

# Trade

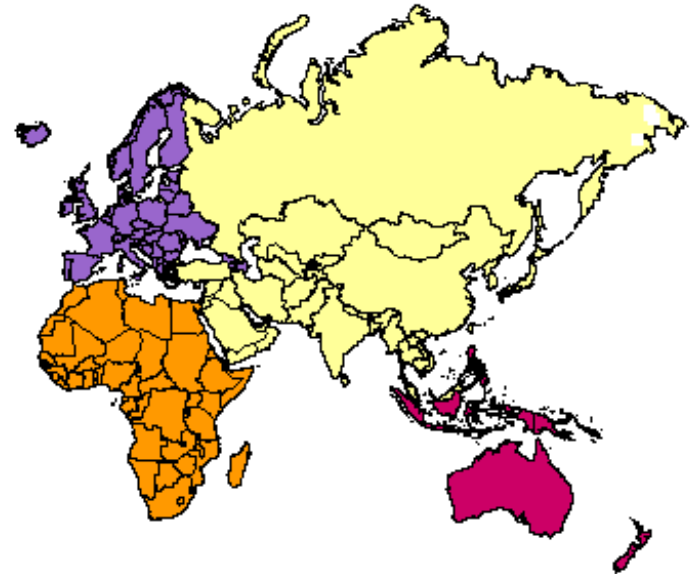
**copies of this presentation can be found at  
[www.antonydavies.org](http://www.antonydavies.org)**

There are two countries.

West

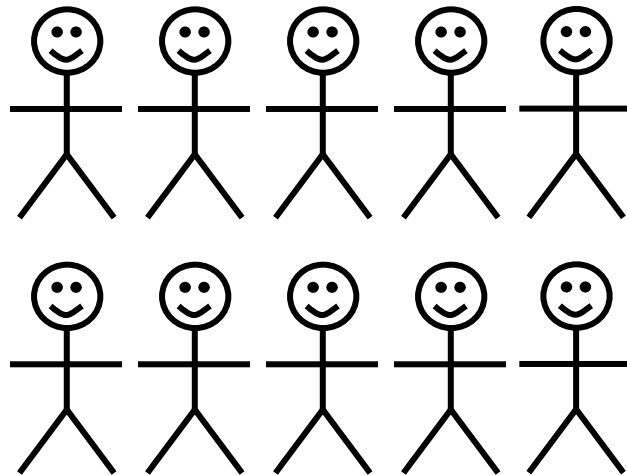


East

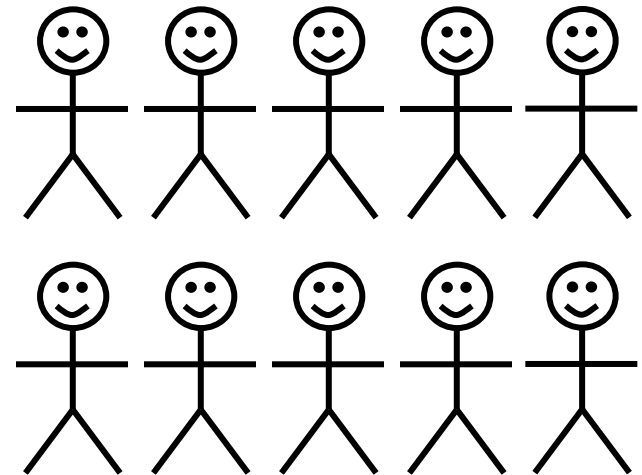
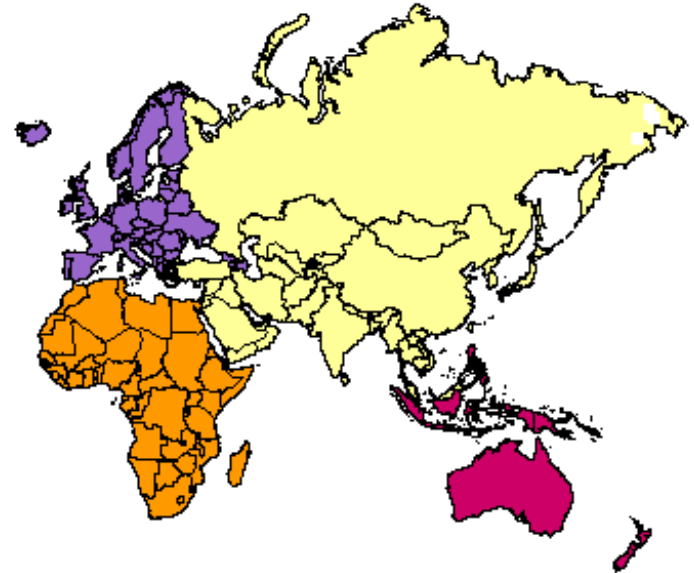


In each country, there are 10 workers.

West

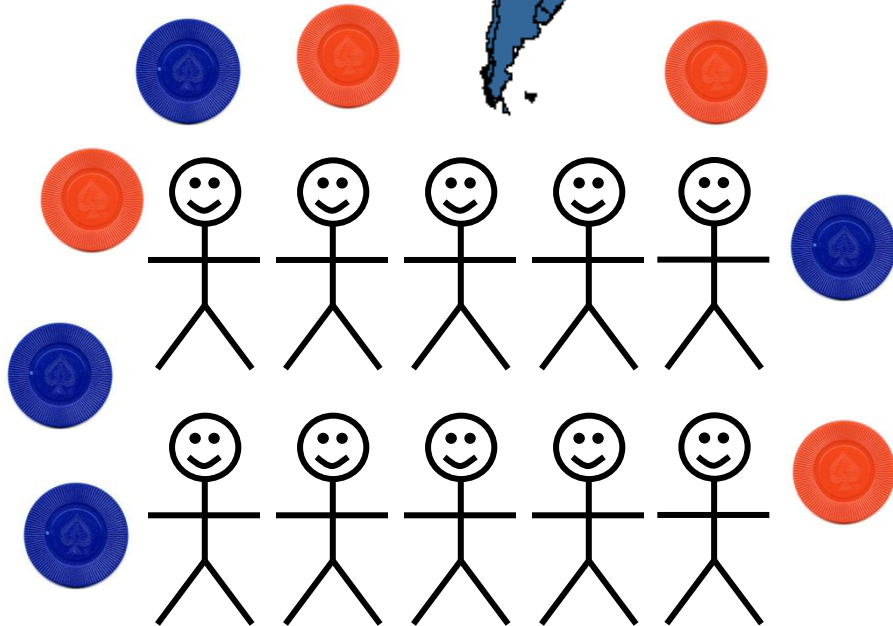


East

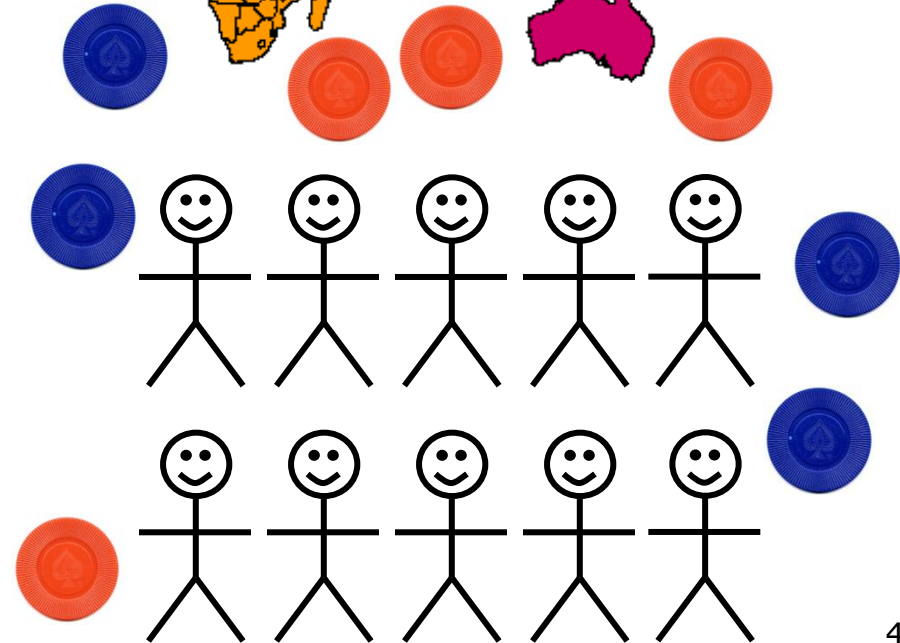
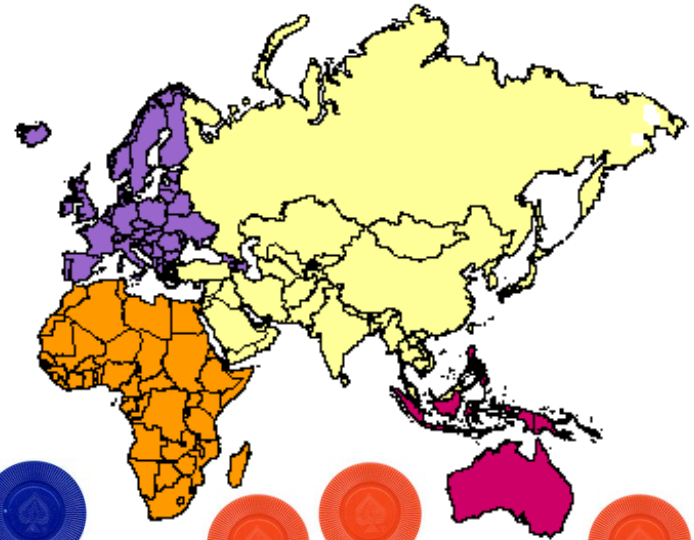


The workers make RED stuff and BLUE stuff.

