

Agriculture in Japan

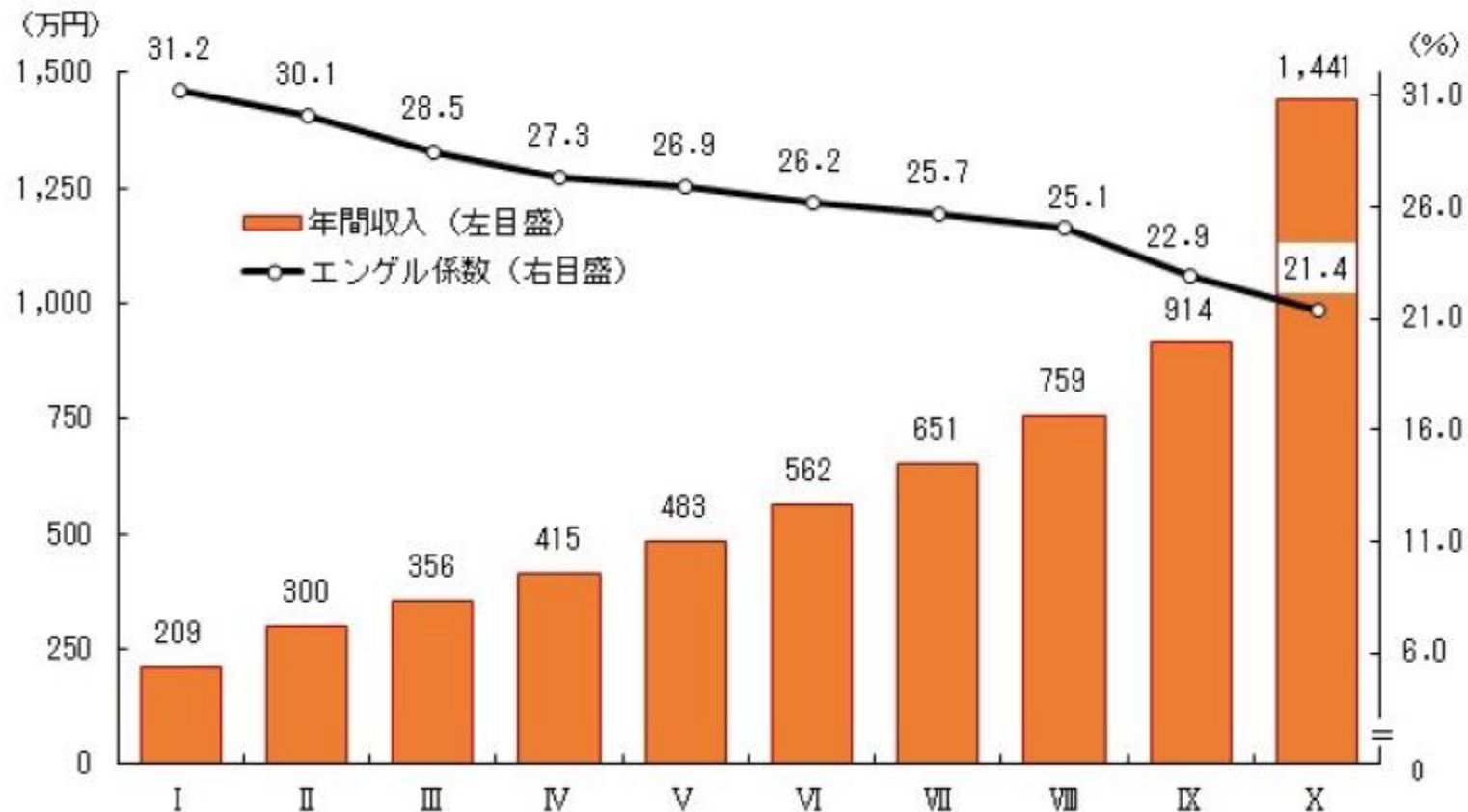
Ryoichi Imai

Agriculture

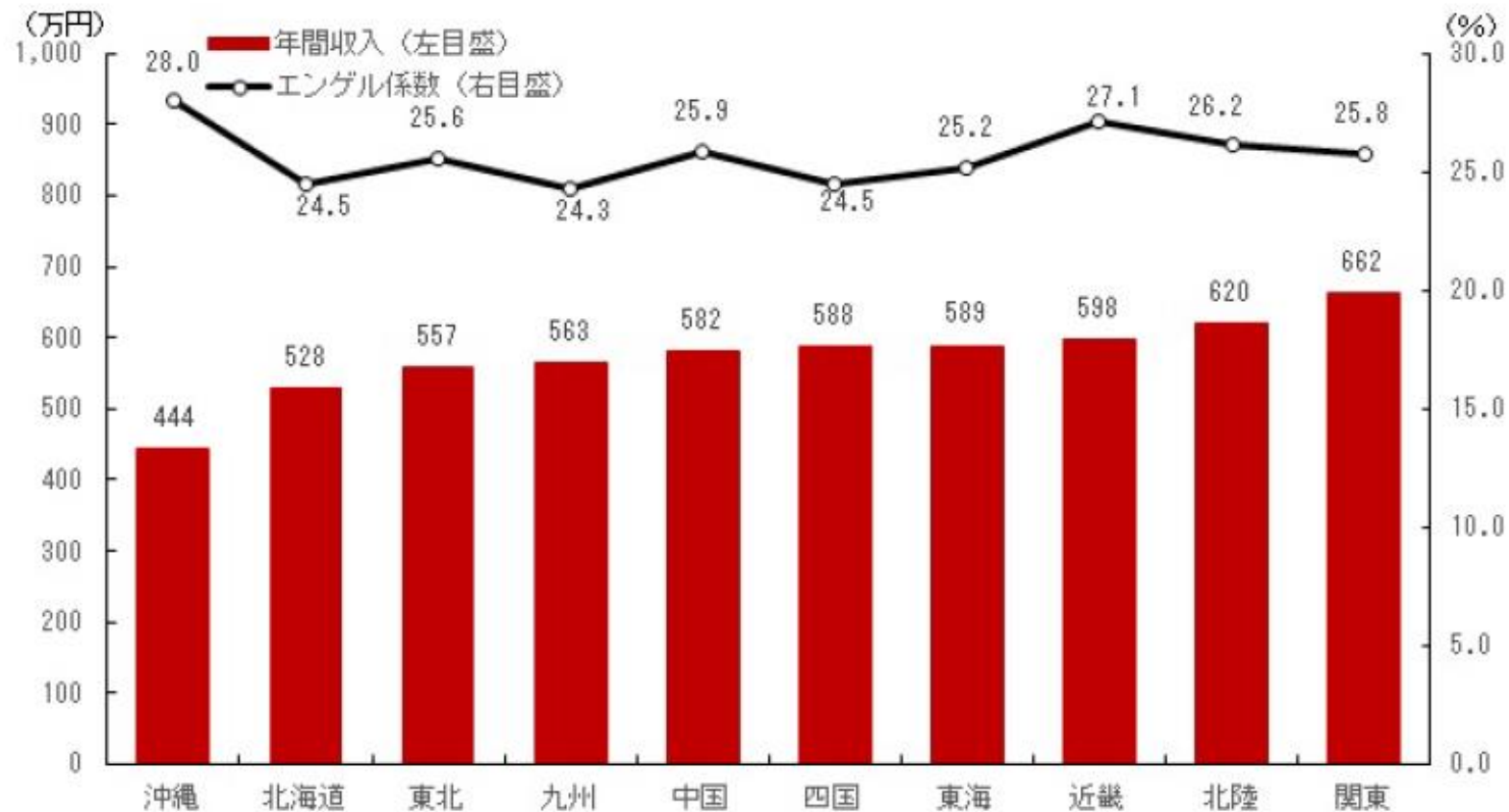
- Japan's agriculture as an industry accounts for 4% of employment, while it accounts for less than 1% of the nation's GDP.
- Japan's agriculture is protected by governments with tariffs and often criticized as barrier against free trade.
- In fact, agriculture is strongly protected by governments in US and EU with subsidies for farmers.
- The current rise in the Engel coefficient is often attributed to the strong protection of farmers. True?

- The Engel coefficient depends on household income.
- The more income you earn, your Engel coefficient decreases.
- Japan's households spend more than 25% of income for food on average.

図1 年間収入十分位別エンゲル係数・年間収入
(2017年(二人以上の世帯))

