

International Economics: Lecture 3

Ricardian Model of Comparative Advantage

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Ricardo's idea on the island



Samo & Lilo

Ricardo's idea on the island



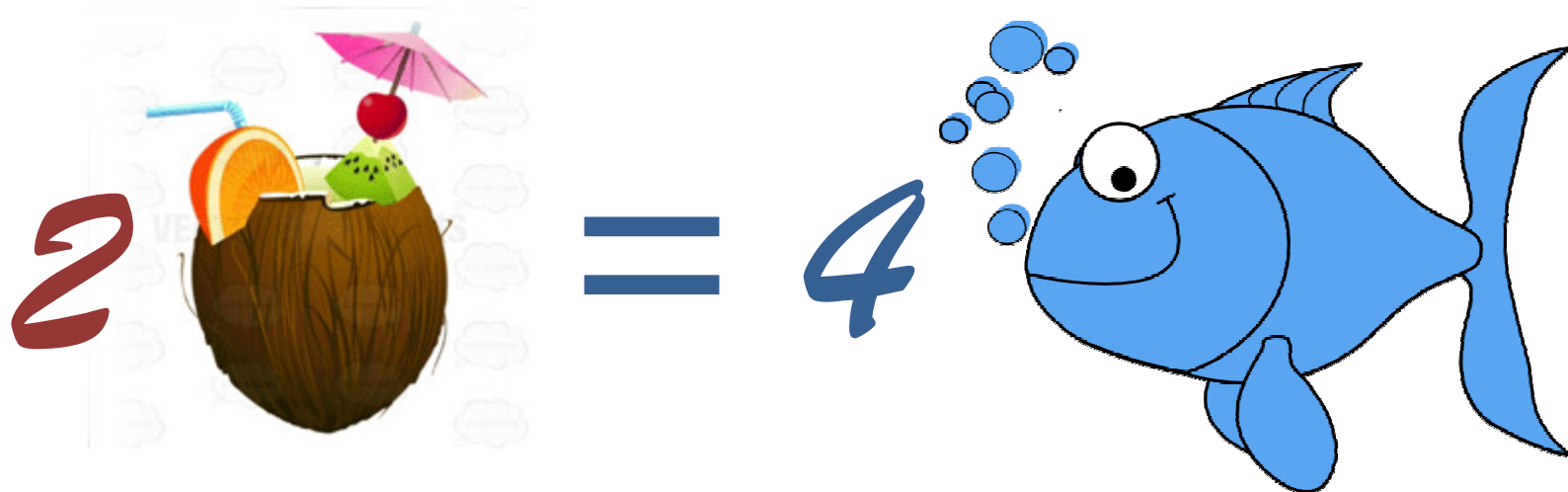
	Samo & Lilo
Water	2
Fish	2

Ricardo's idea on the island



	Samo & Lilo	Rubo & Nato
Water	2	3
Fish	2	6

	Samo & Lilo	Rubo & Nato
Water	2	3
Fish	2	6



Comparative advantage is the best example of an economic principle that is undeniably true yet not obvious to intelligent people.

Paul Samuelson



6. Factors are perfectly mobile within a country
8. But immobile between countries

factors are homogeneous,
and freely and costlessly mobile between industries within a country,
but are immobile between countries

Factor mobility implies LONG-RUN

For labor, it may require the passage of a generation.
For capital, it requires depreciation, followed by new investments.

9. There are no trade barriers and transport costs

10. Trade is balanced

11. Labor is the only factor of production

2. $1 \times 2 \times 2$

12. Constant returns to scale

Doubling the inputs doubles the output.

Amount of labor required to produce one unit output

	1 liter brandy	1 ton grain
Armenia	3	9
Russia	2	3

Definition #1: A nation has a comparative advantage in the product, in which its absolute advantage is higher, or absolute disadvantage is lower.

