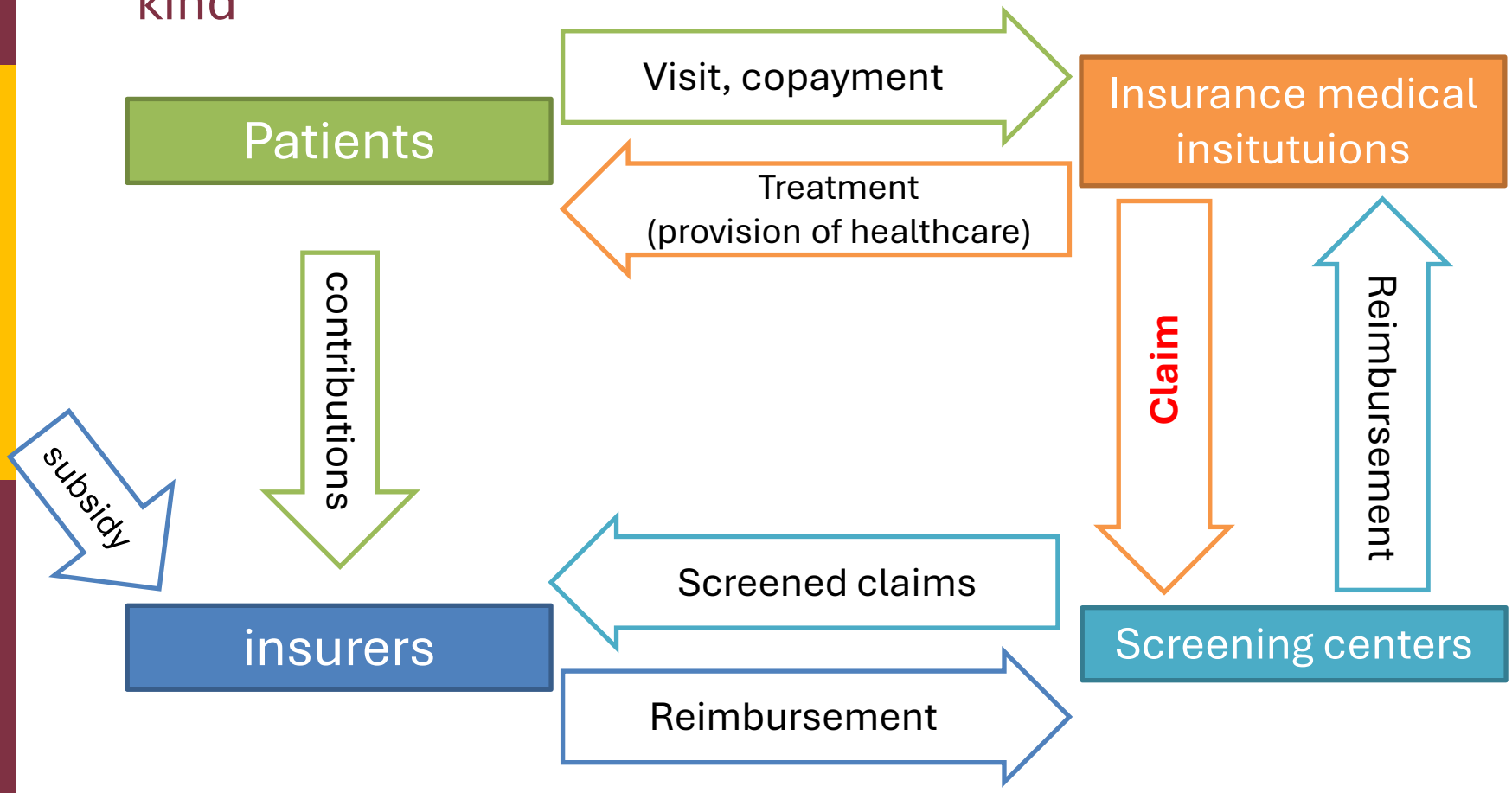
subsidy

reimbursement

https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryou/iryouhoken/iryouhoken01/index.html

Insured treatments

- Contributions are collected ex ante, benefits are paid in kind



https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryou/iryouhoken/iryouhoken01/index.html

Medical fee schedule system

- Medical fee schedule
  - Insurance institutions/pharmacies receive fees
    - Sales: not salaries for doctors
  - Virtually decided by Central Social Medical Insurance Council (*Chuikyo*)
  - Prices for techniques and services + Prices for goods (incl. drugs)
  - Indexation (1 pts = 10 JPY)
    - E.g., fee for first medical examination 288pts = JPY2880 = coinsurance of JPY864
- Basically, fee-for-service
  - Fees depend on what the institutions did for patients (operations, prescriptions)
    - Fee schedule depend on the circumstances: e.g., emergency hospitals, the number of nurses, ….
    - Very complicated

Medical fee schedule system

- Criticism against fee-for-service
  - Detailed fee schedule, but risk of overmedication
  - Imperfect consideration on medical technology evaluation, operating costs
    - Expensive medical equipment: Not reimbursed when set up. Reimbursed when used
  - Imperfect consideration on service quality or efficiency
    - The same practice, the same fee whoever do it.