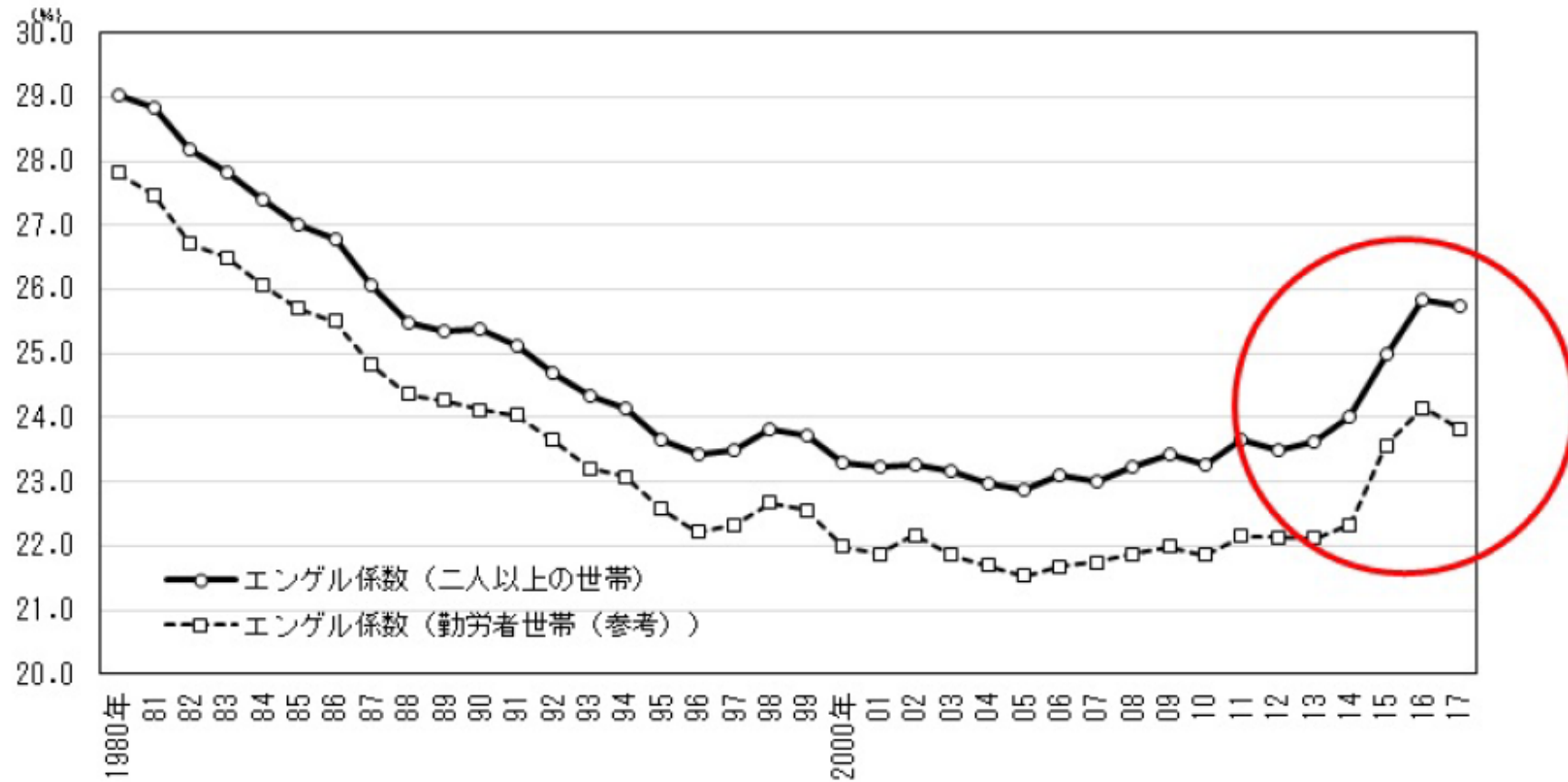


The Engel coefficient does not depend so much on where you live



<https://www.stat.go.jp/info/today/129.html>

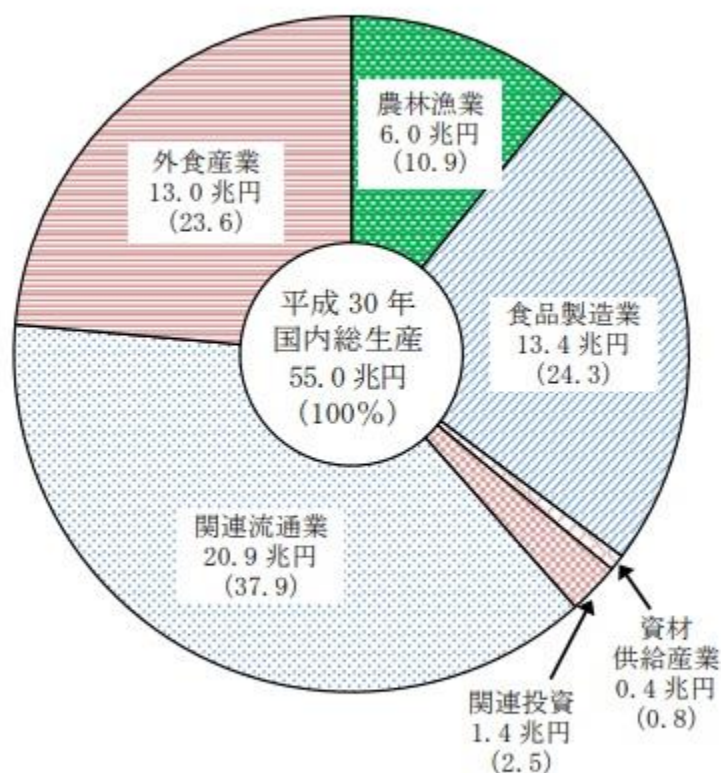
The long-run falling trend of the Engel coefficient is reversed recently