Amount of labor required to produce one unit output

	1 liter brandy	1 ton grain
Armenia	3	9
Russia	2	3

Opportunity cost of one unit output

	1 liter brandy	1 ton grain
Armenia	0.33 (=3/9)	3 (=9/3)
Russia	0.67 (=2/3)	1.5 (=3/2)

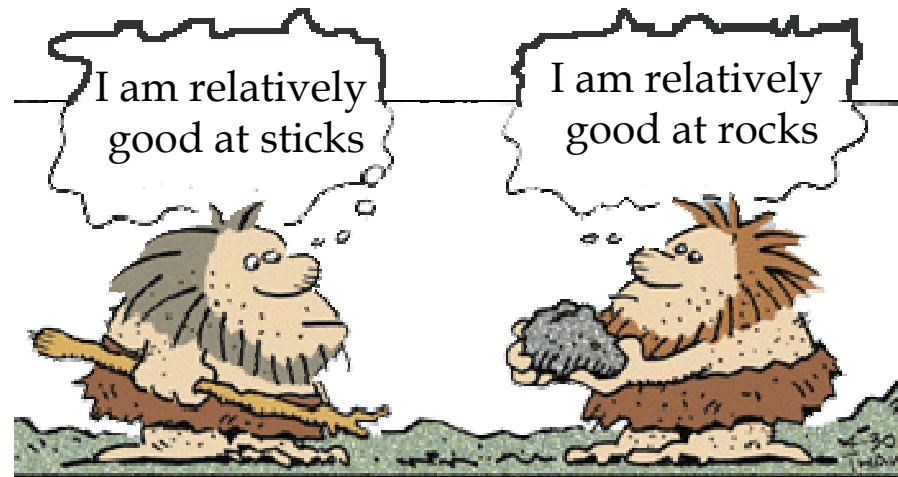
Definition #2: A nation has a comparative advantage in the product, in which its opportunity cost is lower.

Amount of labor required to produce one unit output

	1 liter brandy	1 ton grain
Armenia	3	9
Russia	2	3

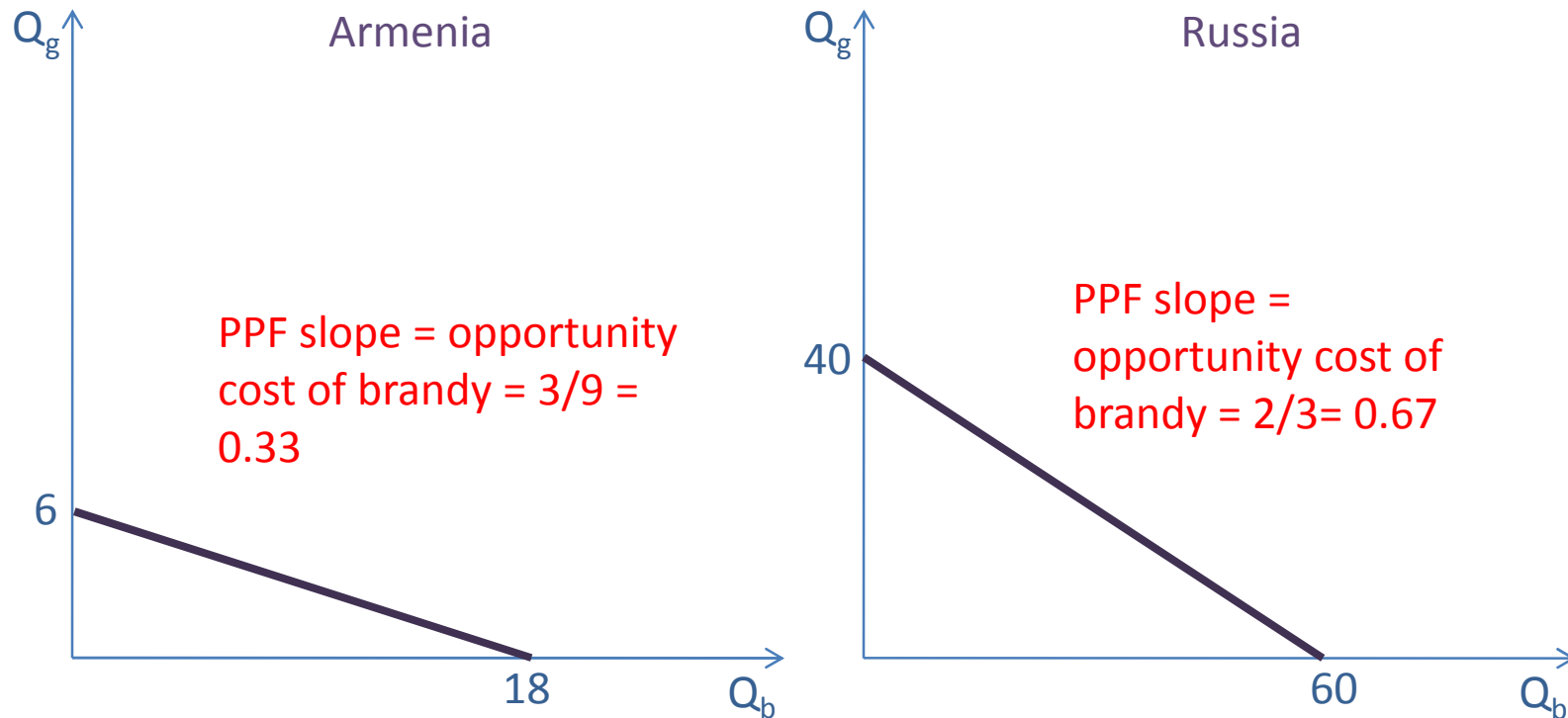
Gains from specialization in line with Comparative Advantage