Medical fee schedule system

- Partial introduction of prospective payments (since 2003)
  - DPC (Diagnosis Procedure Combination)
    - Patient categories: disease and treatments
    - Once a category is set, fee per day is determined
      - Whatever treatments are given, revenues of hospitals remain constant
      - It depends on days since hospitalization
  - Examples in other countries: e.g : DRG (Diagnosis Related Group)
    - Capitation for gatekeepers

Fragmentation of public health insurance

- Mandatory based on job, region and age
- Aged 75+: Elderly Medical Service System
- Aged 74-:
  - If employers provide insurance: Corporate HI associations, Japan Health Insurance Association, Mutual aid associations
    - The dependents are covered by the supporters' insurance
  - If not enrolled these insurances: National Health Insurance
    - Self-employed, farmers, unregular employers, unemployed, retired,…
    - Municipalities set the amount of contributions
    - Inter-insurers transfers
- Different financial situations among insurers
  - Different age structures
  - Positive relationship btn income and health

Insurances for employers

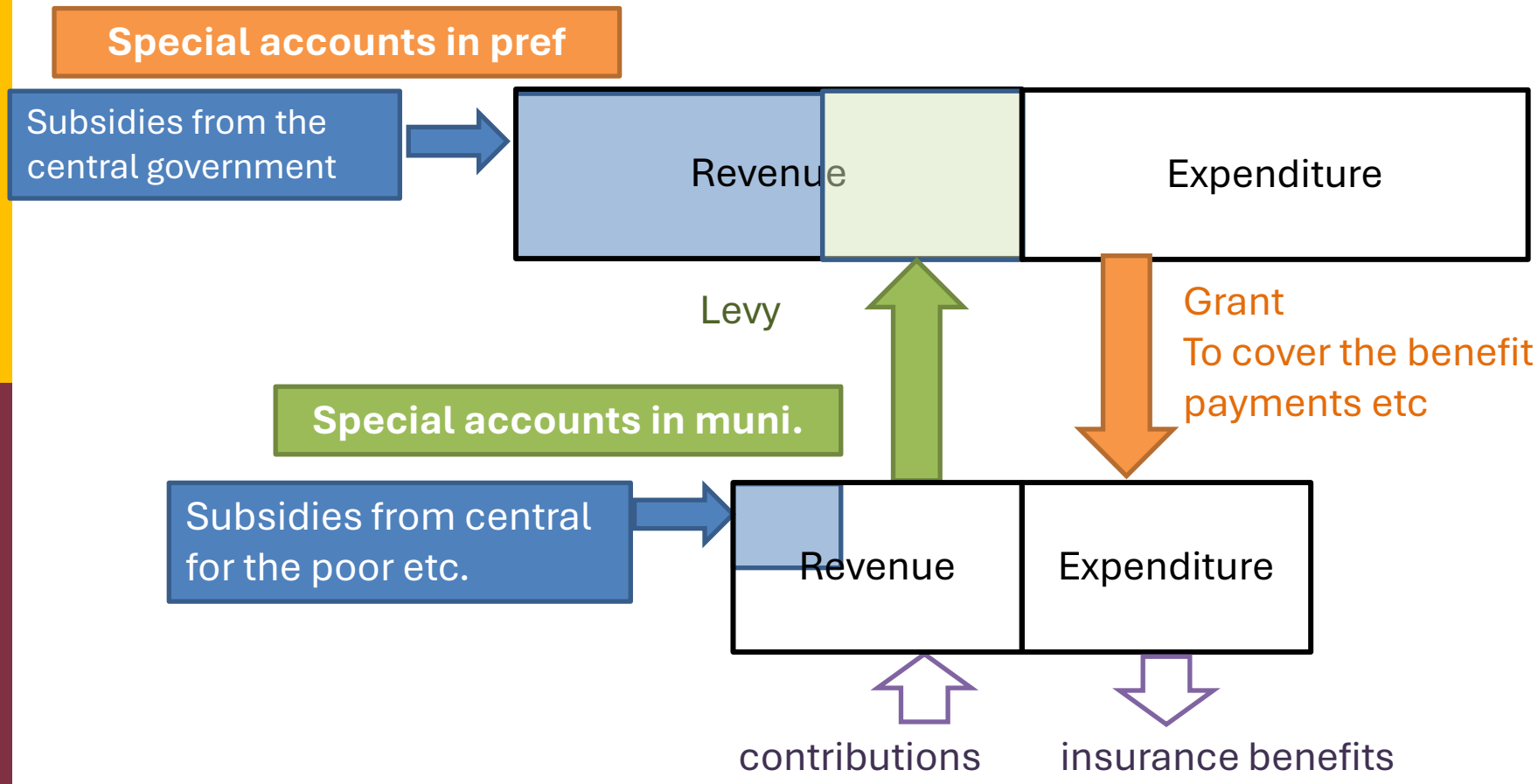
- Corporation HI associations
  - Established following Health Insurance Act
  - Organized by single or multiple firms
    - Insurance needs a large number of enrollees, big firms can have them
  - Contributions differs among associations
- Japan Health Insurance Association
  - Mainly workers of SMEs: Covers employers (& dependents) without corporation HI associations
  - Contributions differs among prefectures
- Mutual aid associations
  - Covers public workers and workers for private schools
    - Waseda has corporation HI association
  - Contributions differs among associations