<https://www.stat.go.jp/info/today/129.html>

Agriculture accounts only for 1% of GDP

図1 農業・食料関連産業の国内総生産の構成

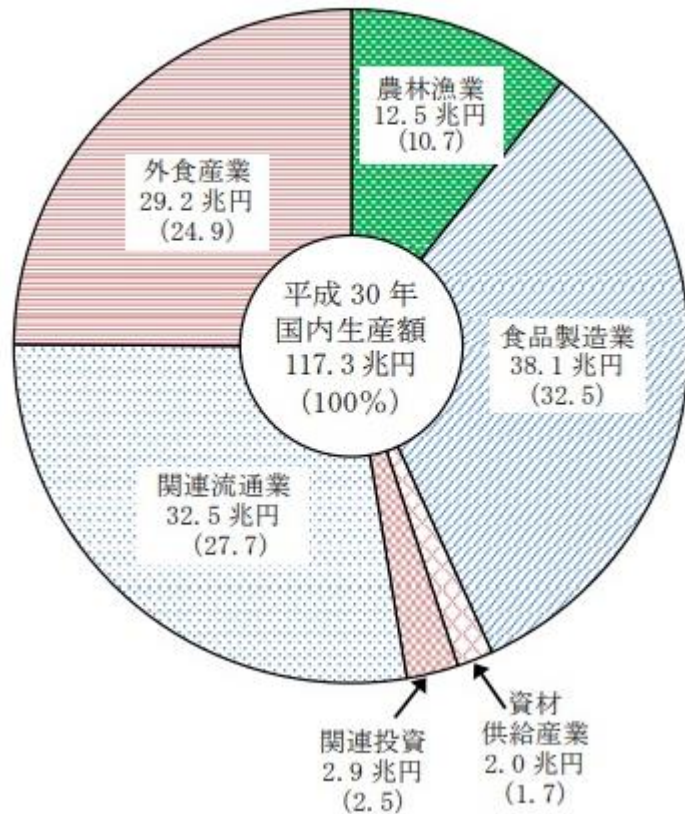


注：統計数値については、表示単位未満を四捨五入しているため、合計値と一致しない。
(以下、図3において同じ。)

- The value added created by agriculture is 6.0 trillion yen, accounting for 1% of Japan's GDP.
- The entire food industry creates value added as much as 55 trillion yen, equivalent to 10% of Japan's GDP.

https://www.maff.go.jp/j/tokei/kouhyou/keizai_keisan/attach/pdf/index-4.pdf

農業・食料関連産業の国内生産額の構成



https://www.maff.go.jp/j/tokei/kouhyou/keizai_keisan/attach/pdf/index-4.pdf

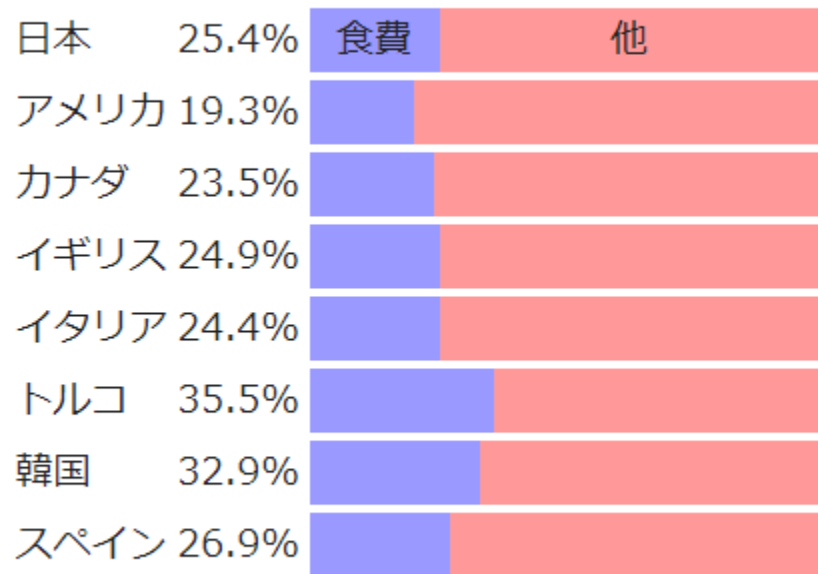
- The sale of the food industry equals the aggregate food consumption in the GDP,
- The sale of the agriculture industry is 12.5 trillion yen, and accounts for only 10% of the aggregate sale of the food industry, which is 117 trillion yen, accounting for 20% of GDP.
- The Engel coefficient (the share of food spending within aggregate consumption) is 25%, which corresponds to the aggregate sale of the food industry, and almost equivalent to Japan's Engel's Coefficient.
- Agriculture reform does not matter with Japan's food expenditure, since domestic agriculture accounts only for 10% of the food spending.

Agriculture support is not fiscal burden

- Agriculture reform does not matter for Japan's food cost, since domestic agriculture accounts only for 10% of the food expenditure.
- In the US and Europe, the governments subsidize agriculture for the food security purpose.
- Its fiscal burden to support agriculture is negligible because agriculture accounts for less than 1% of the nation's GDP, and less than 2% of the households' food consumption.

The Engel's Coefficient – International Comparison

世界の統計 [編集]