	1 liter brandy	1 ton grain
Armenia	+3	-1
Russia	-3	+2



Already 12000 years ago in Armenian highland Shmo and Smo discovered profitable trade opportunities: one of them was relatively good at sticks, the other at rocks.

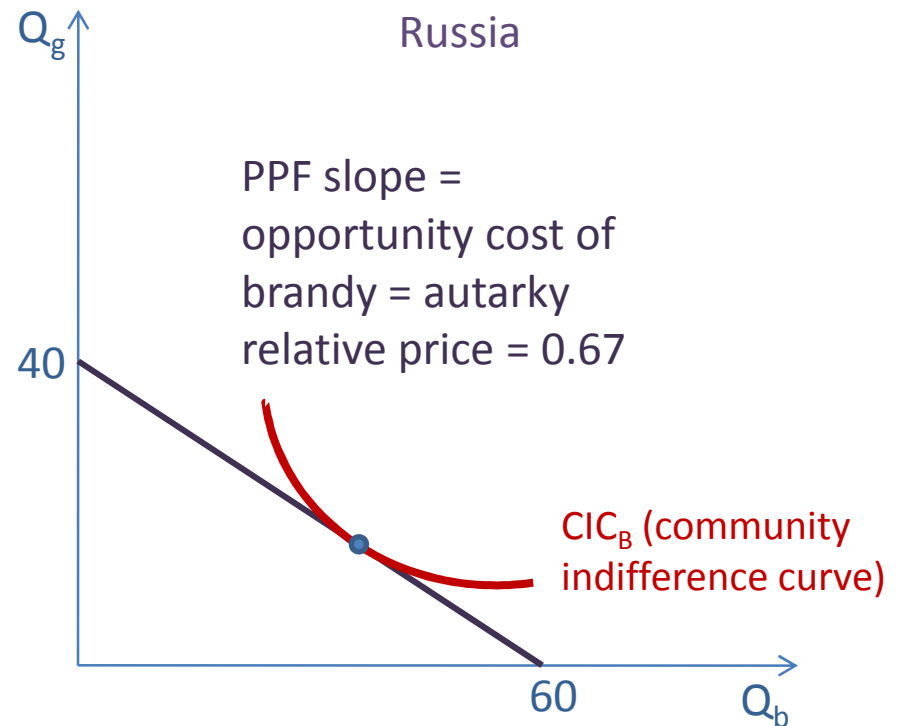
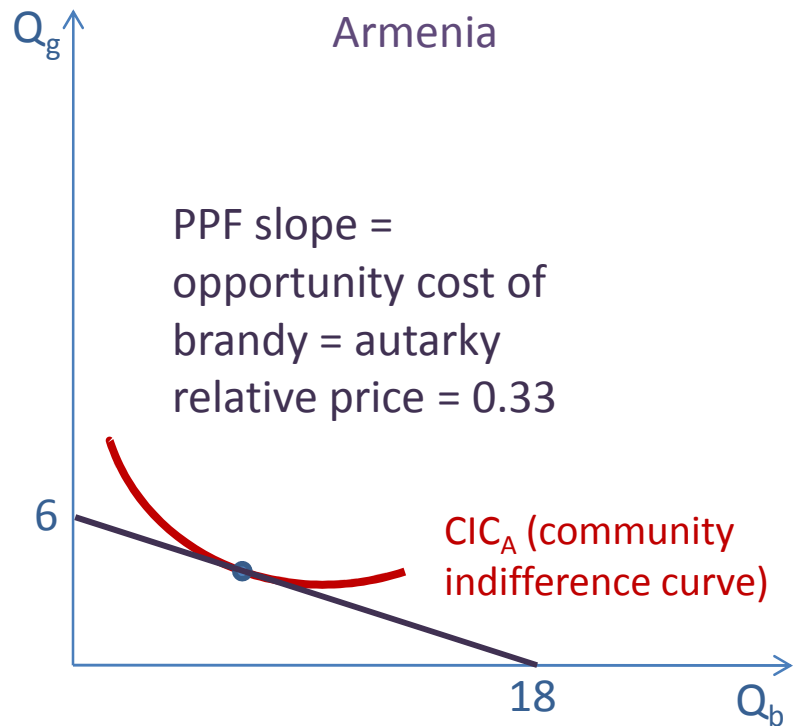
Production Possibilities Frontiers