National Health Insurances

- The enrolled
  - Residents who are not covered other (employers') insurance
  - 70% are nonregular workers and the retired
    - In 1960s, most are farmers or the self-employed
- Insurers, contributions
  - Municipalities are insurers: Since 2008, prefectures are **also** insurers
  - https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/hokabunya/shakaihoshou/hokenseido_kaikaku.html
  - Routine tasks are administered by municipalities
    - Collecting contributions, checking the eligibilities, …

cf) National Health Insurances

- Prefectures have financial responsibility
  - Assign levies to municipalities
  - Transfer grants to cover all of the costs



Insurers: 2022

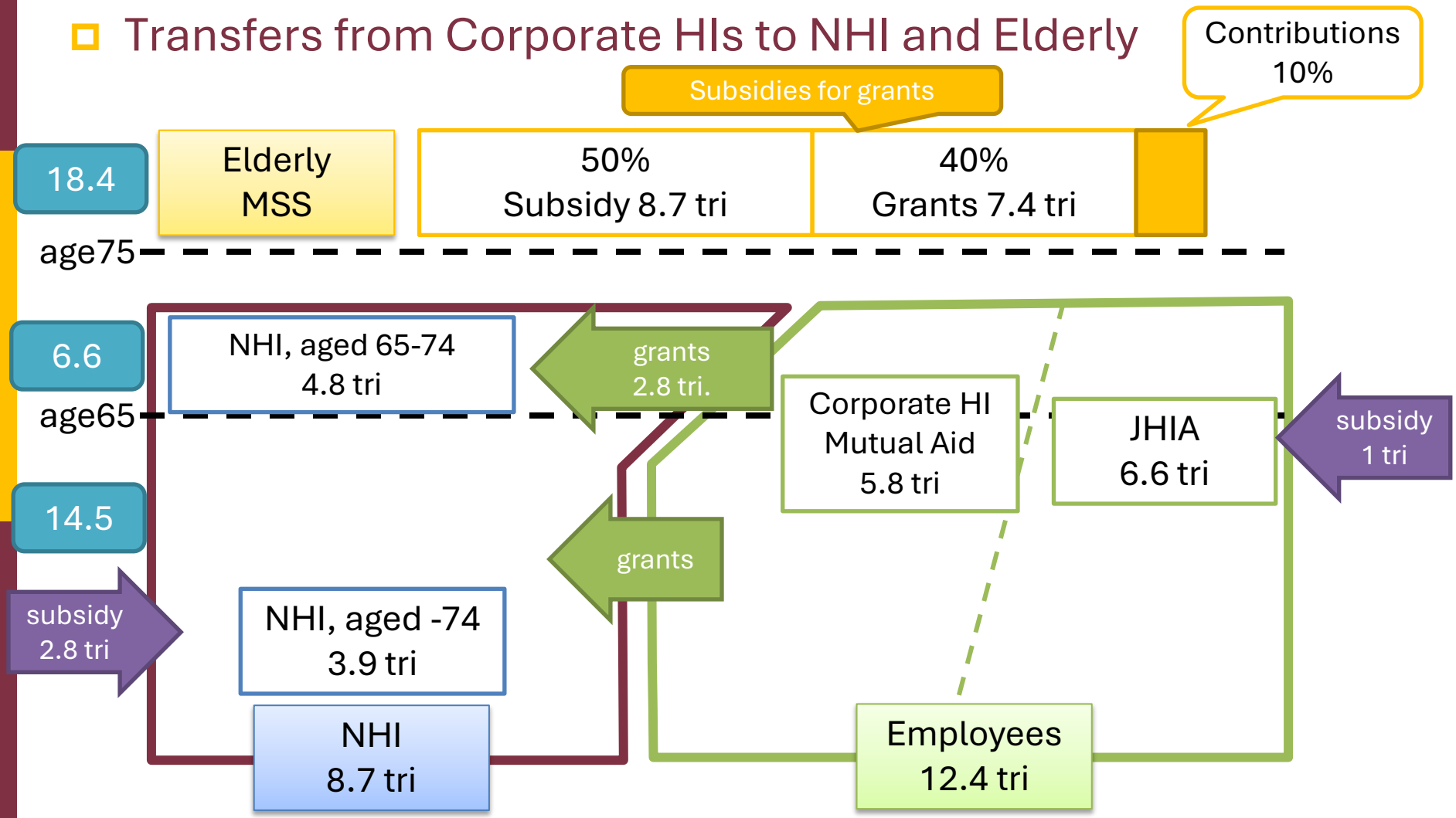
- Corporate HIs are rich and healthy, the opposite is NHI
  - Elderly Medical Service System is supported by all
  - Insurance benefits programs are the same