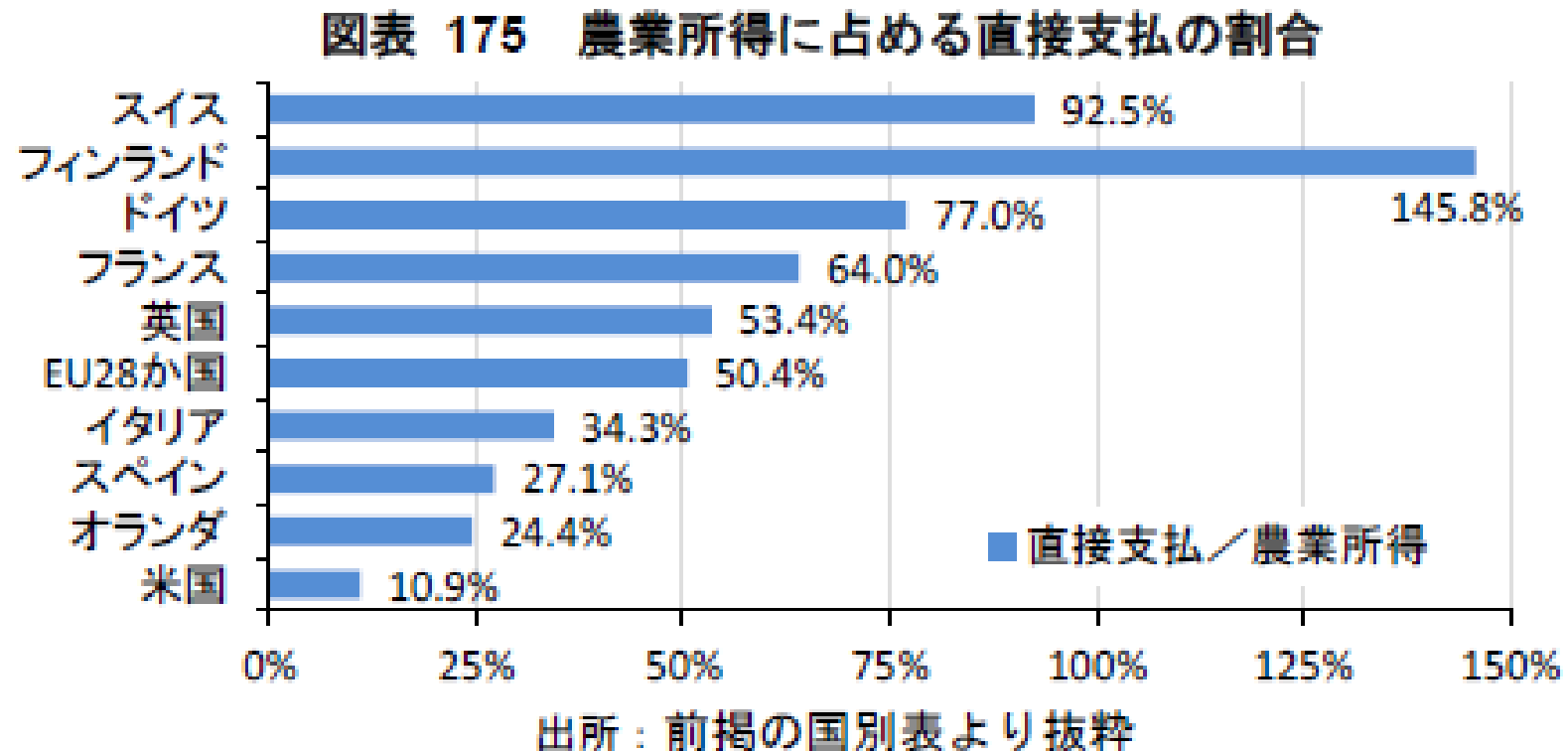


• 総務省統計局 『世界の統計2008』 "13-補2 家計の収入"より

- The Engel's coefficient is 19% even in the United States where the labor productivity of agriculture is as much as 20 times of that of Japan.
- This suggests that agricultural productivity explains only for negligible parts of the international gap in the food expenditure.

<https://ja.wikipedia.org/wiki/%E3%82%A8%E3%83%B3%E3%82%B2%E3%83%AB%E4%BF%82%E6%95%B0>

International Comparison of Subsidies for Agriculture



http://www.maff.go.jp/j/kokusai/kokusei/kaigai_nogyo/k_syokuryo/attach/pdf/itaku29-3.pdf

What is different between US and Switzerland?

- Subsidies account for
 - 92% of farmers' income in Switzerland
 - 5% of farmers' income in US
- However, the labor productivity is much different
 - In Switzerland, arable lands are in the mountains.
 - In US, farmers are working with machines in vast agricultural lands.

Japan and US

(2) 農林水産業の地位 (2016 年)

(単位：億 US ドル)

	米 国		日 本	
	名目額	GDP 比 (%)	名目額	GDP 比 (%)
国内総生産 (GDP)	186, 245	100. 0	49, 362	100. 0
うち農林水産業	1, 776	1. 0	530	1. 1
1 人当たり GDP (ドル)	57, 808		38, 640	

資料：国連統計

http://www.maff.go.jp/j/kokusai/kokusei/kaigai_nogyo/attach/pdf/index-74.pdf

2012 年の農家数 (farmer) は約 320 万人であり、同年の米国の全人口である約 3 億 1,428 万人の約 1%を占めている。農場数が約 210 万軒であることから、平均すると一農場は 1.5 人程度で運営されていることになる。

http://www.maff.go.jp/j/kokusai/kokusei/kaigai_nogyo/k_syokuryo/attach/pdf/itaku29-13.pdf

図表 127 農家数 (人)