West

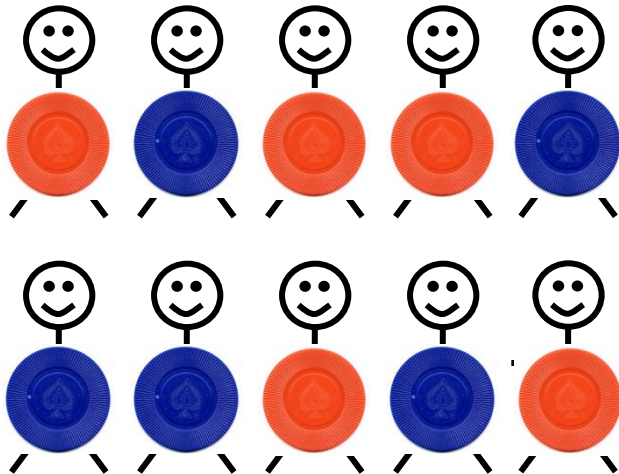


East

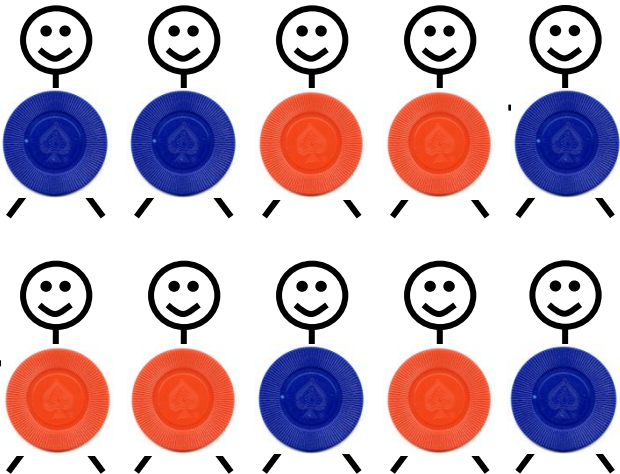
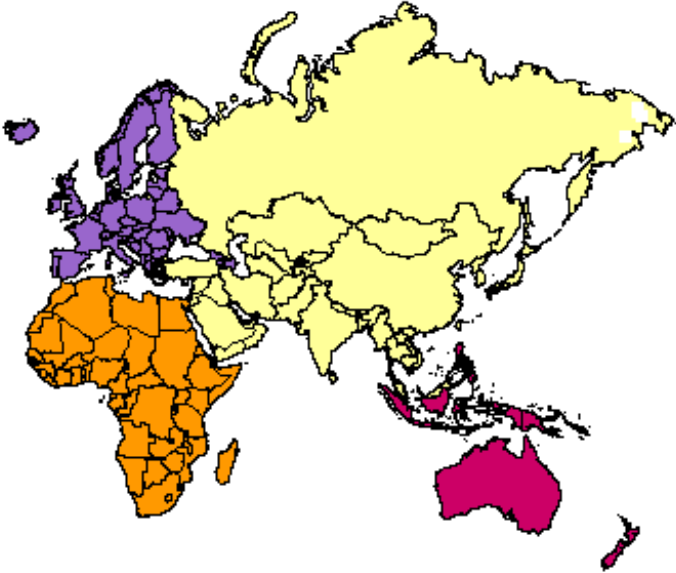


The workers eat the RED stuff and BLUE stuff.