	NHIs	JHIA	Corporate HIs	Mutual aid	Elderly MSS
Insurers	1,716	1	1,388	85	47
Enrollee (mil)	26.60	40.44	28.84	8.64	18.03
Ave. age	54.4	38.7	35.7	33.1	82.9
% of 65-74	45.2%	8.2%	3.5%	1.6%	
Ave. medical costs (JPY K)	395	194	171	167	940
Ave. income (JPY K)	930	1,690	2,370	2,520	880
Subsidy (JPY tri)	4.1	1.1	0.13	zero	9.3

https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryou/iryouhoken/iryouhoken01/index.html

Insurance benefits (FY 2024 budget)

- Transfers from Corporate HIs to NHI and Elderly



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Financial situations, FY2020 settlements

	JHIA	Corporation	NHIs	Seaman's	Elderly
Current revenues					
Contributions	94,618	81,842	23,384	304	13,783
Subsidies from central	12,739	27	30,299	29	50,226
Subsidies from pref.	–	–	10,136	–	15,226
Subsidies from muni.	–	–	5,842	–	13,179
Grants for the older elderly	–	–	–	–	62,786
Grants for the young elderly	–	1	36,250	–	–
Grants for the retired	–	–	-73	–	–
Others	257	1,088	121,183	1	285
Total	107,614	82,958	227,021	334	155,484
Current expenditures					
Insurance benefits	61,870	39,061	83,971	196	153,263
Grants for the older elderly	21,320	20,060	15,589	72	–
Grants for the young elderly	15,302	15,391	28	28	–
Grants for the retired	1	5	–	–	–
Others	2,974	5,483	124,172	7	886
Total	101,467	79,999	223,761	303	154,150
Rev - exped	6,147	2,958	3,260	32	1,335
Contributions - benefits	32,748	42,781	-60,587	108	-139,480

Annual Health, Labour and Welfare Report 2023
Unit: hundred million

1/3 and 1/2 of contributions are used other than benefits in JHIA and corporation HIs, respectively

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- Financial situation of public health insurance
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Short history of public health insurance

- Health Insurance Act in 1922, Universal insurance in pre-war period
- Universal Health Insurance in 1961
  - NHIs covered those who were not enrolled in employers' insurances
- Generous benefits during rapid economic growth period
  - Free medical services for the elderly in 1973
  - Decrease in copayment rates of the dependents, caps on copayments

Short history of public health insurance

- Cutting down benefits in preparation for aging society
  - Increase in co-payment rates (benefit rate reduction)
  - Restraints in medical fee revisions
  - Elderly healthcare system
- Measures to address financial differences between insurers
  - Financial adjustment and joint stabilisation among insurers
  - Prefectural unitisation of National Health Insurance

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Justification for Government intervention: Healthcare

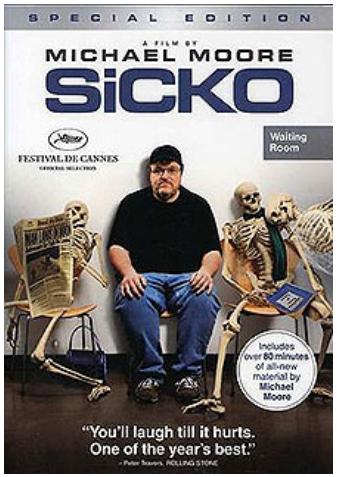
- Externality
  - Especially infectious disease countermeasures
- Asymmetric information
  - Asymmetry in doctor's skills between patients and doctors
    - It is not purchased often and there are a huge variety of products
    - Licensing system for medical professions
    - Possibility of “physician-induced demand” , Small Area Variation
  - Restrictions on competition, existence of non-profit organizations
- Initial investment
  - Medical profession training
  - Maintenance of inpatient facilities and medical equipment
- Income redistribution
  - Medical care in remote areas: due to the impossibility of saving services

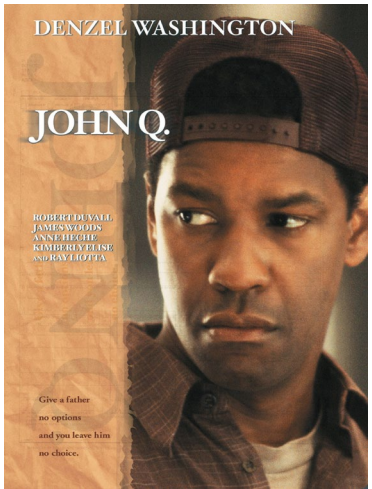
Justification for Government intervention: Health insurance

- Not fully insured/covered by insurance
- Asymmetric information
  - Asymmetric infomation between the insurer and the insured regarding the health status of the insured.
  - Adverse selection: healthy people don't want to buy insurance
  - Moral hazard: the insured stop caring about their health
  - Cream skimming: excluding unhealthy people from insurance
- Merit goods
  - If it is left to individuals, some people will not buy insurance.
  - The government should take responsibility for supplying

Justification for Government intervention: Health insurance

- Income redistribution
  - Expensive medical costs for the poor
  - Cannot pay insurance premiums (contributions)
  - Special egalitarianism regarding medical care
    - The right to receive medical services should not depend on income
    - There is not always agreement
      - There is also the idea that people should have the right to receive a certain minimum standard of medical care.