2007 年	2012 年	変化率 (%)
3,281,534	3,180,074	-3.1

- Both in the US and in Japan, agriculture accounts for 1% of their GDP.
- Agriculture accounts for 1.3% of employment of the US, and 4% of employment of Japan, while the GDP per capita of US is 1.3 times as much as of Japan.
- Then the value added productivity of US agriculture is almost 4 times as much as of Japan. Sounds small?
 - The physical productivity gap from US is as much as 20 times as of Japan. Why?
- The Engel Coefficient of the US is 19%, and that of Japan is 26%.
- What is the mechanism behind such a large gap in the Engel coefficient between Japan and US, if food cost consists much of transportation, wholesale, and retail costs?
- Diet life style also differs between US and Japan.
 - Eating out at restaurants (外食) and taking ready-made meal to home (中食) widely prevail among Japanese households.
 - In the US, eating out is expensive, few good take-home meals are available.

(extra)Agricultural Productivity of Hokkaido

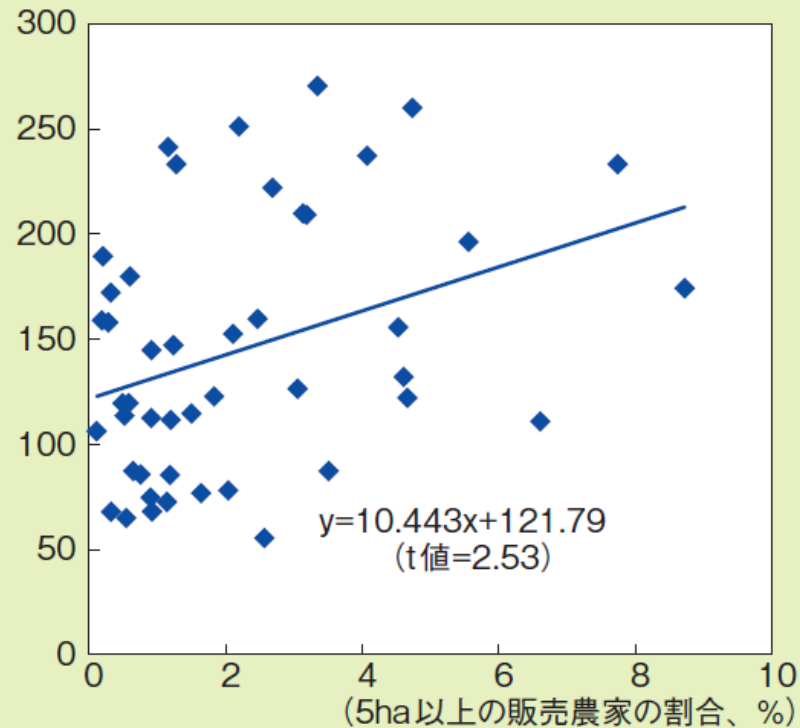
- Hokkaido is outstanding in the ranking of agricultural output, mainly because there are larger farms there.
 - <http://jp.ecodb.net/ranking/C3101.html>
- A government report says:
 1. A rise in average farm size does not increase agricultural productivity.
 2. The output share of larger farms is crucial to the agriculture productivity.
 - The more agricultural output is made by large farms, the higher the labor productivity is.
 3. Output per land is higher, if farming is done by a family, but by an organization.
 - No profit-seeking corporation is allowed to be engaged in farming by governmental regulation.

第3-1-26図 規模、雇用と生産性の関係（都道府県別、2005年）

大規模農家の比率の大きい都府県ほど労働生産性が高く、
雇用労働者の導入農家の比率が大きい都道府県ほど土地生産性が高い傾向

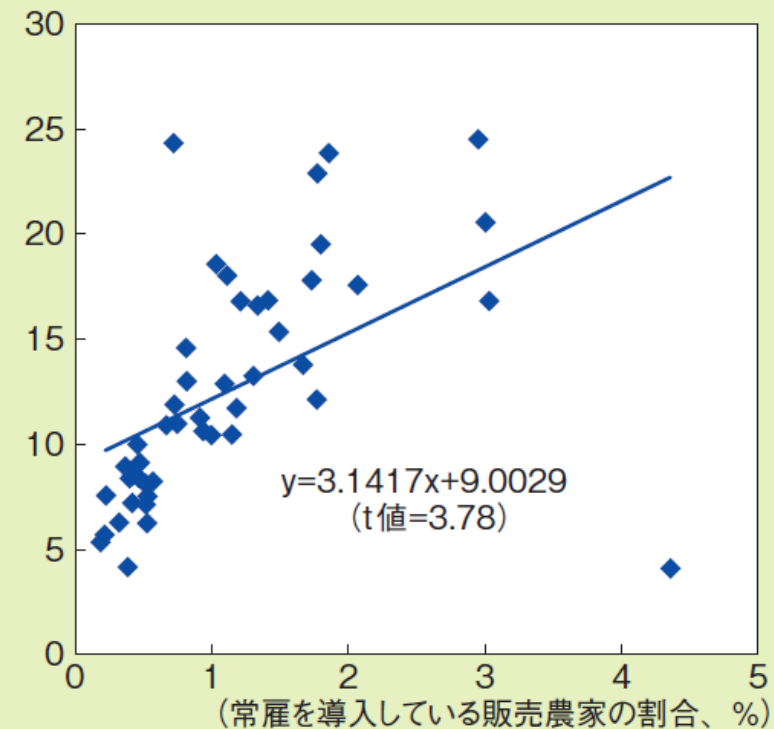
(1) 規模と労働生産性の関係

(販売農家当たりの生産農業所得、万円)



