

Abenomics and Japan's Growth Strategy

Ryoichi Imai

3 Arrows of the Abenomics

- In 2013, PM Abe announced that he would pursue a drastic recovery of Japanese economy through the following three channels (*arrows*).
 1. Monetary Policy to raise inflation expectation and finish the deflation regime that prevailed the last two decades.
 2. Fiscal policy to strengthen the infrastructure to protect the country against natural disasters (– skipped in the class).
 3. Growth Strategy to raise the economy's potential to increase employment.

What is labor productivity?

- Labor productivity = $\text{GDP} / \text{employment}$
- Labor productivity moves procyclically to business cycle. GDP growth is faster than employment growth.
- If development in AI(Artificial Intelligence) replaces labor with robots, labor productivity should rise, while it does not.

Skills and Trainings

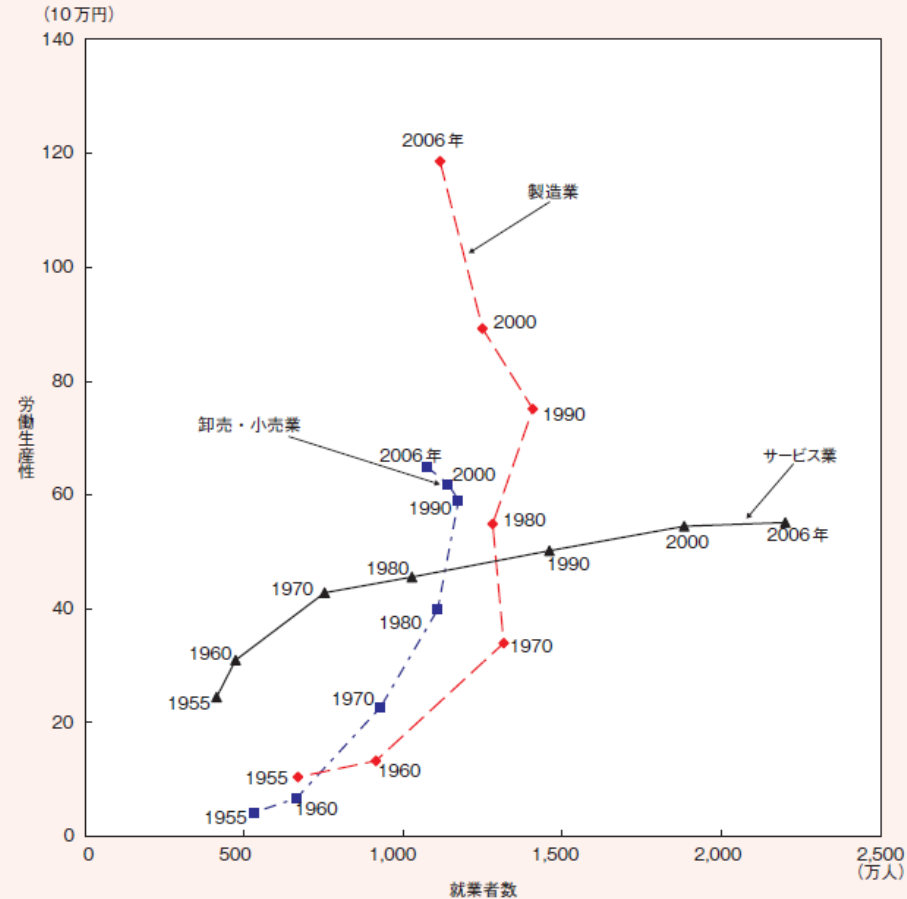
- Firm-specific skills: skills useful only for the workers to work for that firm.
- General skills: skills useful not only for the workers to work for that firm but also for the workers to work for other firms.
- Industry-specific skills: skills useful for that specific industry
- Training to acquire general skills are not provided at the employer's expense.
- Liquidating the labor market might reduce the level of general skills of the economy.

Creative Destruction

- Schumpeter argues that recession may improve productivity by destroying jobs with low productivity and replace them with those with higher productivity.
- Creative Destruction works if technology or skill is embodied with employment, and a new skill is acquired only with new employment.
- In other words, technology is complimenting or substituting to employment?
- If creative destruction were true, then higher labor productivity would be associated with higher unemployment.
- However, there are few empirical supports for creative destruction.

An Inconvenient Truth: Employment grows more in growth-stagnant sectors

第3 - (3) - 2図 就業者数と労働生産性の推移



資料出所 内閣府「国民経済計算」をもとに厚生労働省労働政策担当参事官室にて推計
(注) 1) 労働生産性は実質国内総生産(産業別)を就業者数(産業別)で除したものとした。
2) 2000年基準の値(実質・固定基準年方式)に過去の指数を接合して廻り系列とした。

Employment in manufacturing sectors grew in accordance with productivity until 1990, and it slowed down since then.

Employment is growing at the fastest in service industries where productivity grows at the slowest.

Food and restaurant industries grew in the last century but it is stagnant now.

http://www.mhlw.go.jp/wp/hakusyoro/roudou/08/dl/03_0003.pdf

What is growth strategy?

- It is to design institution and infrastructure to maximize our potential GDP.
- Japan has a very strong reputation in the intermediate products, which are essential to making high-quality final products, such as the Boeing aircrafts and Apple computers.
- However, many leading final goods manufacturers like SONY and Panasonic, have lost competence in the global market.

Value-adding Innovation?

- Many experts argue that future developments of the manufacturing industries are limited, while service industries have relatively high potentials to bring innovation.
- Foreign visitors are often amazed by Japan's local restaurants to provide high quality dining at surprisingly affordable prices.
- But the restaurant industry does not create large value-added, and is notorious for its low working condition and cheap pays.
- Shifting from manufacturing to service is expected to bring a further rise in the employment of low paid jobs.