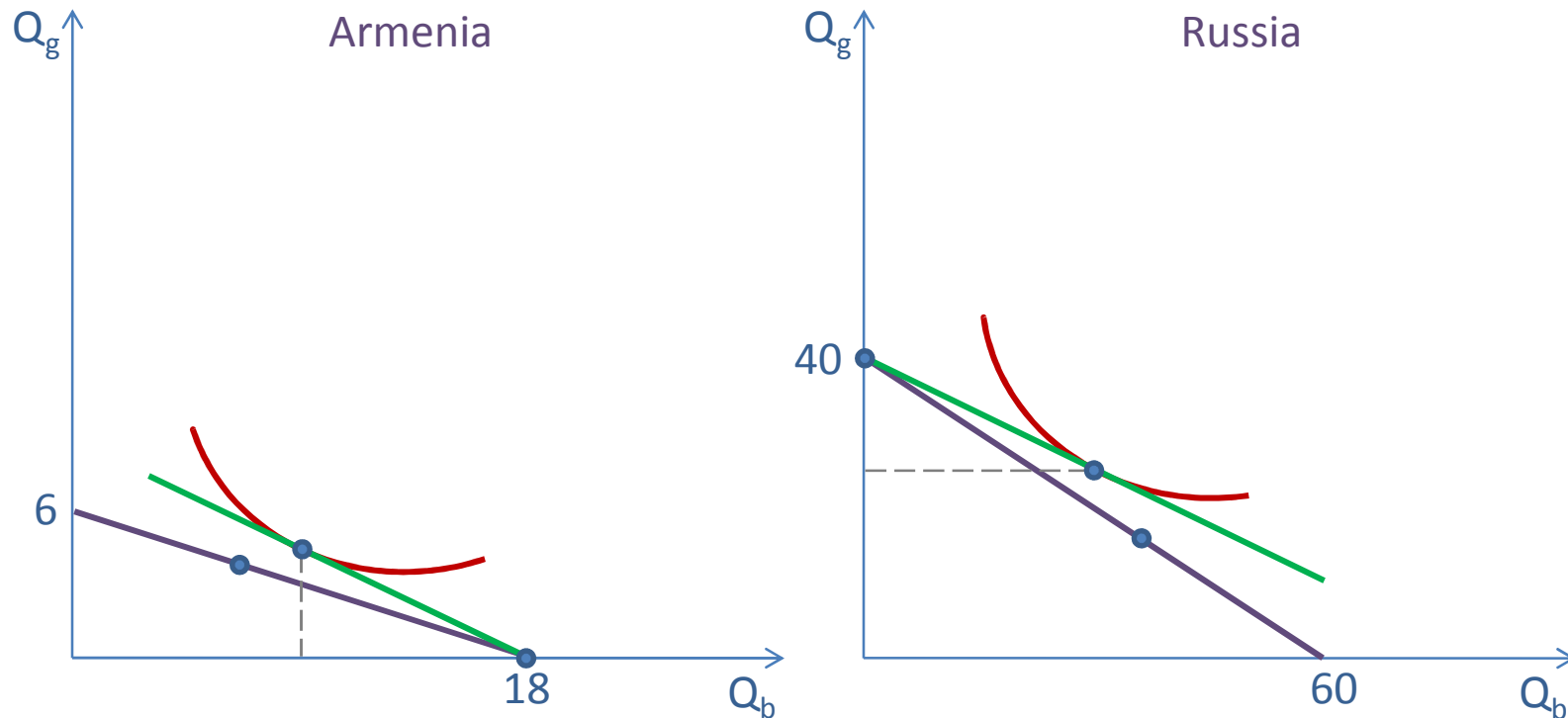
Amount of labor required to produce one unit output and labor endowment