(2) 雇用と土地生産性の関係

(経営耕地面積10a当たりの生産農業所得、万円)



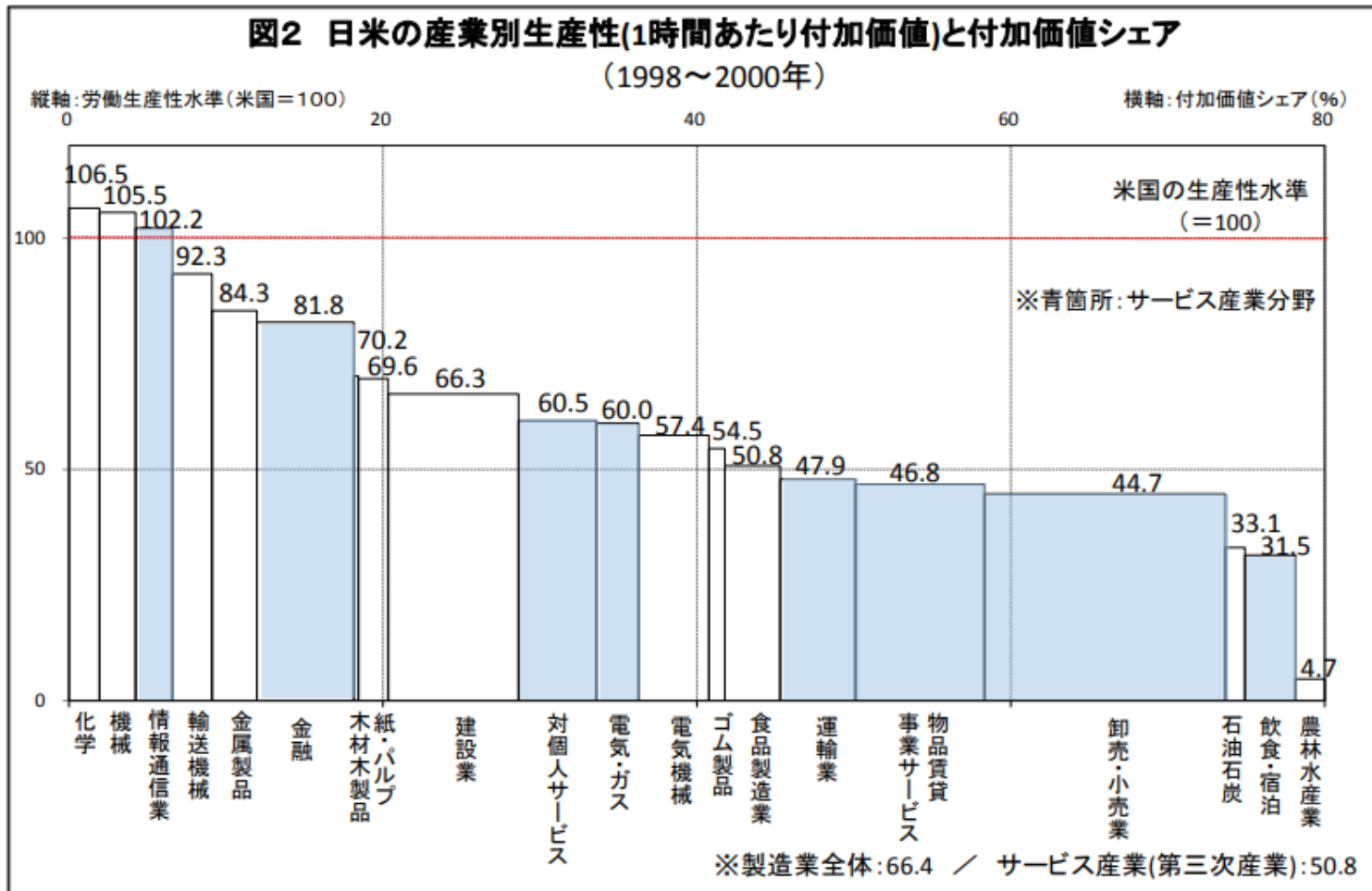
- (備考) 1. 農林水産省「農林業センサス」、「生産農業所得統計」により作成。
2. (1) では、5ha以上農家の割合の高い北海道を除いている。(2) の経営耕地面積は、販売農家のデータ。
3. 販売農家は、経営耕地面積30a以上又は農産物販売金額が年間50万円以上の農家。
4. 括弧内はt値。

Supplement: What is labor productivity?

$$\text{labor productivity} \equiv \frac{\text{real output}}{\text{working hours}}$$