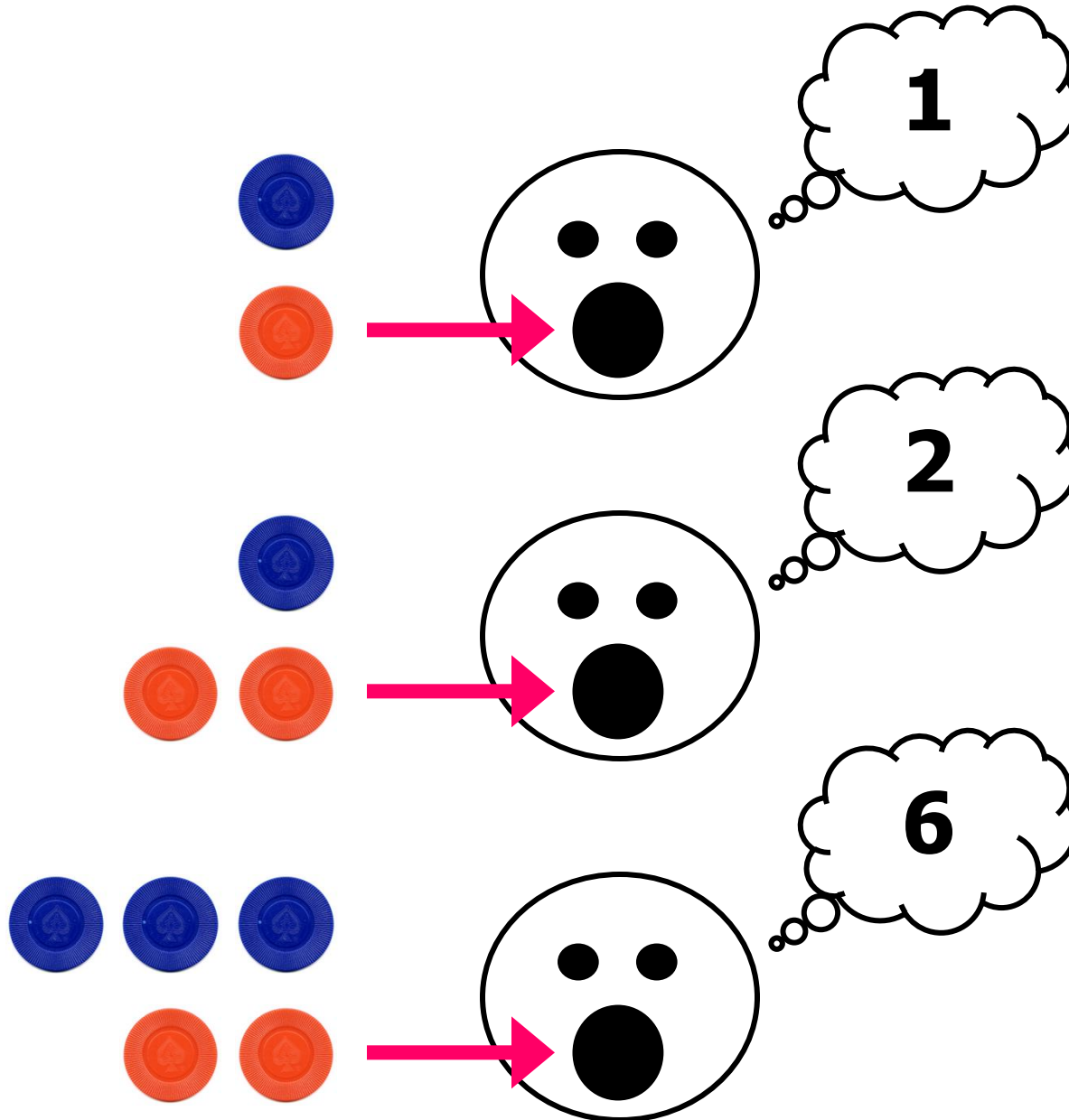
West



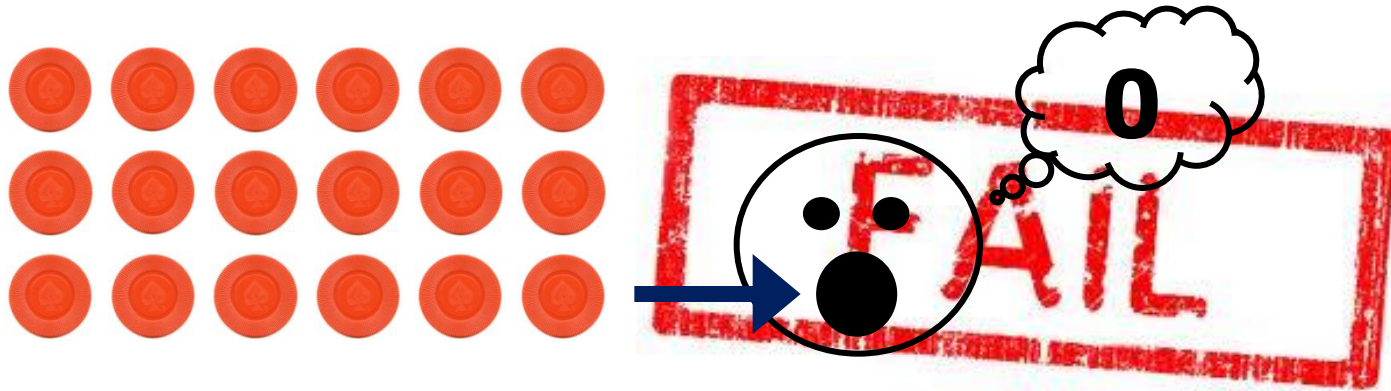
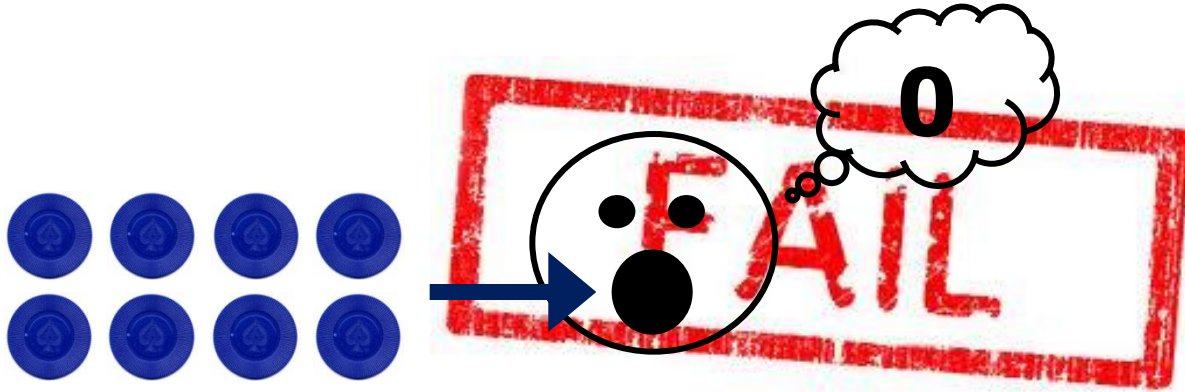
East



Happiness = (RED stuff eaten) (BLUE stuff eaten)

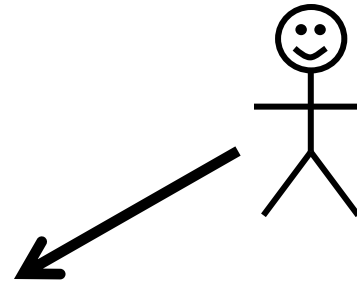


Happiness = (RED stuff eaten) (BLUE stuff eaten)



# A single worker can produce **RED** stuff...

West

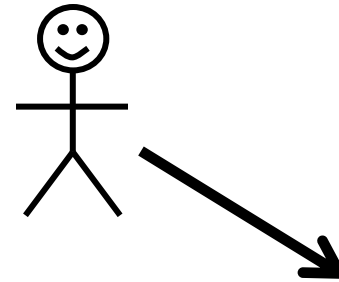


Labor Allocated to Production of Red	Units of Red Produced
0	0
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20



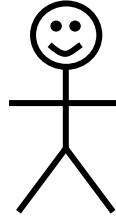
...or **BLUE** stuff.

West



Labor Allocated to Production of Red	Units of Red Produced
0	0
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

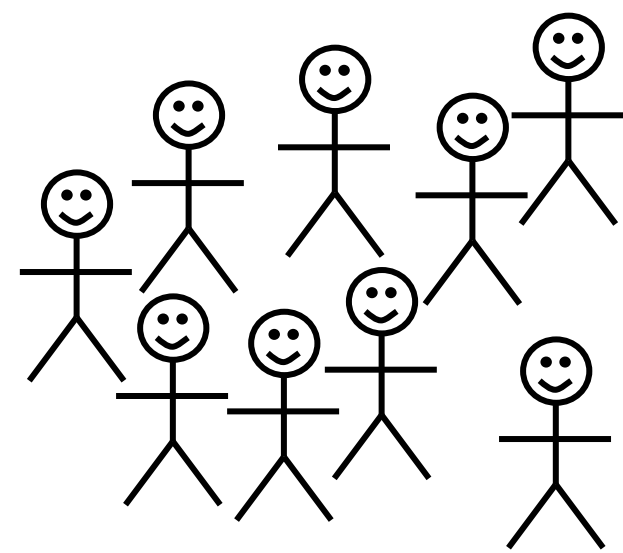
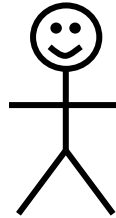
Labor Allocated to Production of Blue	Units of Blue Produced
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10



1 worker to Red

Labor Allocated to Production of Red	Units of Red Produced
0	0
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20





Labor Allocated to Production of Red	Units of Red Produced
0	0
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

Labor Allocated to Production of Blue	Units of Blue Produced
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

1 worker to Red  
and  
9 workers to Blue



You must decide how many workers to allocate to the production of **RED** stuff and how many to allocate to the production of **BLUE** stuff.

Your goal is to attain the most happiness possible for your country.

# Example (using West):



Labor Allocated to Production of Red	Units of Red Produced
0	0
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

Labor Allocated to Production of Blue	Units of Blue Produced
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10

Suppose West chooses to assign 2 Workers to **RED** production and 8 Workers to **BLUE** production.

$$2 + 8 = 10$$

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
2	8	4	8	<del>          </del>	<del>          </del>

Consumption (production plus imports)	Happiness (red consumed x blue consumed)
Units of Red	Units of Blue
4	32

# Round 1: Autarky

Allocate 10 workers to maximize your country's happiness.

$$2 + 8 = 10$$

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
2	8	4	8	<del> </del>	<del> </del>

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
4	8	32

# Round 1: Autarky

## Solution for West

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
5	5	10	5	<del> </del>	<del> </del>

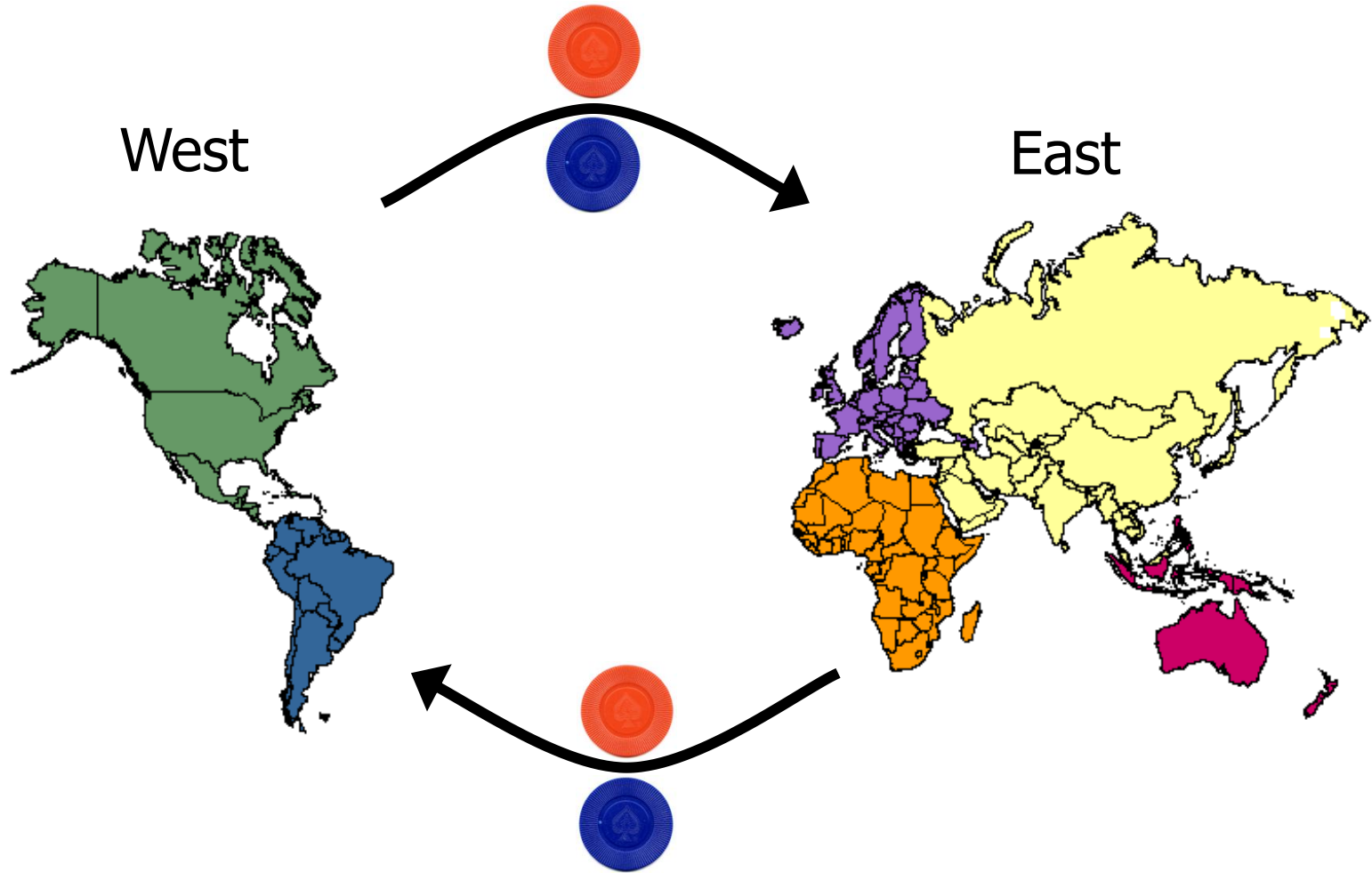
Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
10	5	50