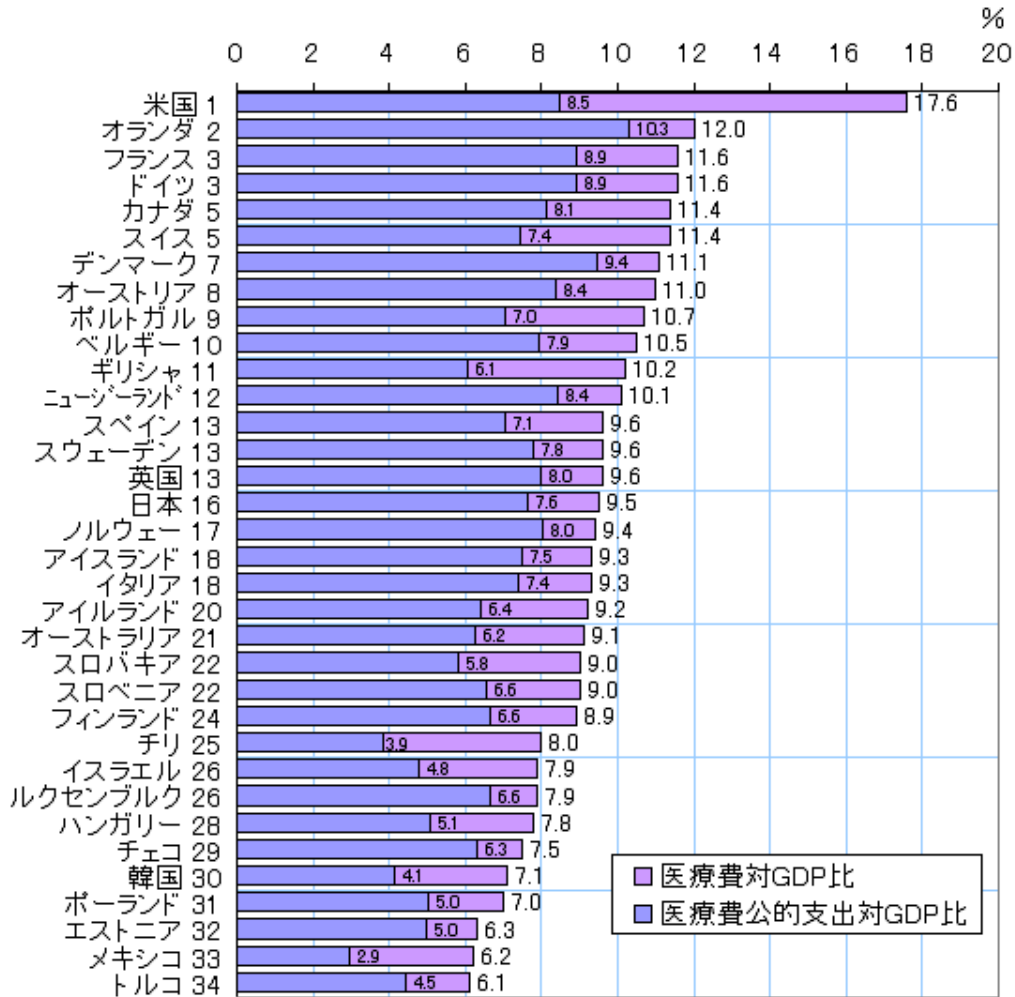
Attractive new products?

- Some other experts argue that Japan should create new products that attract global consumers.
- Apple computers, Google, Microsoft, amazon.com, Starbucks coffee, and others, were founded in the US.
- However, these international companies do not always create employment or [bring tax revenues](#) to the US.

High value-adding sectors?

- In the US, medical care and university education are creating enormously high value-added.
- However, high value-added service is associated with high costs: the US people are forced to pay extremely high medical care costs and university education costs.

OECD諸国の医療費対GDP比率(2010年)



- The US medical care costs amount to 18% of its GDP.
- Only half of the total costs are subsidized by the government.
- The US experts always argue that they need to reduce its high medical care cost, which is the reverse side of the high value-added in the medical sector.

(注) スペイン、日本、オーストラリア、イスラエル、ルクセンブルクは2009年データ、トルコは2008年データ。公的支出対GDPは公的割合から算出。

(資料) OECD Health Data 2012 (28 June)

<http://www2.ttcn.ne.jp/honkawa/1890.html>

Why the Singularity is still so far away?