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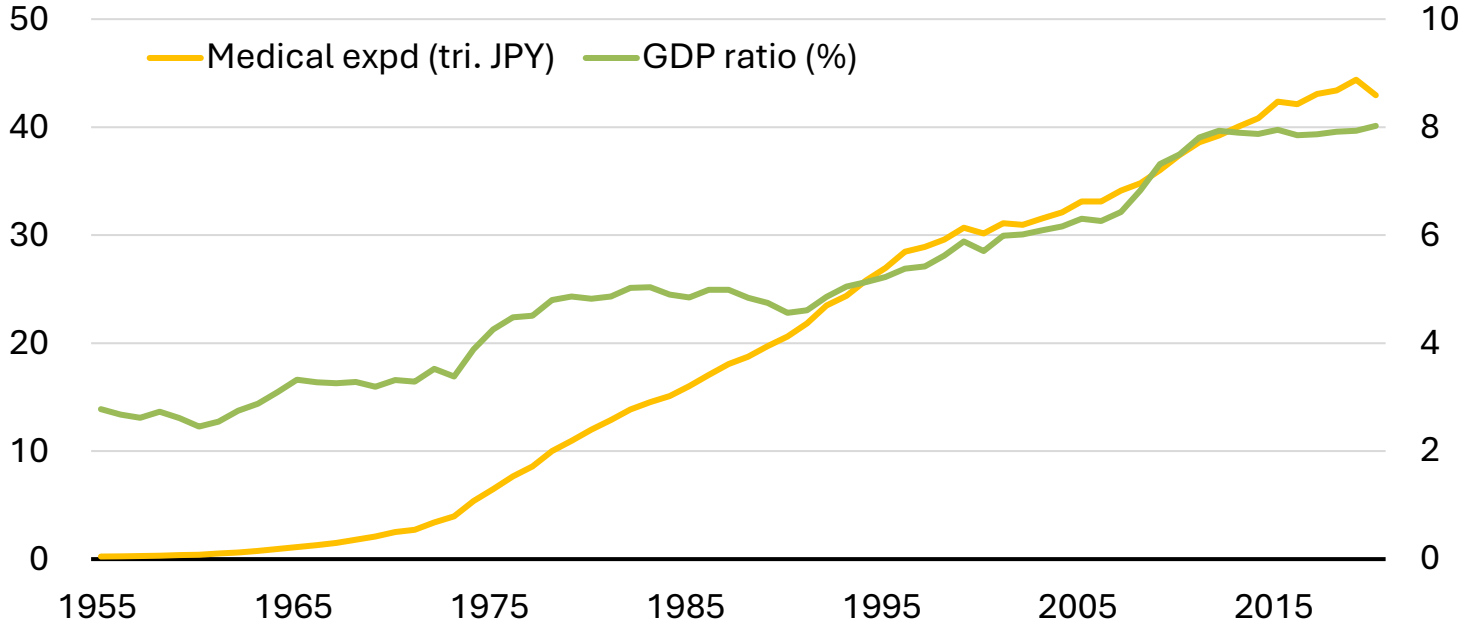
Increase in health spending

- Increasing trend as a ratio to GDP
- Reasons: Chandra and Skinner (2012 JEL) doi:10.1257/jel.50.3.645., Okunade and Murthy 2002 JHE, Fonseca et al. 2021 JEEA
  - Technological progress
    - Technological innovation itself is not necessarily a factor in increasing costs.
    - There may also be an effect of physician-induced demand.
  - Economic growth
    - Japan's growth rate of health expenditure is exceptionally slow compared to economic growth rates
    - Due to control through Chuikyo? (CSMIC)
  - Population aging
    - The impact of aging itself is not that big
  - Ex post moral hazard due to insurance (price effect)