## Solution for East

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
5	5	5	10	<del> </del>	<del> </del>

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
5	10	50

# Round 2: You may trade (if you want).





# Example (using West):



Labor Allocated to Production of Red	Units of Red Produced	Labor Allocated to Production of Blue	Units of Blue Produced
0	0	0	0
1	2	1	1
2	4	2	2
3	6	3	3
4	8	4	4
5	10	5	5
6	12	6	6
7	14	7	7
8	16	8	8
9	18	9	9
10	20	10	10

Suppose West chooses to assign 1 Worker to **RED** production and 9 Workers to **BLUE** production.

West agrees to trade East 5 **BLUE** for 3 **RED**.

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
1	9	2	9	3	-5
Consumption (production plus imports)				Happiness (red consumed x blue consumed)	
Units of Red	Units of Blue				
5	4	20			

# Round 2: Trade

Allocate 10 workers then trade (if you want) to maximize your country's happiness.

$$1 + 9 = 10$$

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
1	9	2	9	3	-5

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
5	4	20

# Round 2: Trade

Price

1 Red = 1 Blue

## Solution for West

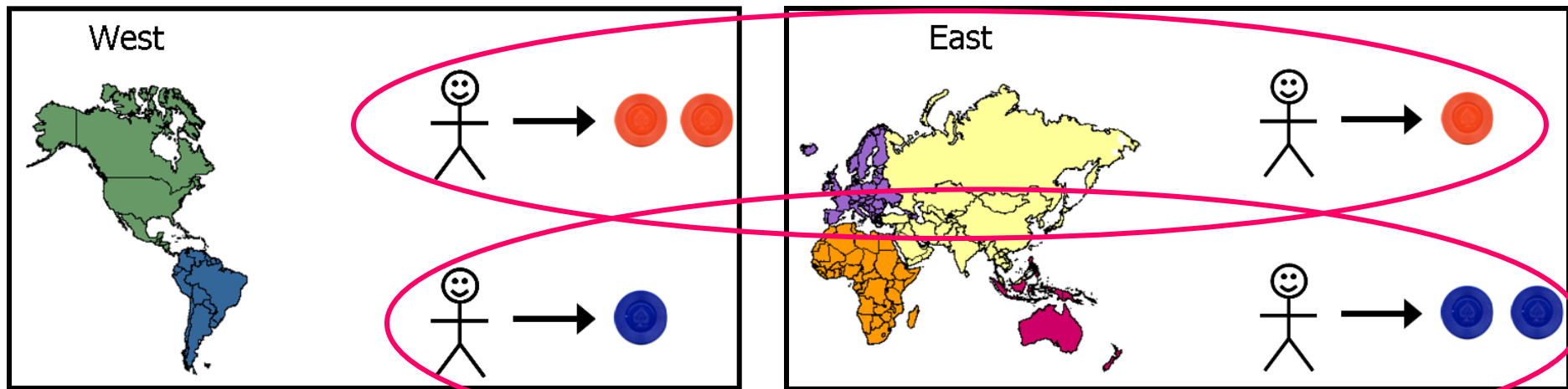
Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
10	0	20	0	-10	10

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
10	10	100

## Solution for East

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
0	10	0	20	10	-10

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
10	10	100



West has an absolute advantage in the production of **RED** stuff.

→ In West, 1 unit of **RED** costs 1/2 worker. 😊

→ In East, 1 unit of **RED** costs 1 worker. ☹️

East has an absolute advantage in the production of **BLUE** stuff.

→ In West, 1 unit of **BLUE** costs 1 worker. ☹️

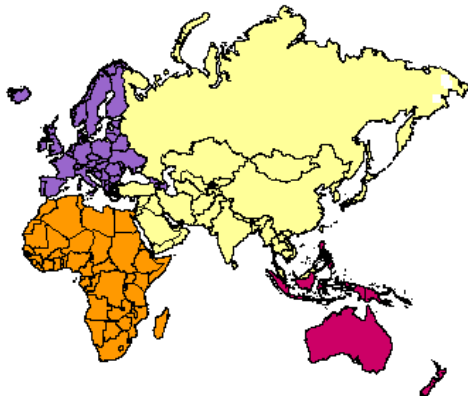
→ In East, 1 unit of **BLUE** costs 1/2 worker. 😊

# What if East has an absolute advantage in the production of both RED and BLUE?



Labor Allocated to Production of Red	Units of Red Produced
0	0
1	2
2	4
3	6
4	8
5	10
6	12
7	14
8	16
9	18
10	20

Labor Allocated to Production of Blue	Units of Blue Produced
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10



Labor Allocated to Production of Red	Units of Red Produced
0	0
1	3
2	6
3	9
4	12
5	15
6	18
7	21
8	24
9	27
10	30

Labor Allocated to Production of Blue	Units of Blue Produced
0	0
1	6
2	12
3	18
4	24
5	30
6	36
7	42
8	48
9	54
10	60

# Round 3: Autarky

Allocate 10 workers to maximize your country's happiness.

$$2 + 8 = 10$$

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
2	8	4	8	<del> </del>	<del> </del>

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
4	8	32

# Round 3: Autarky

## Solution for West

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
5	5	10	5	<del> </del>	<del> </del>

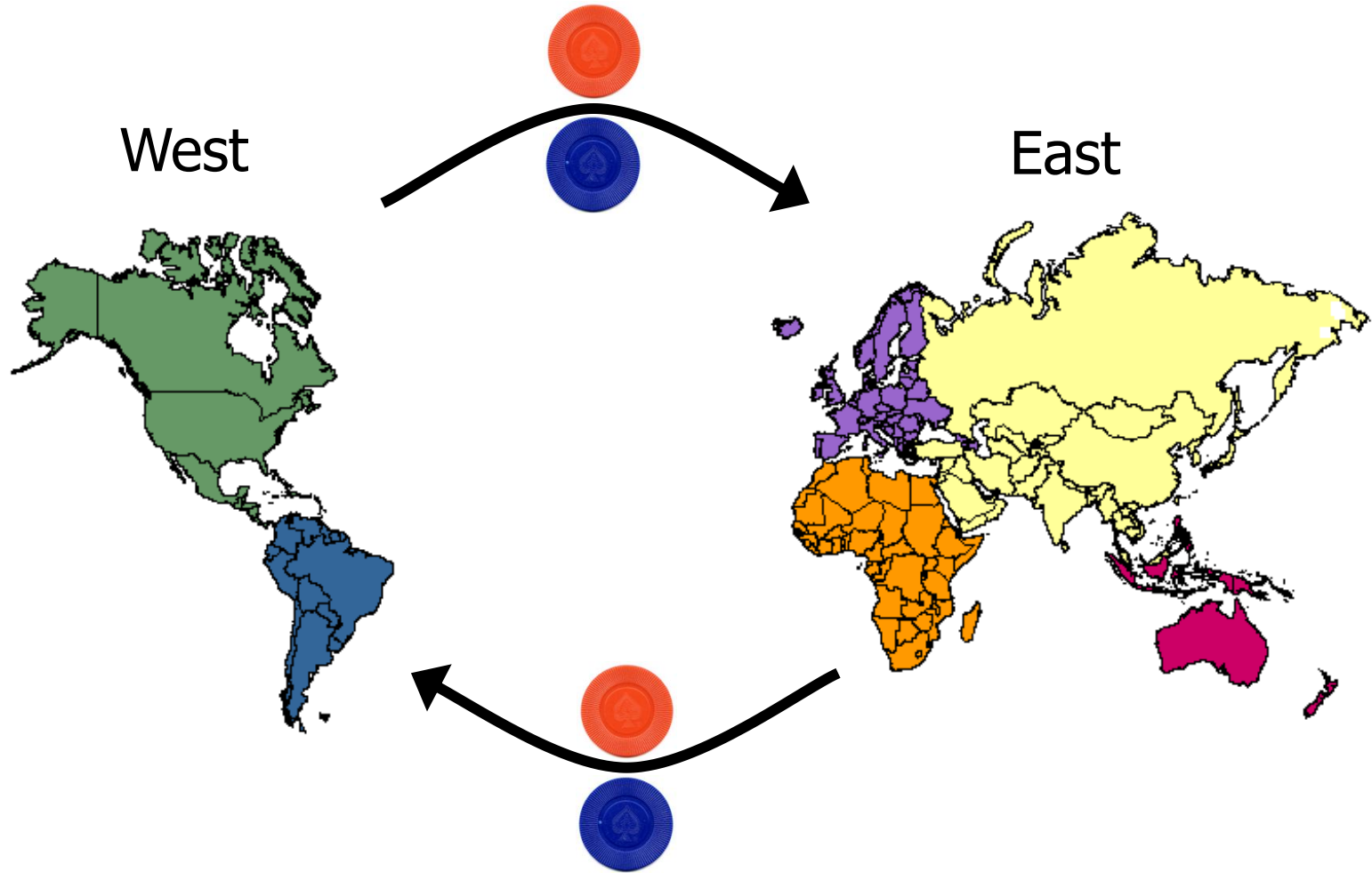
Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
10	5	50