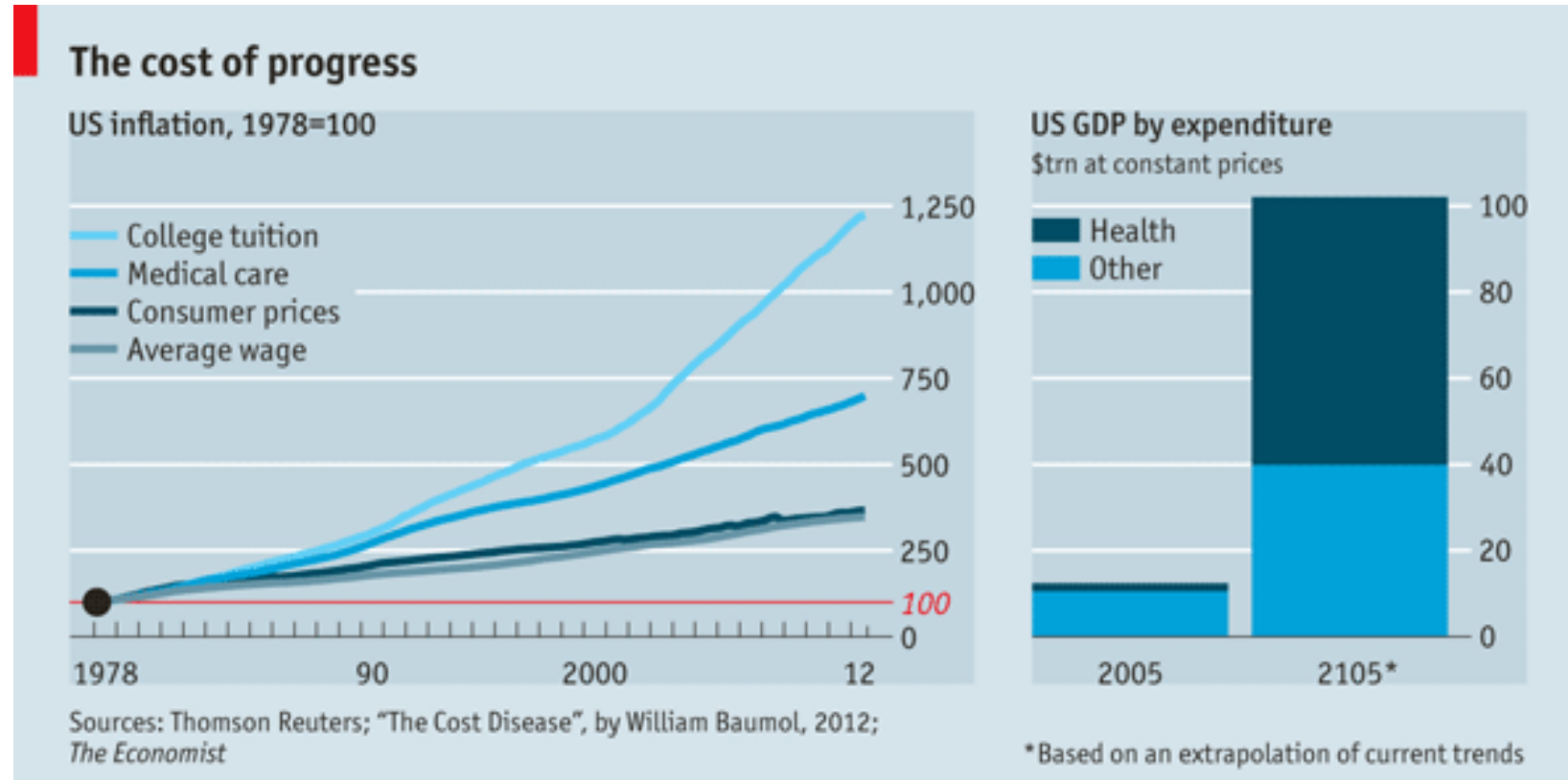
Ryoichi Imai

The Baumol's Cost Disease

- The rise in the relative costs of the “stagnant” slow productivity growth sectors inevitably outpace those of the fast productivity growth sector.
 - Stagnant sectors: medical care, education, performing arts
 - Fast productivity growth sector: information technology, machineries, automobiles.
- Shifting provision from public to private sectors will not cure the underlying disease.
- Economic growth still enables people to afford them, even with the spiraling costs of education and medical care.

Baumol's Cost Disease

- Since the 1980s the price of university education in America has risen by 440% and the cost of medical care by 250%. For the economy as a whole, the average increases in price and wage were only 110% and 150% respectively
- America's health-care spending as a share of GDP, for instance, is growing by around 1.4% a year. If it continued to expand at this rate for a century, it would rise to that eye-popping figure of 60% in 2105.

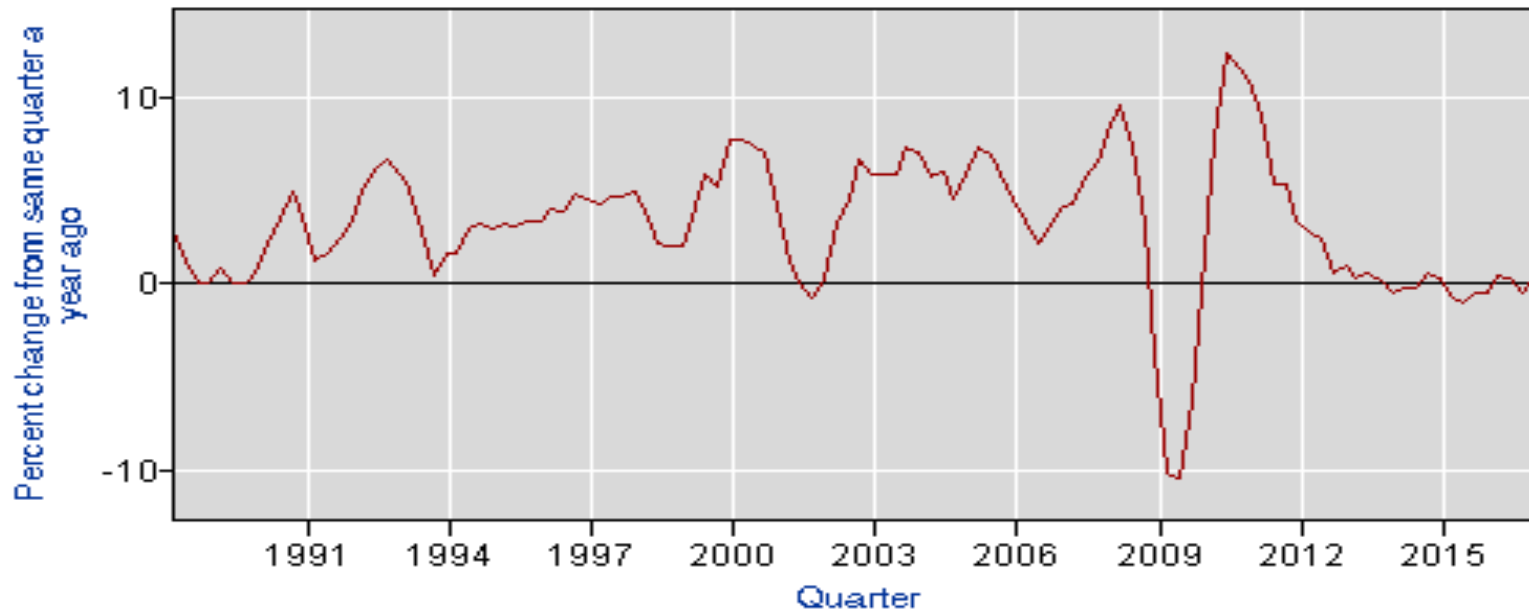


<http://www.economist.com/node/21563714>

What is the Singularity?

- Information technology would eventually replace human works with machines.
- War of human beings against robots (Terminator).
- Kurzweil and other futurologists predict that Singularity will come around 2040.
- If labor is replaced with machines, labor productivity would rise.
- Today, however, labor productivity is stagnating.
- The only evidence that is consistent with the Singularity is the reduction in the labor share of GDP.