	1 liter brandy	1 ton grain	Total labor
Armenia	3	9	54
Russia	2	3	120

Autarky Equilibrium



Free Trade Equilibrium

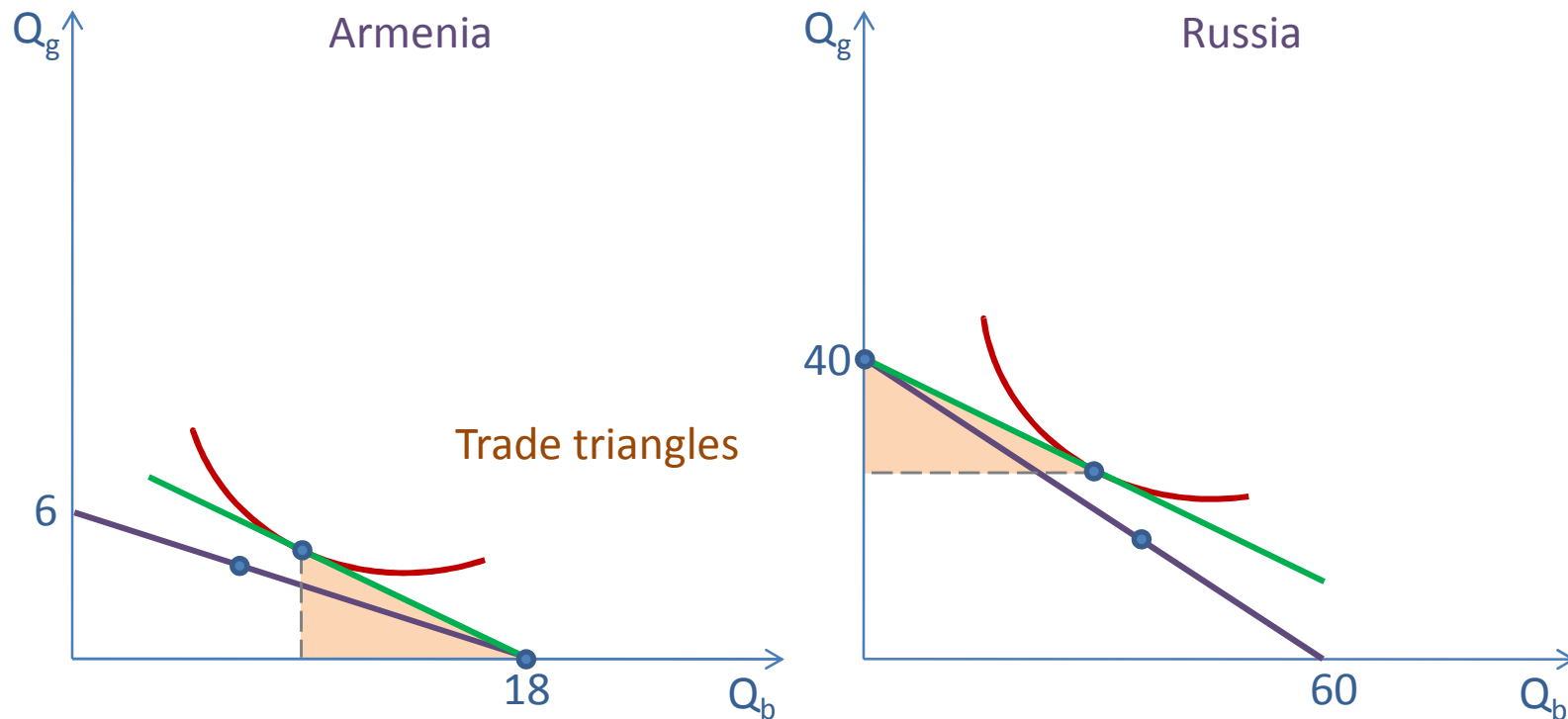


Terms of trade is the relative price of exports in terms of imports.

Terms of trade **rests in between** the two autarkic relative prices.

$$0.33 < \text{Terms of Trade} < 0.67$$