## Solution for East

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
5	5	15	30	<del> </del>	<del> </del>

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
15	30	450

# Round 4: You may trade (if you want).





# Round 4: Trade

Allocate 10 workers then trade (if you want) to maximize your country's happiness.

$$1 + 9 = 10$$

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
1	9	2	9	3	-5

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
5	4	20

# Round 4: Trade

Price

1.4 Red = 1.9 Blue

## Solution for West

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
10	0	20	0	-14	19

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
6	19	114

## Solution for East

Labor Allocation (must total 10)		Production		Imports (negative = exports)	
Production of Red	Production of Blue	Units of Red	Units of Blue	Units of Red	Units of Blue
0	10	0	60	14	-19

Consumption (production plus imports)		Happiness (red consumed x blue consumed)
Units of Red	Units of Blue	
14	41	574

# Are we thinking about the problem correctly?

When you produce more **RED** stuff, what do you give up?

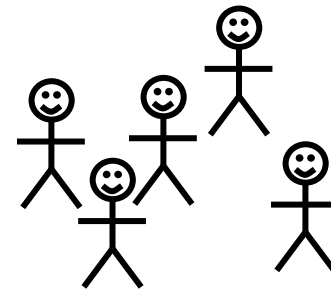
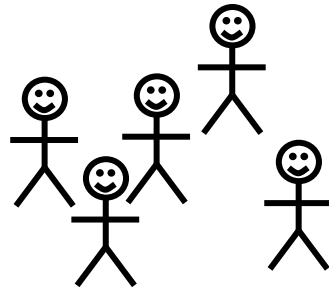
When you produce more **BLUE** stuff, what do you give up?

Absolute advantage → give up workers to produce stuff

Relative advantage → give up red to produce blue

→ The cost of **BLUE** stuff isn't a worker.

→ The cost of **BLUE** stuff is **RED** stuff!



Labor Allocated to Production of Red	Units of Red Produced
0	0
1	2

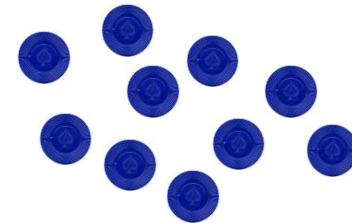
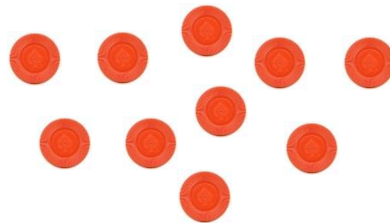
Labor Allocated to Production of Blue	Units of Blue Produced
0	0
1	1

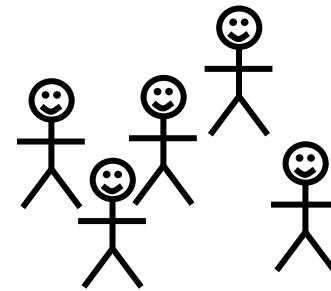
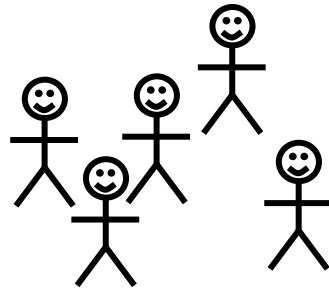
For West: 1 BLUE costs 2 RED



0	12
7	14
8	16
9	18
10	20

0	0
7	7
8	8
9	9
10	10





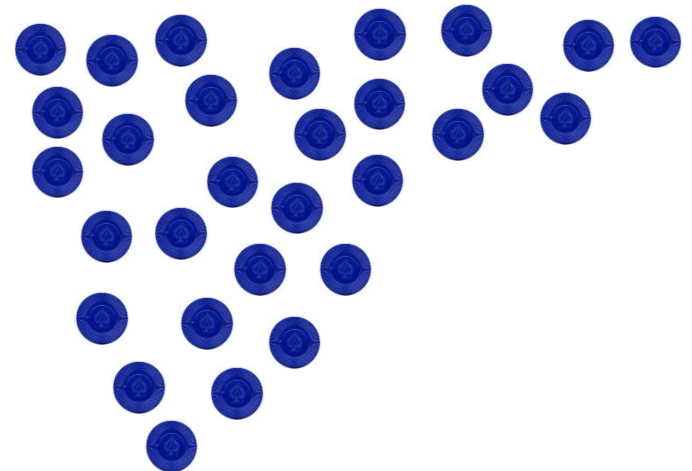
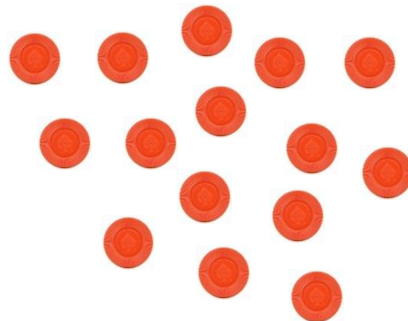
Labor Allocated to Production of Red	Units of Red Produced
0	0
1	3

Labor Allocated to Production of Blue	Units of Blue Produced
0	0
1	6

For East: 1 BLUE costs  $\frac{1}{2}$  RED

6	18
7	21
8	24
9	27
10	30

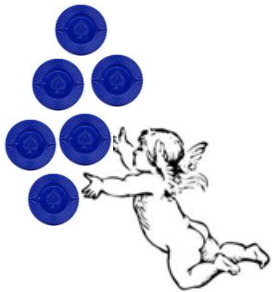
6	36
7	42
8	48
9	54
10	60



For West: 1 BLUE costs 2 RED



For East: 1 BLUE costs 1/2 RED



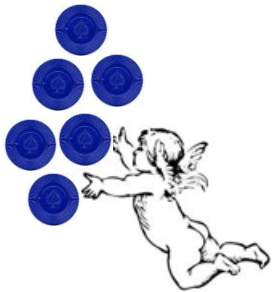
**Relative Advantage:**  
**Blue**

For West: 1 BLUE costs 2 RED  
1 RED costs  $\frac{1}{2}$  BLUE



**Relative Advantage:**  
**Red**

For East: 1 BLUE costs  $\frac{1}{2}$  RED  
1 RED costs 2 BLUE



# The Power of Relative Advantage

No matter how large, small, rich, or poor, by definition, every country has a relative advantage in something.