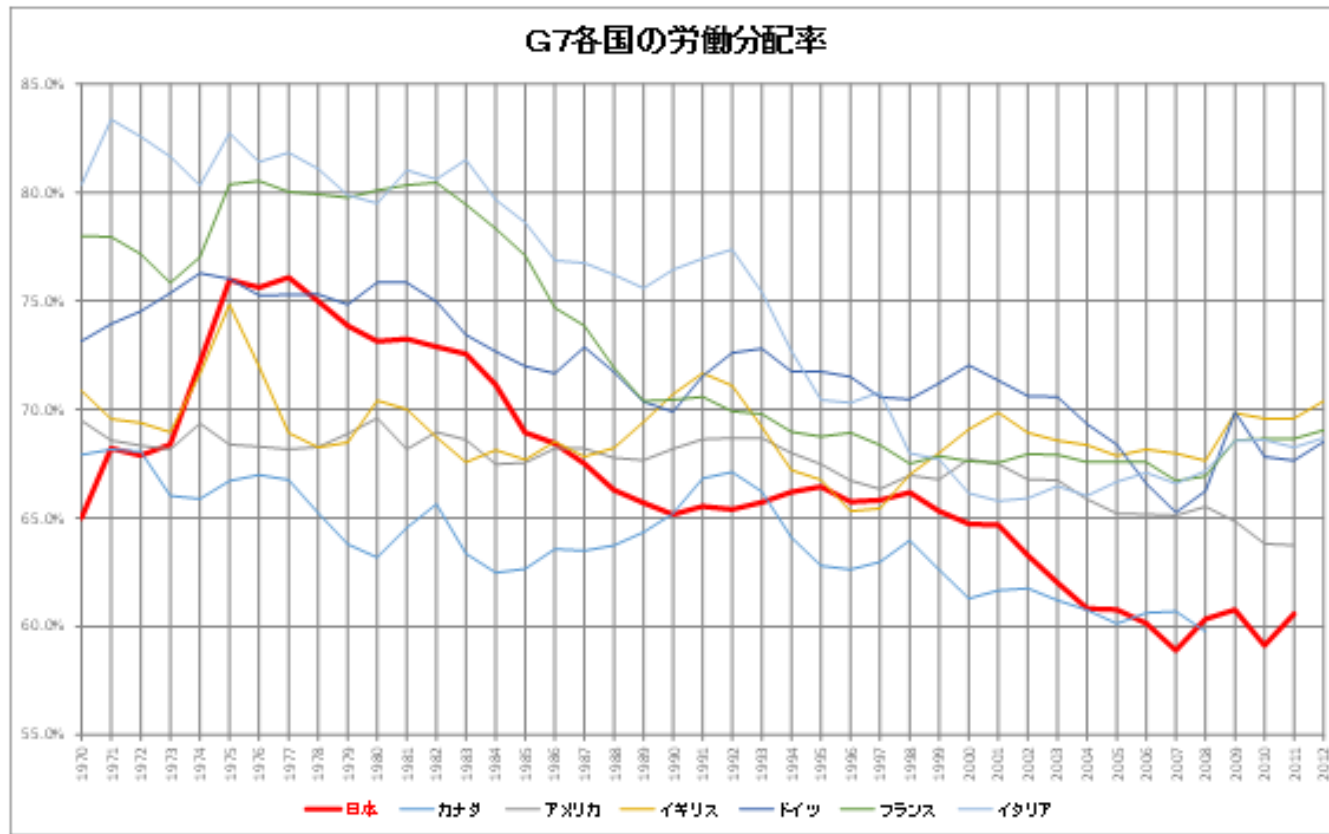
Where is the productivity growth?



<http://cepr.net/blogs/beat-the-press/where-s-the-productivity-growth-the-bureau-of-labor-statistics-can-t-find-the-robots>

- It is widely argued that AI will eventually replace labor with machines, and the Singularity is approaching.
- In reality, however, there is no strong evidence that shows high productivity growth.
- Why labor productivity rises in 2010?

Labor share is declining in G7 economies



【出所】“Unit Labor Costs-Annual Indicators: Labor Income Share Ratios” OECD statistics データより中西健治事務所作成

平成 29 年 4 月 13 日 参議院 財政金融委員会 自由民主党・こころ 中西健治

Japan's labor share has been declining in the latest decades and its level is the lowest among G7 economies.

Does firms in Japan use more information technology than other G7 economies? – probably not.

Why the Baumol disease occur? 1

- We need to explore the impacts of technological progress on the demand side as well as on the supply side.
- Supply side: Technological progress reduces the relative price of capital to labor, and replaces labor with capital in production, not by so much as the factor price change.
 - In other words, the substitution elasticity is less than one in production.

Why the Baumol disease occur? 2

- Demand side: Technological progress reduces the relative price of capital-intensive goods to labor-intensive goods, and consumers' demand shifts from the latter to former.
 - However, the expenditure share for capital-intensive goods decreases, while the expenditure share for labor-intensive goods increases.
 - In other words, the substitution elasticity is less than one in consumption.
- If the substitution elasticity is less than one in both consumption and production, the Baumol disease occurs.