Free Trade Equilibrium



Due to *Constant returns to scale* and *One factor of production*, opportunity cost is constant and PPF is a straight line.

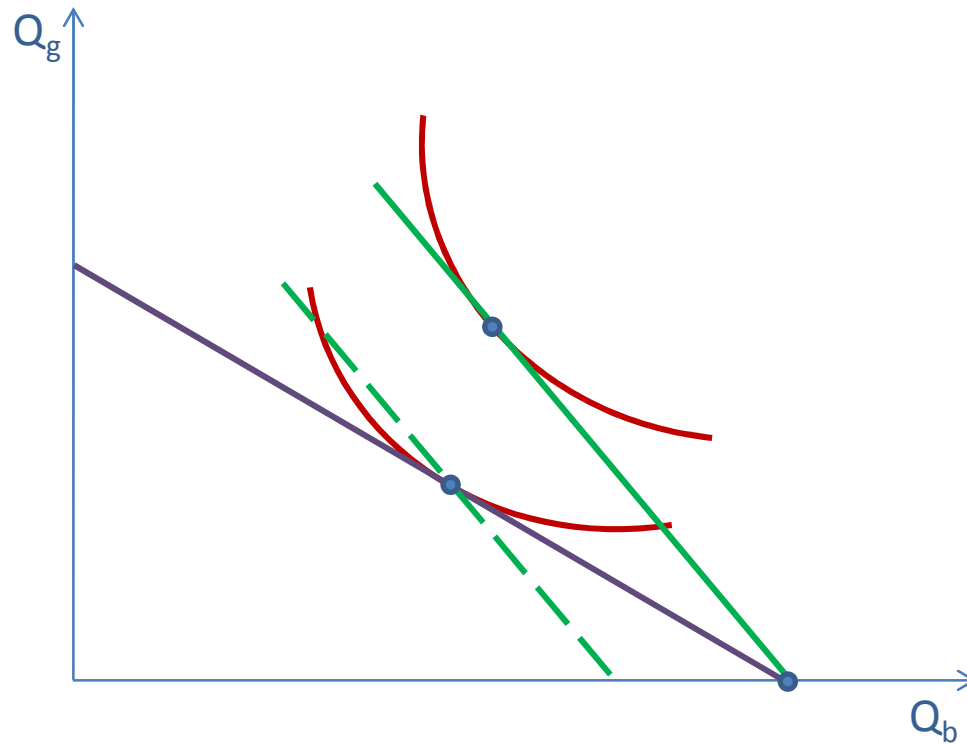
Therefore, in free trade equilibrium each country is completely specializing in its comparative advantage product.