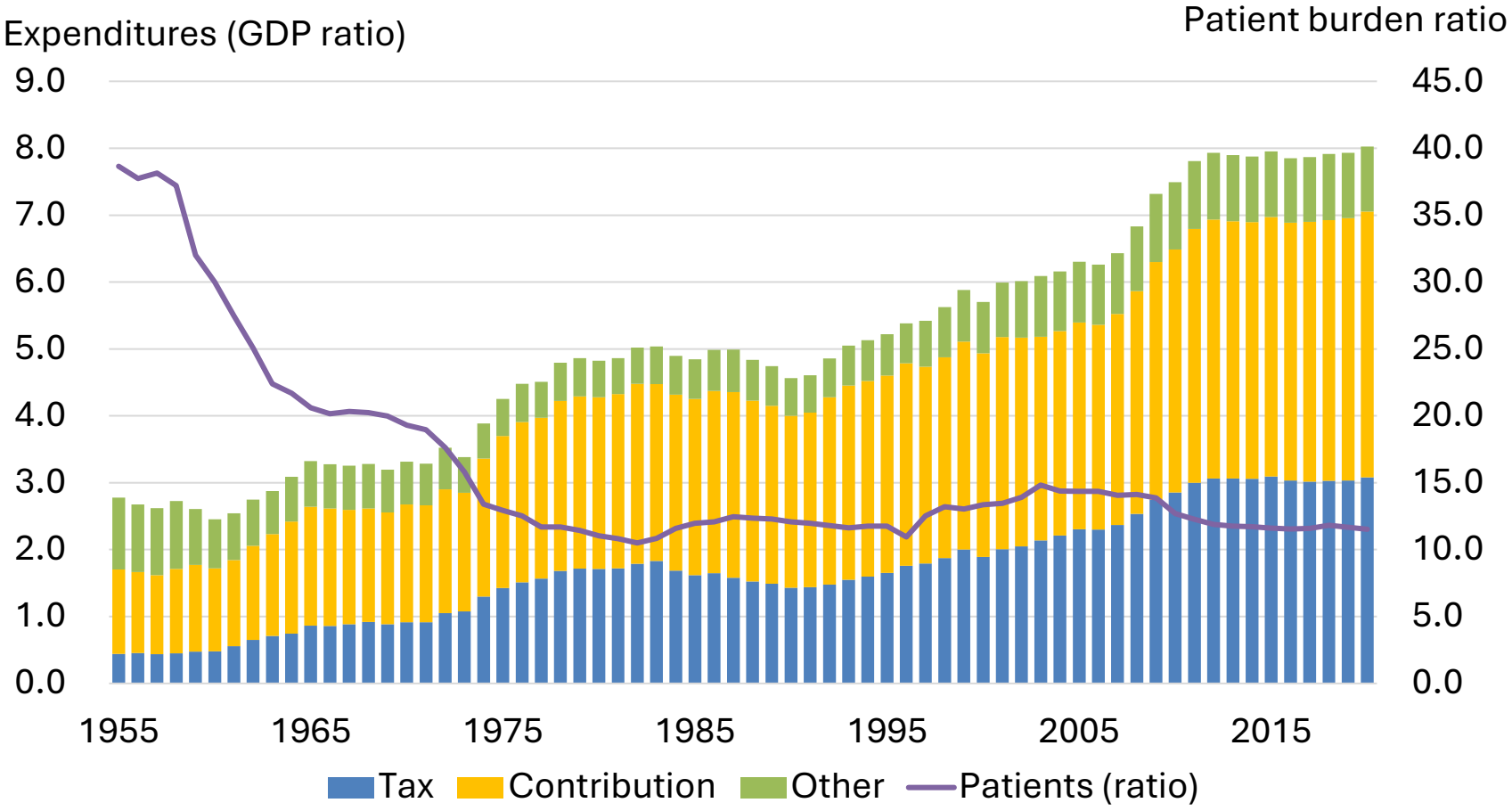
National medical care expenditure

- Estimates of National Medical Care Expenditure
  - An estimate of the cost required for treatment of injuries and illnesses that may be covered by insurance medical treatment
  - Excluded: Evaluation treatment (advanced medical care etc.), as well as (1) normal pregnancy and delivery, (2) medical examinations , vaccinations , etc. , (3) Does not include the cost of prosthetic eyes and limbs, etc.