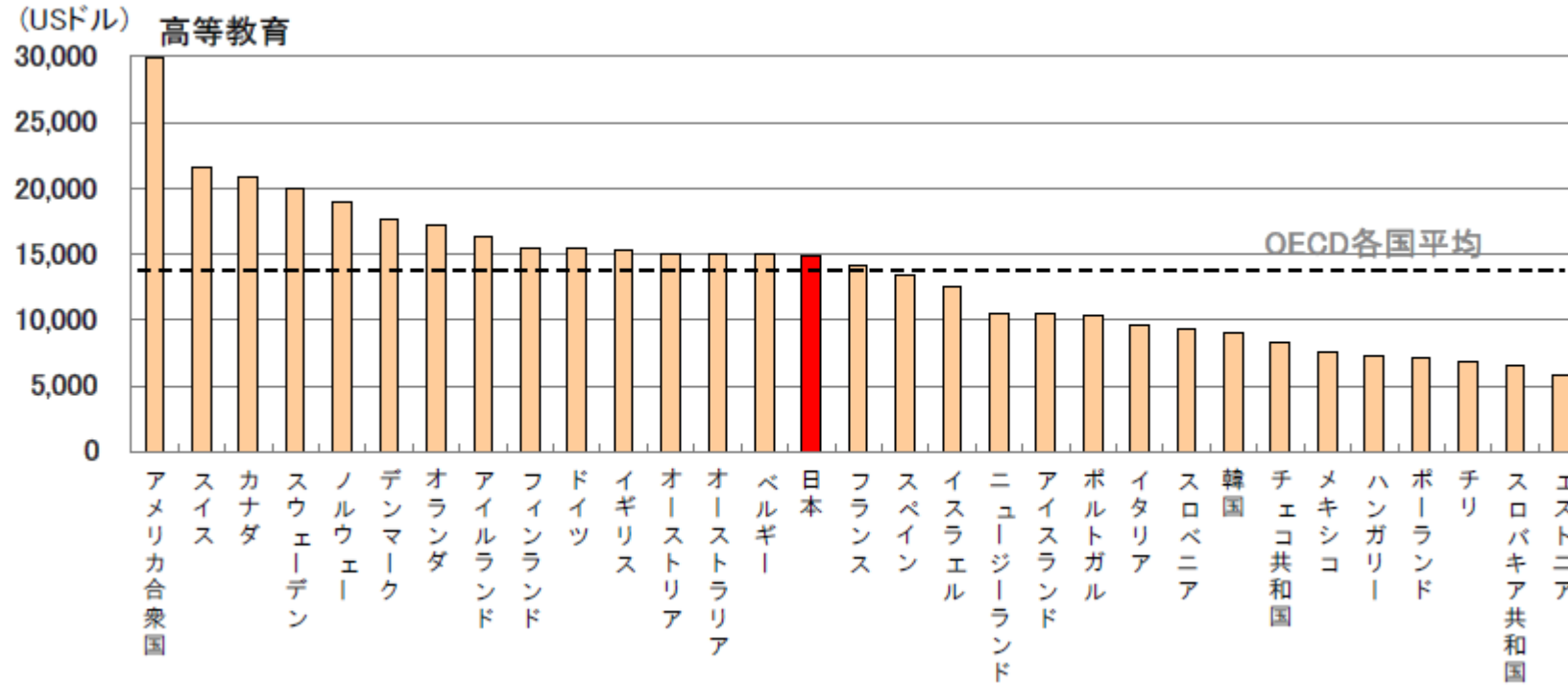
Intuition for the Baumol Effect

- Consider a consumer who recognizes a reduction in the TV price. Does she buy more TVs?
- Probably no. She would buy other goods.
- Consumers tend to save money by reducing her expenditure share for the goods of which the price decreases, in order to buy other goods.
- Economic growth tends to reduce the relative price of goods to services, and raises the expenditure share for services. This is the Baumol effect.
- (Nordhaus) The Singularity is still far away because the expenditure share for capital-intensive goods is not growing.

Are University Tuitions too High in Japan

Ryoichi Imai

University education costs per person



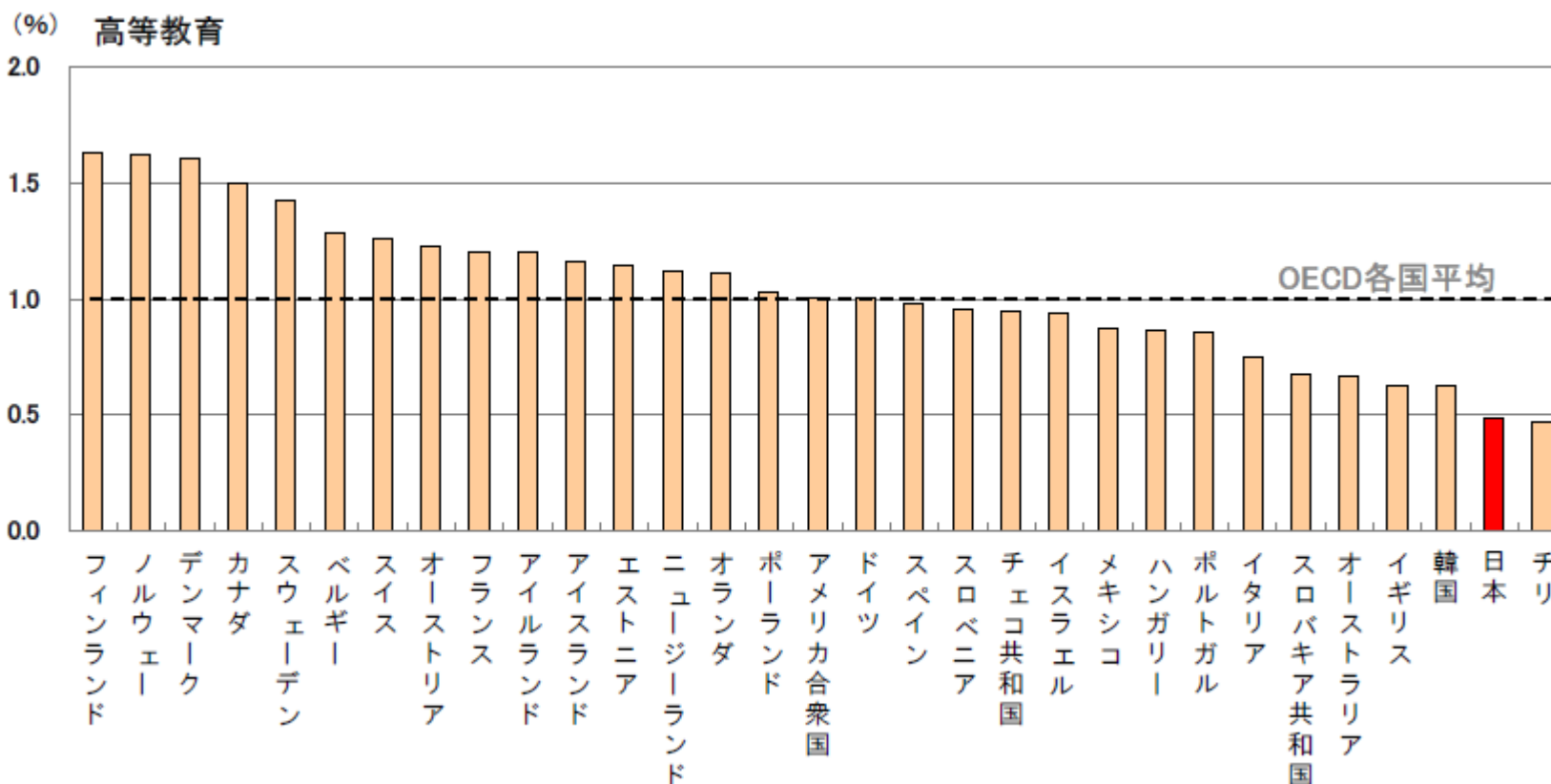
http://www.mext.go.jp/b_menu/shingi/chukyo/chukyo0/gijiroku/__icsFiles/afieldfile/2011/10/07/1311502_8_1.pdf