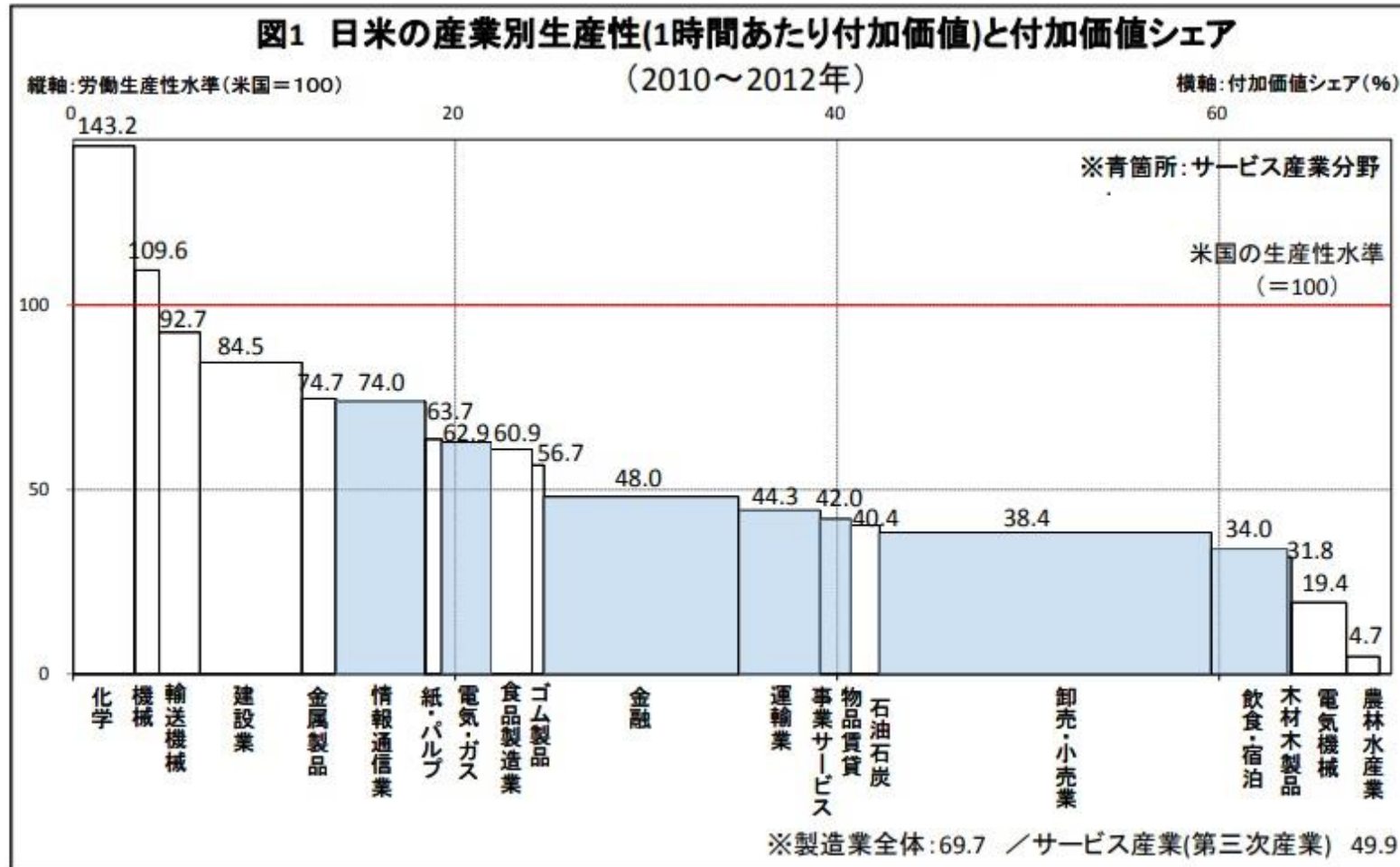
- In order to raise labor productivity, we need to increase output without increasing working hours.
- Simple rise in working hours does not raise but reduce labor productivity.

Comparison of Labor Productivity between Japan and the USA



- Japan's Industrial productivity was far much behind the US in 1998-2000, except for
 - Chemistry
 - Machinery
 - Information and communication
- Agricultural productivity in US is 20 times higher than in Japan.

Comparison of Labor Productivity between Japan and the USA



- Japan's labor productivity in chemistry and machinery is still higher than that of the US.
- However, the labor productivity gap from the US became even larger for the most of Japan's industries, especially for the service sectors.

図3 90年代後半との比較(%ポイント)
(2010~2012年水準-1998~2000年水準)



Which industries are even worse than the other?

- Japan's labor productivity **growth** overperformed that of the US in chemistry, construction, food, machinery and others.
- Japan's labor productivity **growth** underperformed that of the US in information and communication, finance, and electronic machinery.

Why Electronics and Finance stagnate?

- Electronics is stagnant mainly because the same industries emerged in China, Taiwan, and South Korea. They are challenging Japan with similar quality and lower prices.
- Finance is stagnant mainly because
 1. The bad loan problem after the bubble economy in 1990s reduced business opportunities.
 2. The zero lower bound for the nominal interest prevailed since the late 1990s.