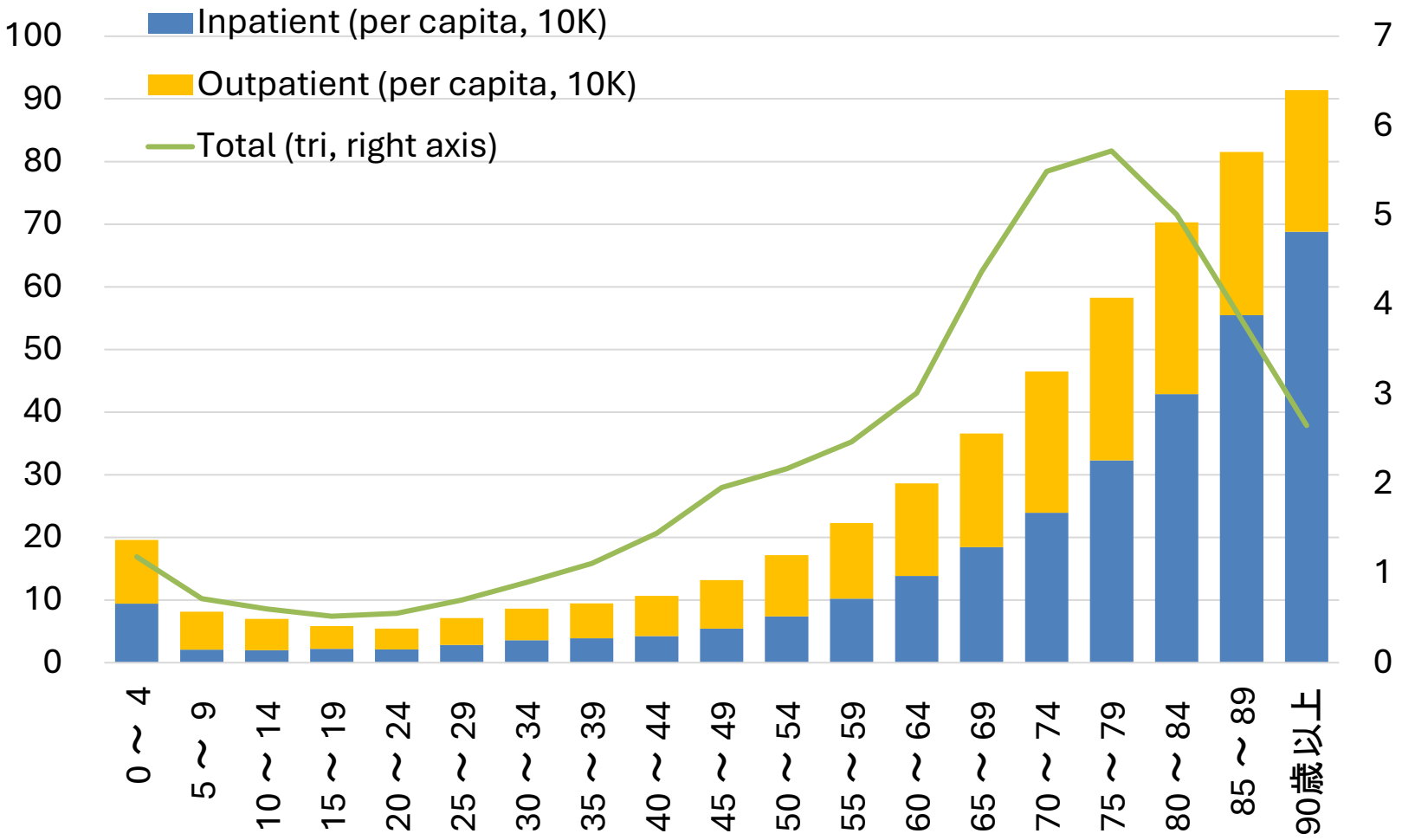
Revenue sources

- Copayment is about 11%
  - Copayment rate for working generations is 30%: Copayment cap
  - Contributions include those paid by employers