Education costs in US\$

【教育段階別】	(USドル)	
	初等中等教育	高等教育
日本	8,301	14,890
韓国	6,723	9,081
アメリカ合衆国	10,995	29,910
イギリス	9,169	15,310
フランス	8,559	14,079
ドイツ	7,859	15,390
OECD各国平均	8,169	13,717

http://www.mext.go.jp/b_menu/shingi/chukyo/chukyo0/gijiroku/__icsFiles/afieldfile/2011/10/07/1311502_8_1.pdf

Public subsidy to university education in the share of GDP



http://www.mext.go.jp/b_menu/shingi/chukyo/chukyo0/gijiroku/___icsFiles/afieldfile/2011/10/07/1311502_8_1.pdf

Public and private costs of university education

【高等教育】 (%)

	公財政	私費負担	合計
日本	0.5	1.0	1.5
韓国	0.6	1.9	2.6
アメリカ合衆国	1.0	1.7	2.7
イギリス	0.6	0.6	1.2
フランス	1.2	0.2	1.4
ドイツ	1.0	0.2	1.2
OECD各国平均	1.0	0.5	1.5

http://www.mext.go.jp/b_menu/shingi/chukyo/chukyo0/gijiroku/__icsFiles/afieldfile/2011/10/07/1311502_8_1.pdf

Higher Education in Japan and US

- In Japan, higher education costs account for 1.5% of GDP, while it accounts for 2.7% in the US.
- Higher education creates more value-added in the US than in Japan.
- If Japanese people pay university costs as much as the US people, Japan can increase the value-added of the education sector.
- However, high value-added does not always imply high quality.
- Raising higher education costs would be a plausible growth strategy.
- However, the majority of Japanese people would not support this idea.

Individual and Public Returns of Investment in Higher Education

- OECD publishes their annual reports on the private and social costs and benefits of the tertiary education.
- The costs include direct costs (tuitions) and forgone earnings.
- The benefits include gross earnings benefits, income tax and social security contribution effects, and unemployment benefits.
- Then the net return to invest in tertiary education is the total benefits minus the total costs.

Private Returns for Men and Women

MEN	costs	benefits	Net returns	Internal rate of return
France	-69	375	305	11%
Japan	-115	355	239	8%
United States	-101	569	468	13%
OECD average	-60	313	252	13%

WOMEN	costs	benefits	Net returns	Internal rate of return
France	-59	211	152	9%
Japan	-116	144	28	3%
United States	-88	360	272	11%
OECD average	-55	222	167	11%

Costs, benefits, and net returns are in USD converted using PPP. Source: OECD 2017

Public Returns for Men and Women

MEN	costs	benefits	Net returns	Internal rate of return
France	-66	224	158	8%
Japan	-17	153	136	16%
United States	-73	368	294	12%
OECD average	-54	208	154	10%

WOMEN	costs	benefits	Net returns	Internal rate of return
France	-56	144	88	8%
Japan	-17	145	128	21%
United States	-68	177	108	7%
OECD average	-51	135	83	8%

Costs, benefits, and net returns are in USD converted using PPP. Source: OECD 2017

Gap between Men and Women, Private and Public

- Private return is lower in Japan (8%) than in France (11%) or US (13%).
- Private return is lower for women (3%) than for men (8%) in Japan.
- Public return is higher in Japan (16%) than in France (8%) or US (12%).
- Public return is higher for women (21%) than for men (16%) in Japan.

Discussion

- In Japan, private return is lower than public return, because colleges and universities are heavily financially-dependent on the tuition revenues paid by the students' parents.
- In Japan, public return is higher than in Europe or in US, because public support for tertiary education is weak, while the rise in revenues of tax and social contribution is high.
 - Taxes and social contributions are paid mainly by college and university graduates in Japan.

Who should pay university tuitions?

- Japan has always spent too little public money on higher education. The reason why Japan has mainly private universities is because of the low public spending.
- However, we can't go along with the anti-austerity advocates who try to rely on unstable financial resources such as "issue government bonds to pay for higher education.
- Higher taxes or social insurance are necessary.
- However, running universities with public funds is a redistribution from the economically weak to the strong.