## Conclusions:

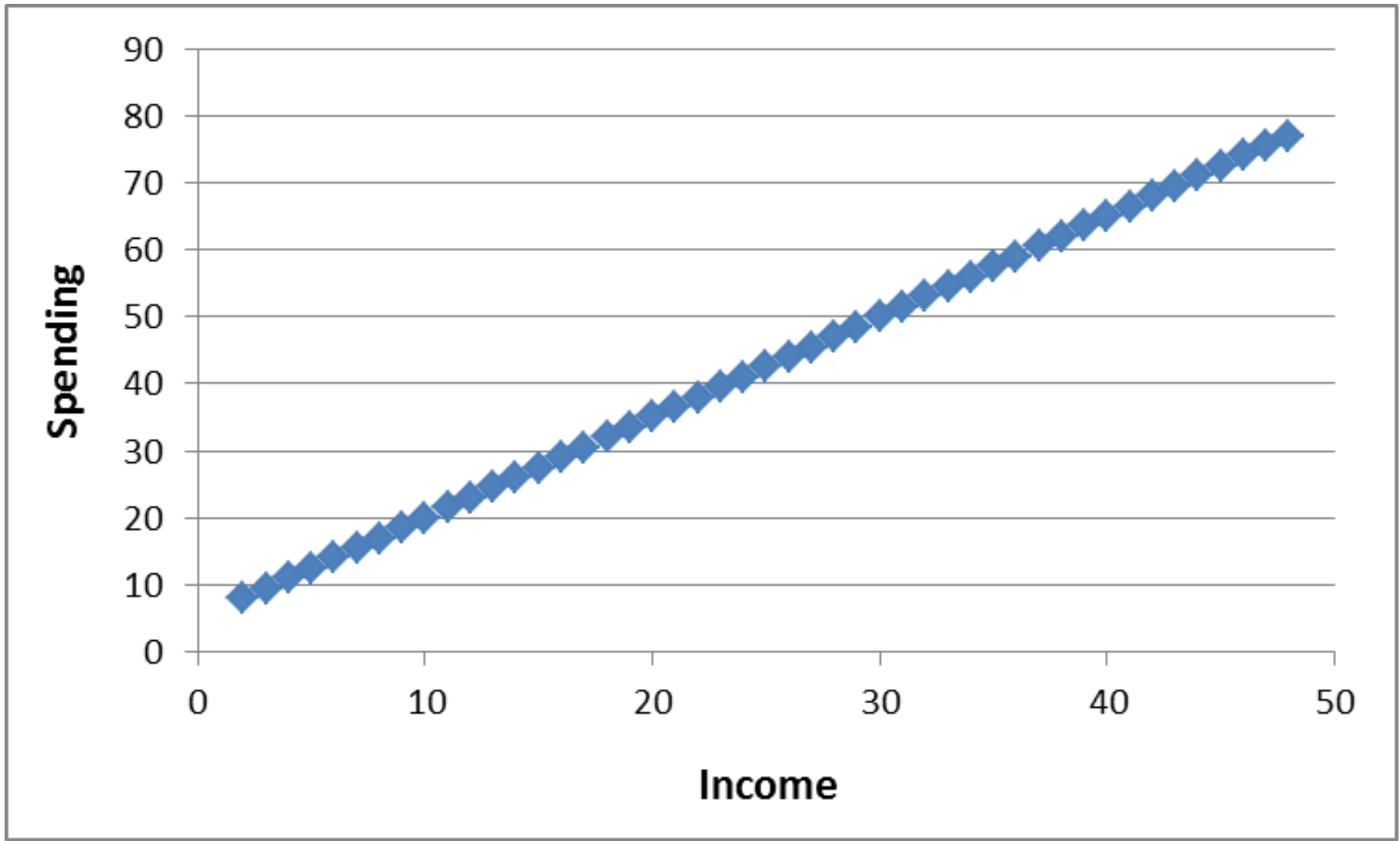
1. Trade is a positive sum relationship.
2. Exchanging goods is what's important. Money is only a tool that facilitates the exchanging.
3. Every country has a relative advantage in something.
4. Trade is the combination of exchange and specialization. Specialization is the directing of resources toward the countries relative advantage.

# **Does It Work This Way in the Real World?**

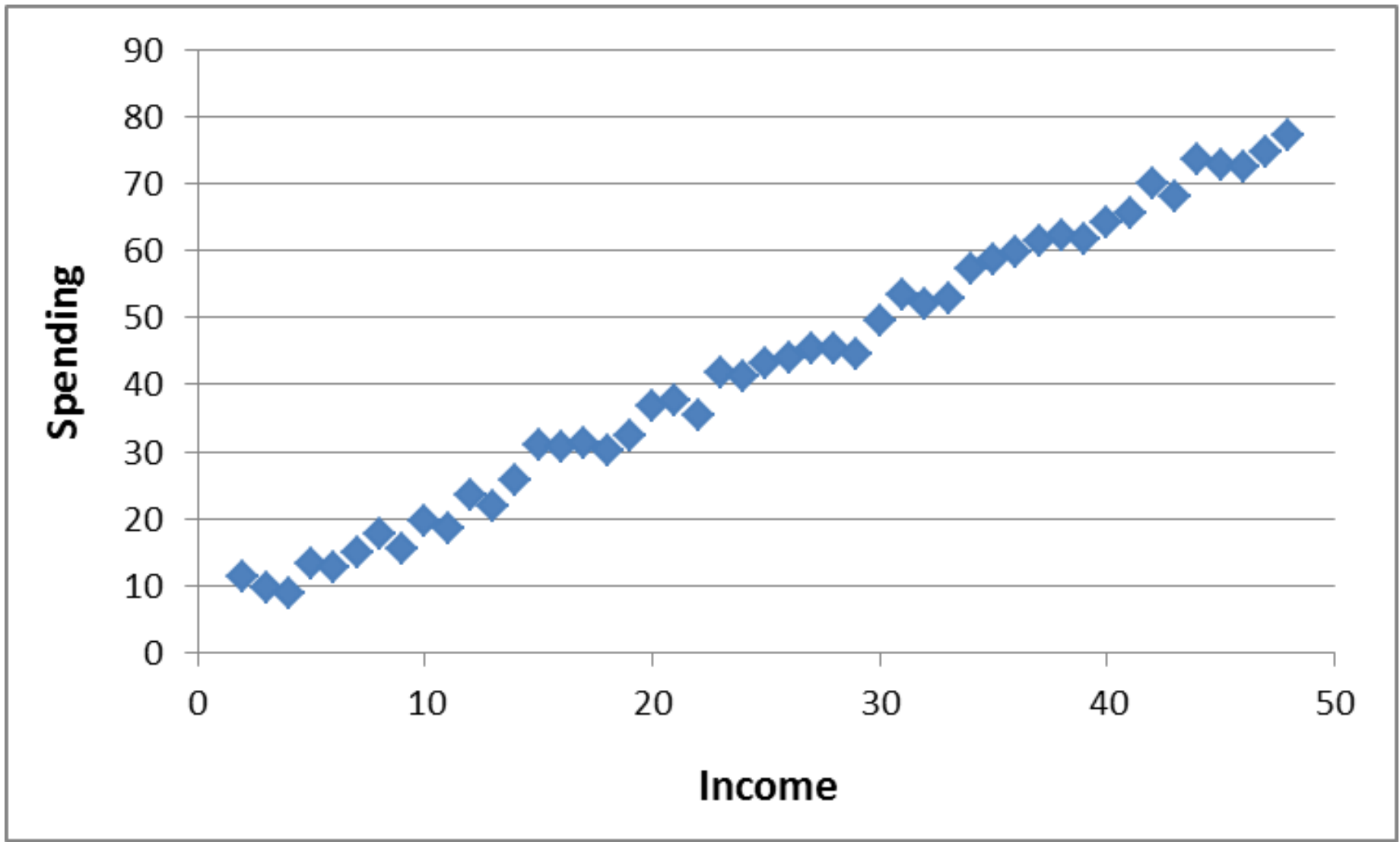
Let's look at the data.

But first, a warning about data...

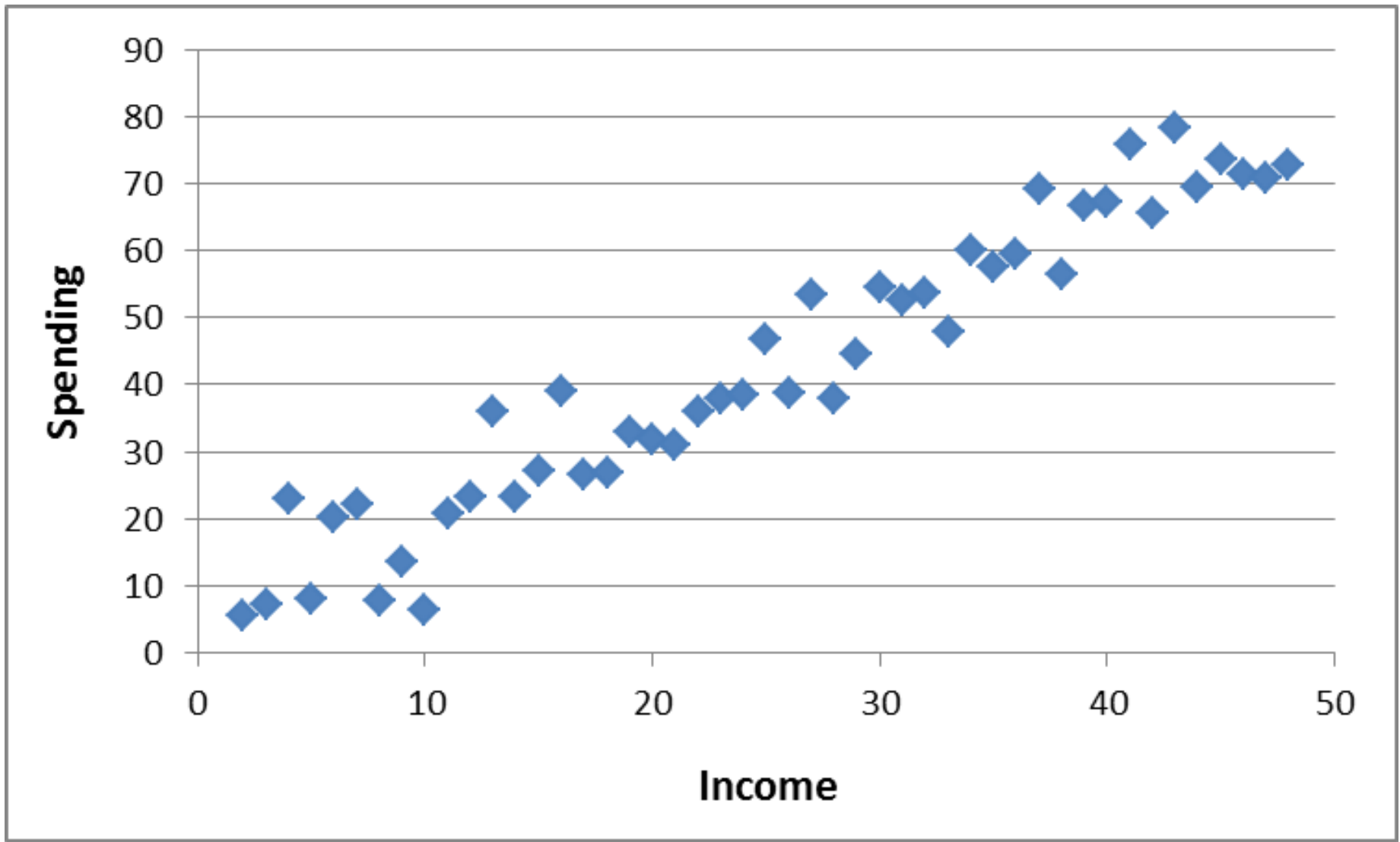
**As people get more income, what happens to their spending?**