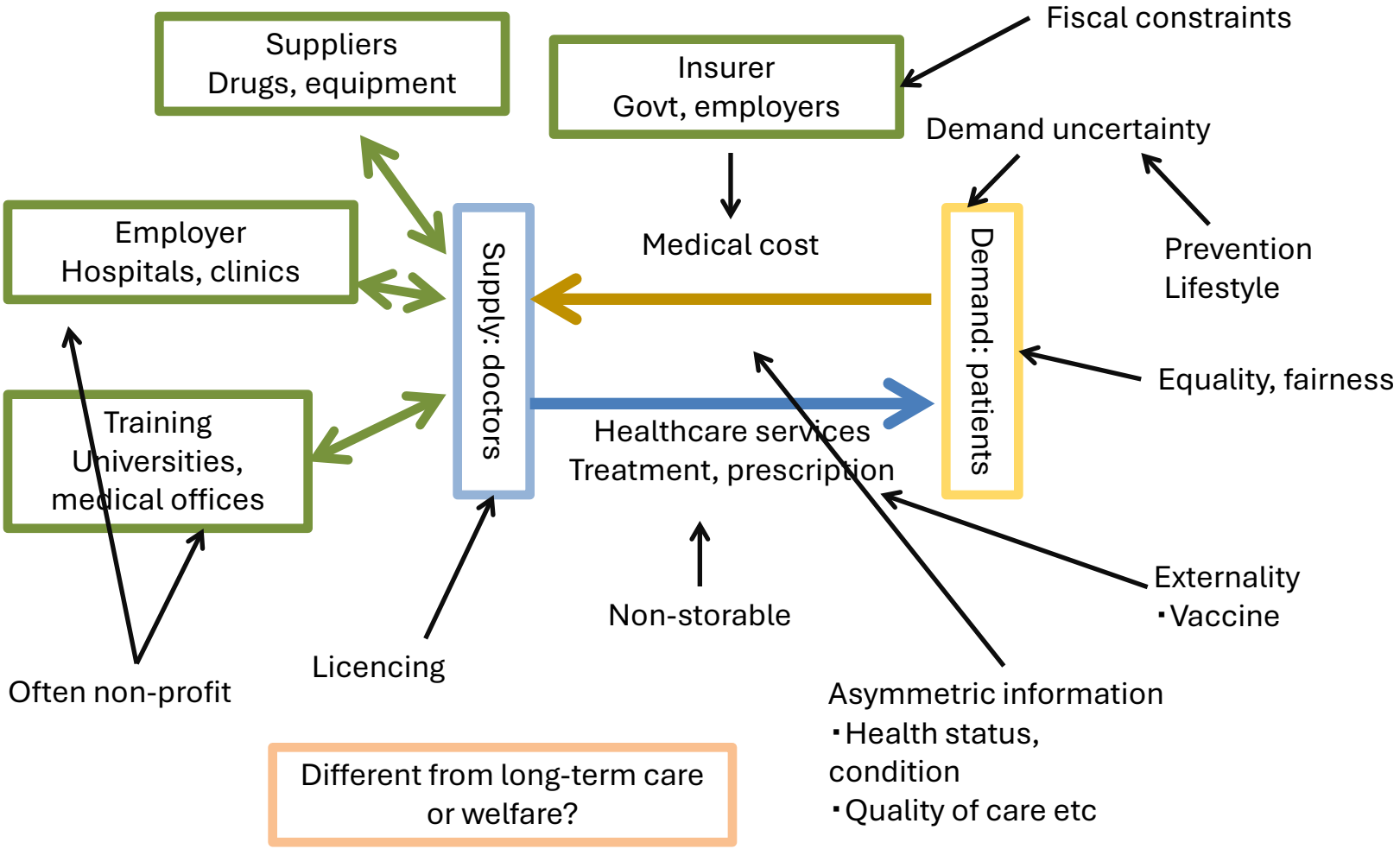
Expenditures by age groups

- U-shaped: Aging is certainly a factor in increasing medical



Health economics as applied economics

- Health economics is an application of microeconomics
  - Like normal goods, there are many things that differ from "normal" goods.



Copayments and patient behavior

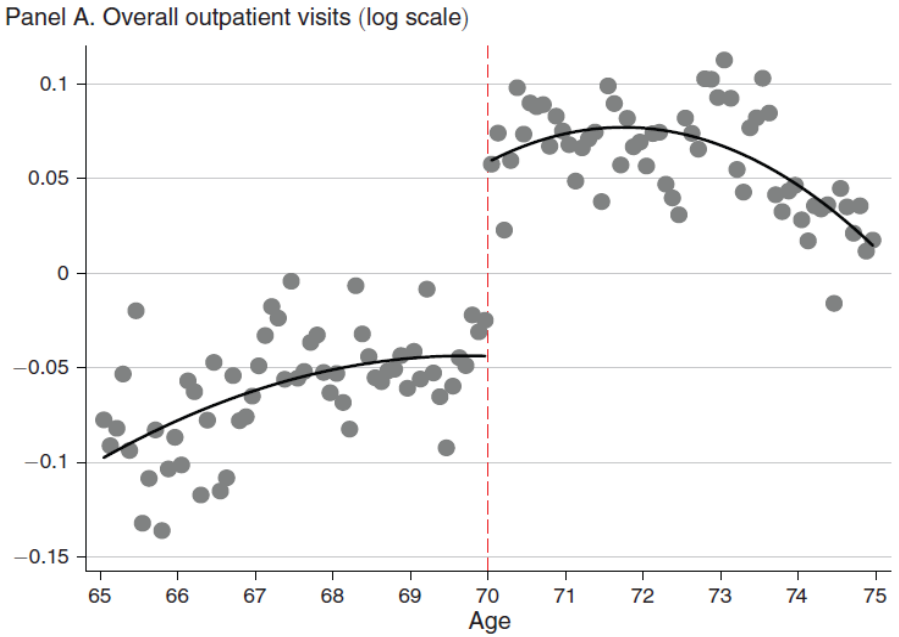
- Huge stock of empirical analysis
  - From aggregate data/observation data to experimental/quasi-experimental data and big data
  - Progress in econometric methods
    - Various endogeneities: omitted variables, sample selection, …
      - People with low copayment rates may be in better health.
      - People with low copay rates may have higher incomes.
      - People who don't buy insurance may not respond to surveys.
    - Physician induced demand

Copayments and patient behavior

- RAND Health Insurance Experiment (1971-1982)
  - The gold standard of empirical analysis of healthcare demand (Newhouse 1993)
  - Estimating price elasticity
    - Randomization of copayment rates
    - Acute phase treatment -0.16 , chronic phase treatment -0.20 , outpatient -0.17 , inpatient -0.17
- Oregon Health Insurance Experiment

Copayments and patient behavior

- Various quasi-experimental studies
- Shigeoka (2014, AER)
  - At age 70, the copayment rate decreases from 20% to 10% in Japan
    - RDD: Regression Discontinuity Design
  - Outpatient visits decrease drastically (Fig 2), but the mortality rate does not change



- Similar strategy used in [Fukushima-Mizuoka-Yamamoto-Iizuka (2016, JHE)]