University Tuition and Income Distribution

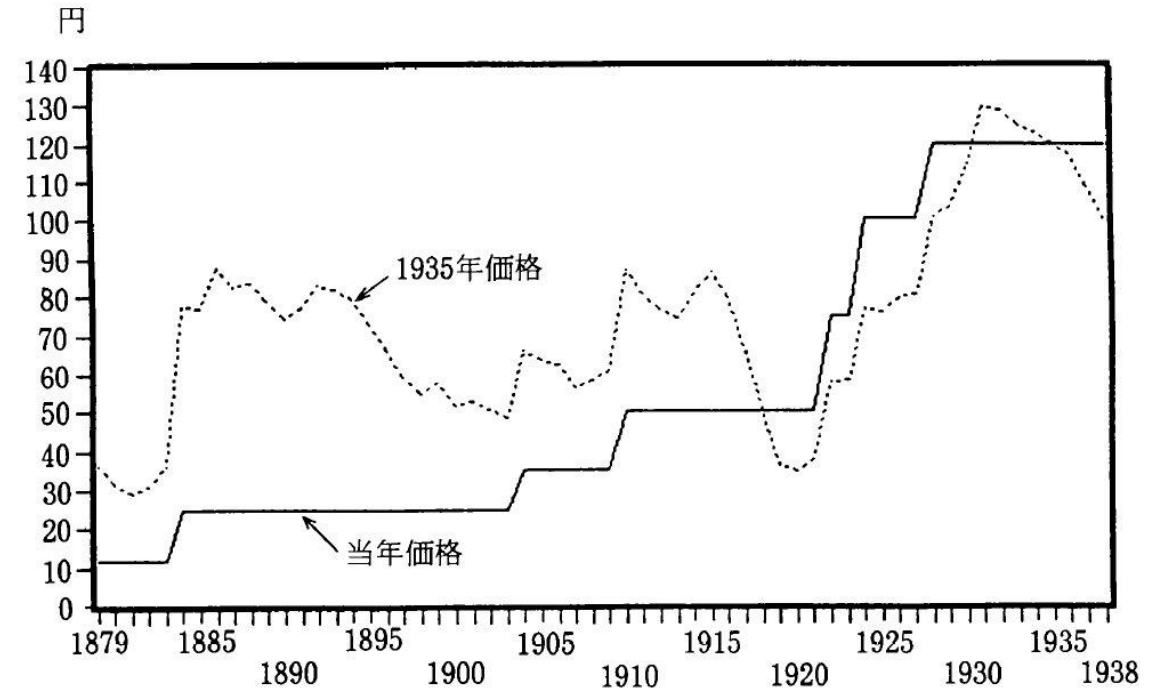
- If the actual cost of higher education is charged, children from low-income families will not be able to go to college.
- On the other hand, the rate of return on a college degree is sufficiently high that lowering the cost of higher education at public expense would result in income redistribution from the economically weak to the strong.
- Therefore, it would be fair to support them with scholarships or education loans.

Middle School Tuition in Prewar Japan

- Before the WWII, going to an old middle school (prefectural school) was quite a heavy burden for the average family.
- For example, in Tokyo Prefecture, the annual tuition was 27 yen for an income of 1,006 yen. To put the scale in today's terms, the tuition is 135,000 yen for an income of 5 million yen.
 - annual https://www.jstage.jst.go.jp/article/csssej/1/0/1_31/_pdf/-char/en

Tuition Fees of National Universities in Prewar Time

- In 1916, but pre-war tuition at national universities was 50 yen. Based on an income of 5 million yen, that would be 250,000 yen.
- This may sound manageable, but this is for income tax payers.
- Pre-war national universities probably charged tuition fees comparable to today's private universities.



出所：〔文部省年報各年版〕, 〔週刊朝日編, pp.436, 446, 453〕,
〔日本統計年鑑, 各年〕, 〔大川一司1967, p.134〕から推計

図1 国立大学授業料の変せん 戦前 (1879-1938年)

<https://rihe.hiroshima-u.ac.jp/search/attachfile/49056.pdf>

Postwar Change

- National University Tuition drastically decreased in the postwar Japan.
- The ratio of university tuition to GNP per capita:
 - .67 in 1890s,
 - .52 in 1930s
 - .03 in 1960s

表2 国立大学授業料と、国民一人あたり消費支出とGNP

— 戦 前 —

期 間	国立大学 授 業 料 (円)	一人 当 り 消 費 支 出 (円)	一人 当 り G N P (円)	比	比
	(1)	(2)	(3)	(1)/(2)	(1)/(3)
1886-89	25.0	17.5	22.1	1.43	1.13
1890-99	25.0	29.3	37.2	0.85	0.67
1900-09	31.0	49.9	66.1	0.62	0.47
1910-19	50.0	93.4	131.2	0.54	0.38
1920-29	89.0	203.2	269.2	0.44	0.33
1930-35	120.0	164.3	229.5	0.73	0.52

出所：図1に同じ

表3 国立大学授業料と、国民一人あたり消費支出とGNP

— 戦 後 —

期 間	国立大学 授 業 料 (円)	一人 当 り 消 費 支 出 (千円)	一人 当 り G N P (千円)	比	比
	(1)	(2)	(3)	(1)/(2)	(1)/(3)
1955-69	7200	76	121	0.09	0.06
1860-69	11100	194	349	0.06	0.03
1970-79	64800	718	1275	0.09	0.05
1980-84	208800	1337	2266	0.16	0.09

出所：図1に同じ

年度	国立大学			私立大学			私立大学/国立大学		
	授業料(円)	入学料(円)	検定料(円)	授業料(円)	入学料(円)	検定料(円)	授業料(倍)	入学料(倍)	検定料(倍)
昭和50年	36,000	50,000	5,000	182,677	95,584	9,647	5.1	1.9	1.9
昭和51年	96,000	50,000	7,500	221,844	121,888	11,452	2.3	2.4	1.5
昭和52年	96,000	60,000	7,500	248,066	185,205	13,084	2.6	2.3	1.7
昭和53年	144,000	60,000	10,000	286,568	157,019	14,722	2	2.6	1.5
昭和54年	144,000	80,000	13,000	325,198	175,999	16,302	2.3	2.2	1.3
昭和55年	180,000	80,000	15,000	355,156	190,113	17,995	2	2.4	1.2
昭和56年	180,000	100,000	15,000	388,253	201,611	19,293	2.1	2	1.3
昭和57年	216,000	100,000	17,000	406,261	212,650	20,398	1.9	2.1	1.2
昭和58年	216,000	120,000	17,000	433,200	219,428	21,016	2	1.8	1.2
昭和59年	252,000	120,000	19,000	451,722	225,820	21,019	1.8	1.9	1.2
昭和60年	252,000	120,000	19,000	475,325	235,769	22,854	1.9	2	1.2
昭和61年	252,000	150,000	21,000	497,826	241,275	24,016	2	1.6	1.1
昭和62年	300,000	150,000	21,000	517,395	245,263	24,686	1.7	1.6	1.2
昭和63年	300,000	180,000	23,000	539,591	251,124	25,573	1.8	1.4	1.1
平成元年	339,600	185,400	23,000	570,584	256,600	26,608	1.7	1.4	1.2
平成2年	339,600	206,000	25,000	615,486	266,603	28,166	1.8	1.3	1.1
平成3年	375,600	206,000	25,000	641,608	271,151	29,258	1.7	1.3	1.2
平成4年	375,600	230,000	27,000	668,460	271,948	30,228	1.8	1.2	1.1
平成5年	411,600	230,000	27,000	688,046	275,824	31,005	1.7	1.2	1.1
平成6年	411,600	260,000	29,000	708,847	280,892	31,973	1.7	1.1	1.1
平成7年	447,600	260,000	29,000	728,365	282,574	32,645	1.6	1.1	1.1
平成8年	447,600	270,000	31,000	744,733	287,581	33,171	1.7	1.1	1.1
平成9年	469,200	270,000	31,000	757,158	288,471	33,410	1.6	1.1	1.1
平成10年	469,200	275,000	33,000	770,024	290,799	33,648	1.6	1.1	1
平成11年	478,800	275,000	33,000	783,298	290,815	33,727	1.6	1.1	1
平成12年	478,800	277,000	33,000	789,659	290,691	33,773	1.6	1	1
平成13年	496,800	277,000	33,000	799,973	286,528	33,725	1.6	1	1
平成14年	496,800	28,2000	33,000	804,367	284,828	33,537	1.6	1	1
平成15年	520,800	28,2000	33,000	807,413	283,306	33,106	1.6	1	1
平成16年	520,800	28,2000	33,000	817,952	279,794	32,800	1.6	1	1
平成17年(案)	535,800	28,2000	33,000						