**Will all people behave exactly the same?**

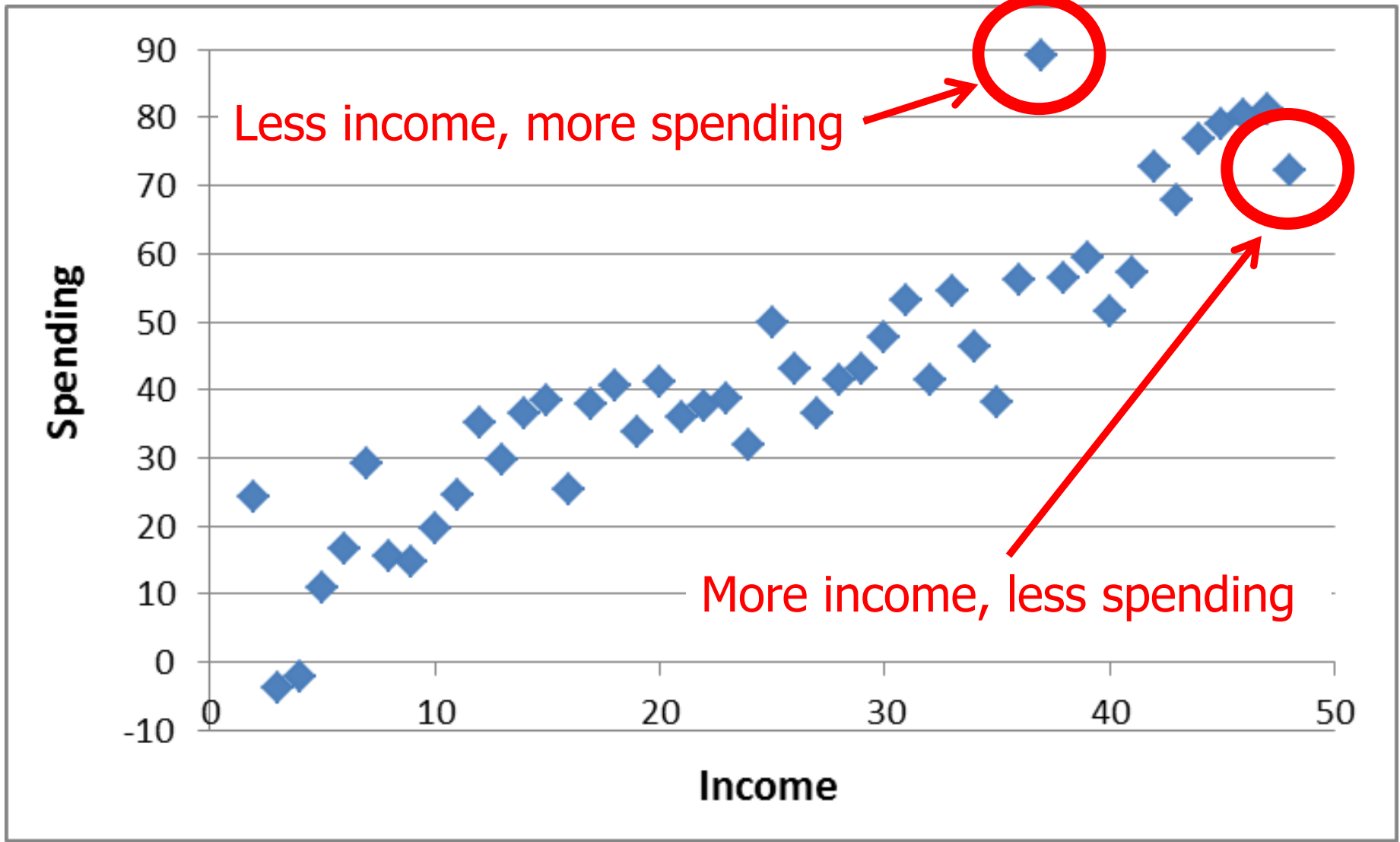


**Will all people have exactly the same incomes?**





**Will random events (bad and good)  
happen to different people?**



Less income, more spending

More income, less spending

## **Conclusion:**

- **Anecdotes are good for illustrating truth.**
- **Anecdotes are bad for identifying truth.**

# Assumptions About Trade

## Protectionist Assumption:



Trade leads to a centralization of political power, decreased competition, and the transfer of wealth.

## Globalist Assumption:



Trade leads to a decentralization of political power, increased competition, and the creation of wealth.

# Trade and Income

## Protectionist Assumption:

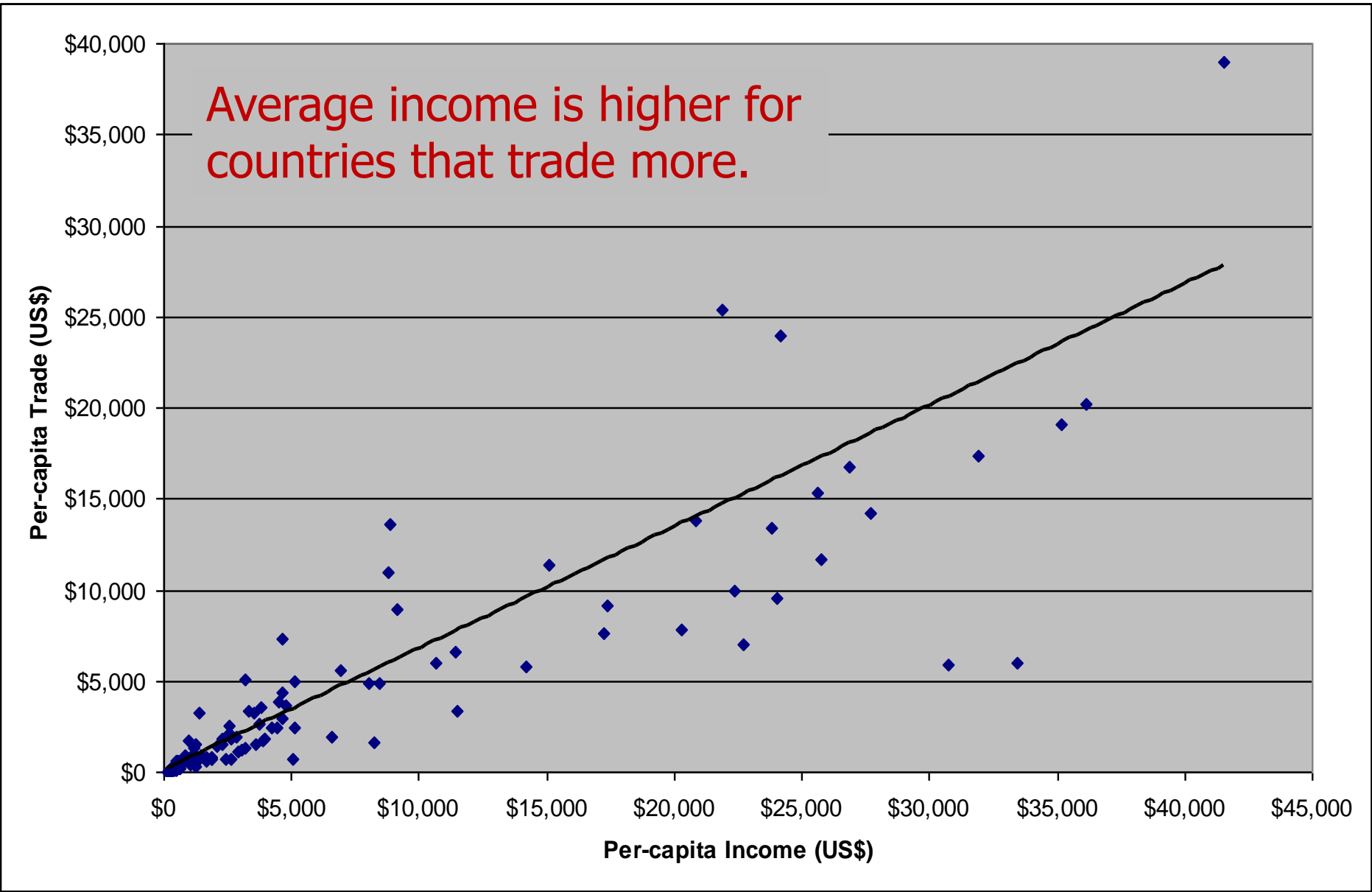


Trade is exploitive of peoples and industries, therefore per-capita income will be lower for countries that trade more.