Ricardo's idea in plain English

If you are smart in everything, then do whatever you are smartest of all.

If you are stupid in everything, then do whatever you are least stupid of all.

Gains from Trade



Higher Community Indifference Curve

Higher Real GDP

Relative wages

Prices in Armenia

$$P_{bA} = 3w_A$$

$$P_{gA} = 9w_A$$

Prices in Russia

$$P_{bR} = 2w_R$$

$$P_{gR} = 3w_R$$

In competitive markets prices are equal to factor costs.

In Ricardo's model we have just one factor: labor, so price is equal to unit labor requirement multiplied by wage.

In each country wages in both industries are the same, because factor is perfectly mobile within countries.

Wages differ between countries, because factor is perfectly immobile between countries.

Amount of labor required to produce one unit output

	1 liter brandy	1 ton grain
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Relative wages

Prices in Armenia

$$P_{bA} = 3w_A$$

$$P_{gA} = 9w_A$$

Prices in Russia

$$P_{bR} = 2w_R$$

$$P_{gR} = 3w_R$$

Trade is possible only when exporting country price is less than importing country price.

So price of brandy in Armenia is less than its price in Russia.
The opposite is true for grain.

$$P_{bA} < P_{bR} \quad P_{gA} > P_{gR} \quad \rightarrow \quad 3w_A < 2w_R \quad 9w_A > 3w_R$$

$$2/3 > w_A/w_R > 1/3 \quad \rightarrow \quad 1.5 < w_R/w_A < 3$$

Relative wages

$$2/3 > w_A / w_R > 1/3 \quad \rightarrow \quad 1.5 < w_R / w_A < 3$$

Russia has a comparative advantage in grain, Armenia in brandy.

But because Russia has absolute advantage in both brandy and grain, Russian wages should be higher.

Specifically, Russian wages should be from 1.5 to 3 times higher, than Armenian wages.

Otherwise the trade will not be profitable.

If Russian wages would be more than 3 times higher, then Russian grain will not be competitive in Armenian market.

If Russian wages would be less than 1.5 times higher, then Armenian brandy will not be competitive in Russian market.

Relative wages

$$2/3 > w_A/w_R > 1/3 \quad \rightarrow \quad 1.5 < w_R/w_A < 3$$

Competitive advantage depends not only on relative productivity, but also on relative wages.

Wages around the world

	2013, USD		2013, USD
Norway	66	Greece	19
Switzerland	63	Czech Rep.	12
Germany	49	Poland	9
France	43	Mexico	7
US	36	Philippines	2.1
Singapore	24	Russia (2016 Nov.)	2.7
		Armenia (2016 Dec.)	2.2

Hourly compensation costs in manufacturing **in 2013 in USD**:
 includes direct pay, social insurance expenditures, and labor-related taxes.
Source: The Conference Board.

The estimate for Armenia & Russia is based on Armstat & Rosstat data
 of 221,835 AMD & 36,195 RUB average wage in 2016 Dec & Nov respectively.

Thank you and enjoy.

But remember Confucius words

Learning without thinking is
useless.