National VS Private

- Since the end of World War II, the tuition ratio between national universities and private universities has been surprisingly stable at around 1.6 times recently.
- It seems that tuition fees at national universities could be raised even more.
- However, when national universities raise tuition, private universities also raise tuition, so it may be the private universities that are creating the gap between national and private universities.

国公立大学の授業料等の推移

年度	国立大学		公立大学		私立大学	
	授業料	入学料	授業料	入学料	授業料	入学料
	円	円	円	円	円	円
昭和 50	36,000	50,000	27,847	25,068	182,677	95,584
51	96,000	↓	66,582	74,220	221,844	121,888
52	↓	60,000	78,141	80,152	248,066	135,205
53	144,000	↓	110,691	90,909	286,568	157,019
54	↓	80,000	134,618	104,091	325,198	175,999
55	180,000	↓	157,412	119,000	355,156	190,113
56	↓	100,000	174,706	139,118	380,253	201,611
57	216,000	↓	198,529	150,000	406,261	212,650
58	↓	120,000	210,000	167,265	433,200	219,428
59	252,000	↓	236,470	178,882	451,722	225,820
60	↓	↓	250,941	179,471	475,325	235,769
61	↓	150,000	252,000	219,667	497,826	241,275
62	300,000	↓	290,400	230,514	517,395	245,263
63	↓	180,000	298,667	261,639	539,591	251,124
平成 元	339,600	185,400	331,686	268,486	570,584	256,600
2	↓	206,000	337,105	287,341	615,486	266,603
3	375,600	↓	366,032	295,798	641,608	271,151
4	↓	230,000	374,160	324,775	668,460	271,948
5	411,600	↓	405,840	329,467	688,046	275,824
6	↓	260,000	410,757	357,787	708,847	280,892
7	447,600	↓	440,471	363,745	728,365	282,574
8	↓	270,000	446,146	371,288	744,733	287,581
9	469,200	↓	463,629	373,893	757,158	288,471
10	↓	275,000	469,200	375,743	770,024	290,799
11	478,800	↓	477,015	381,271	783,298	290,815
12	↓	277,000	478,800	383,607	789,659	290,691
13	496,800	↓	491,170	387,200	799,973	286,528
14	↓	282,000	496,800	394,097	804,367	284,828
15	520,800	↓	517,920	397,327	807,413	283,306
16	↓	↓	522,118	397,271	817,952	279,794
17	535,800	↓	530,586	401,380	830,583	280,033
18	↓	↓	535,118	400,000	836,297	277,262
19	↓	↓	536,238	399,351	834,751	273,564
20	↓	↓	536,449	399,986	848,178	273,602
21	↓	↓	536,632	402,720	851,621	272,169
22	↓	↓	535,962	397,149	858,265	268,924
23	↓	↓	535,959	399,058	857,763	269,481
24	↓	↓	537,960	397,595	859,367	267,608
25	↓	↓	537,933	397,909	860,266	264,417
26	↓	↓	537,857	397,721	864,384	261,089
27	↓	↓	537,857	397,721	868,447	256,069
28	↓	↓	537,809	393,426	-	-
29	↓	↓	538,294	394,225	-	-

(注)① 年度は入学年度である。

② 国立大学の平成16年度以降の額は国が示す標準額である。

③ 公立大学・私立大学の額は平均であり、公立大学入学料は地域外からの入学者の平均である。

Relative Burden of University Tuition

- In 1980, per capita GDP was 2.14 million yen, while national university tuition was 180,000 yen, or less than 10%.
- In the 2010s, national university tuition was 540,000 yen, or about 12% of GDP per capita of 4.4 million yen.
- The burden of university tuition on households appears to be slightly higher today than 40 years ago, but it has not changed significantly.
- On the other hand, the difference between GDP per capita and GDP per working population is larger now than in the past. Working-age households are thought to be earning more than in the past. This does not necessarily mean that the real burden on households is increasing.

University tuitions remains proportional to GDP

- In terms of the prevailing economic growth in Japan, the increase in university tuition fees from 1980 to 1997 was natural, and the stagnation since then is also natural because of the lack of nominal growth.
- In the U.S., though, the ratio of college tuition to GDP is probably even higher.
- For many years, private universities have pressured politics to say that tuition fees at national universities are too low and unfair, but tuition fees at national universities are in the trend range in terms of the ratio of tuition to GDP.
- In fact, it is the private universities that have been raising tuition fees in the name of correcting the disparity. In fact, the ratio of tuition fees between national and private universities has been stable at 1.6.

Reason for further rise in university tuition

- In the U.S., they say, "High college tuition is a progressive tax on high income people. Since it is politically difficult to impose a literal progressive tax on high-income earners, they take it as college tuition.
- In our generation, there are still many people whose parents graduated from high school, but they are university professors.
- Nowadays, however, there are hardly any university students with parents who have graduated from high school.
- If this is the case, then the parents of today's elite university students have the financial means to pay for their education, which means that university tuition fees can be raised even higher.

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