## Globalist Assumption:

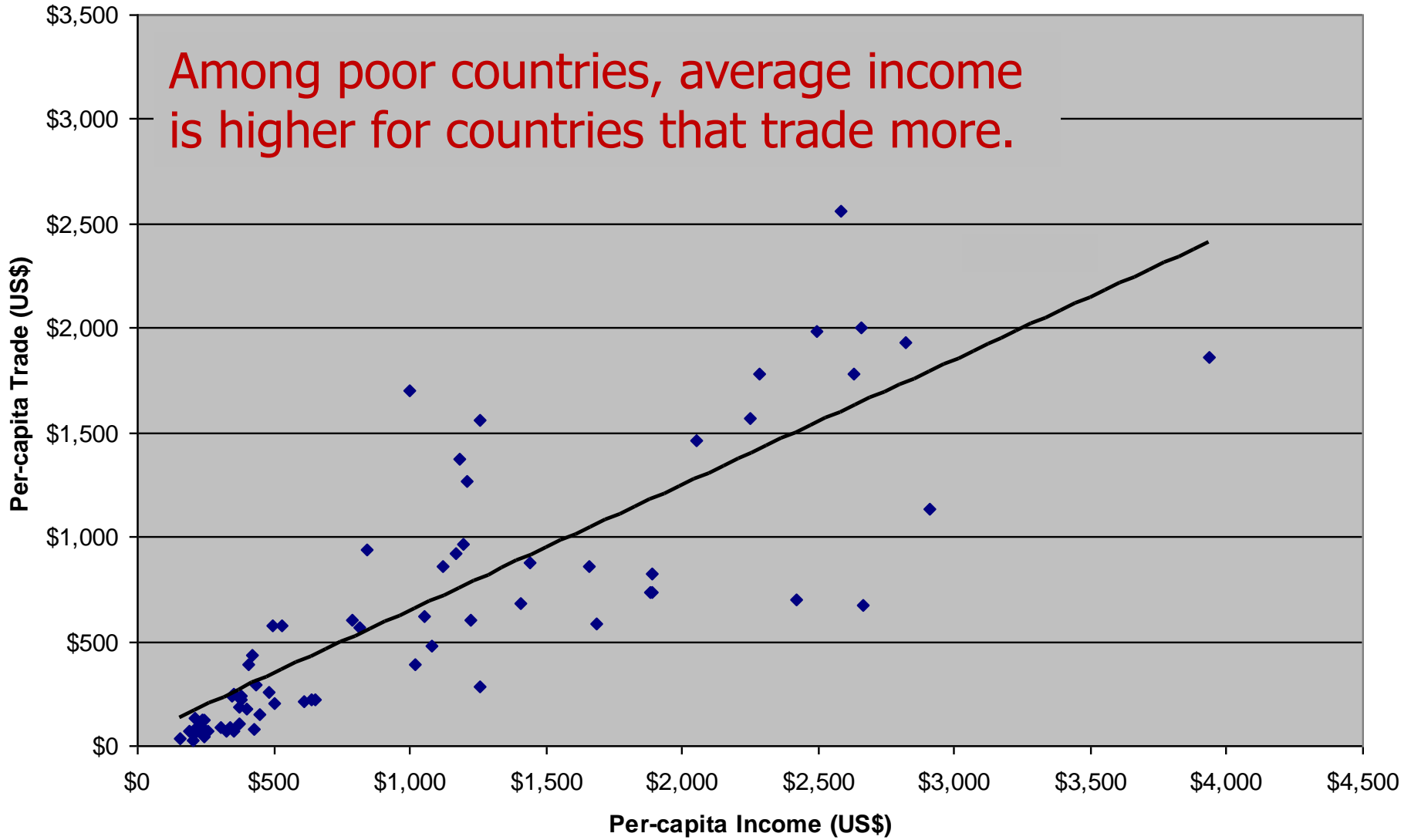


Trade is beneficial to both parties, therefore per-capita income will be higher for countries that trade more.



Data source: International Monetary Fund

Among poor countries, average income is higher for countries that trade more.



Data source: International Monetary Fund

## Vietnam

Workers in foreign-owned apparel and footwear factories rank in the **top 20%** of wage earners.

## Indonesia

In 2000, Nike paid **\$720** annually compared with an average annual country-wide wage of **\$241**.

## Mexico

Firms that exported most or all of their product paid wages **60% higher** than wages of non-exporting firms.

*Source: Brown, Drusilla K., Alan V. Deardorff, and Robert M. Stern, "The Effects of Multinational Production on Wages and Working Conditions in Developing Countries," discussion paper no. 483, School of Public Policy, The University of Michigan, August 2002.*



# Trade and Income Distribution

## Protectionist Assumption:

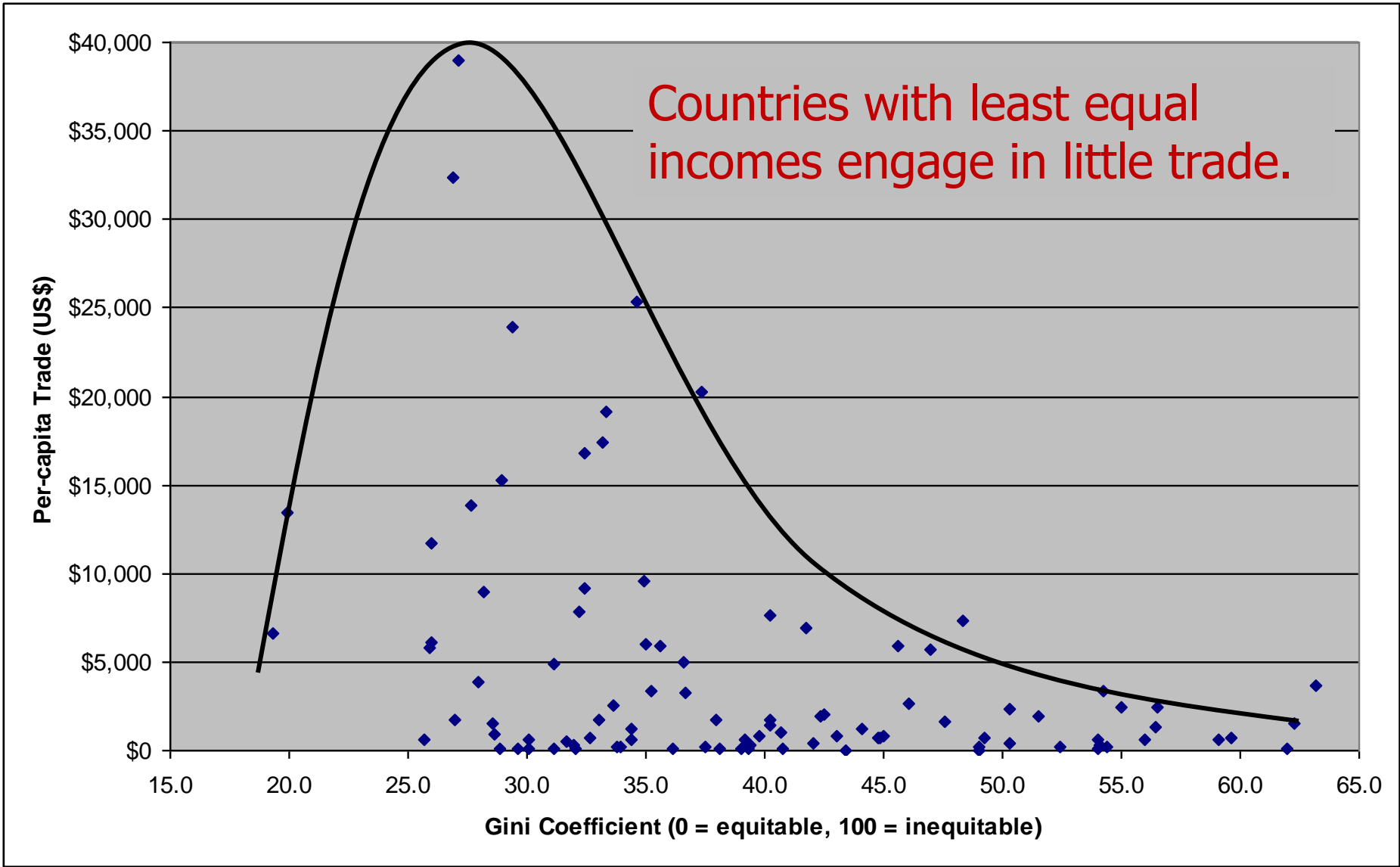


Trade consolidates income in the hands of the powerful, therefore countries that trade more will have a less equitable income distribution.

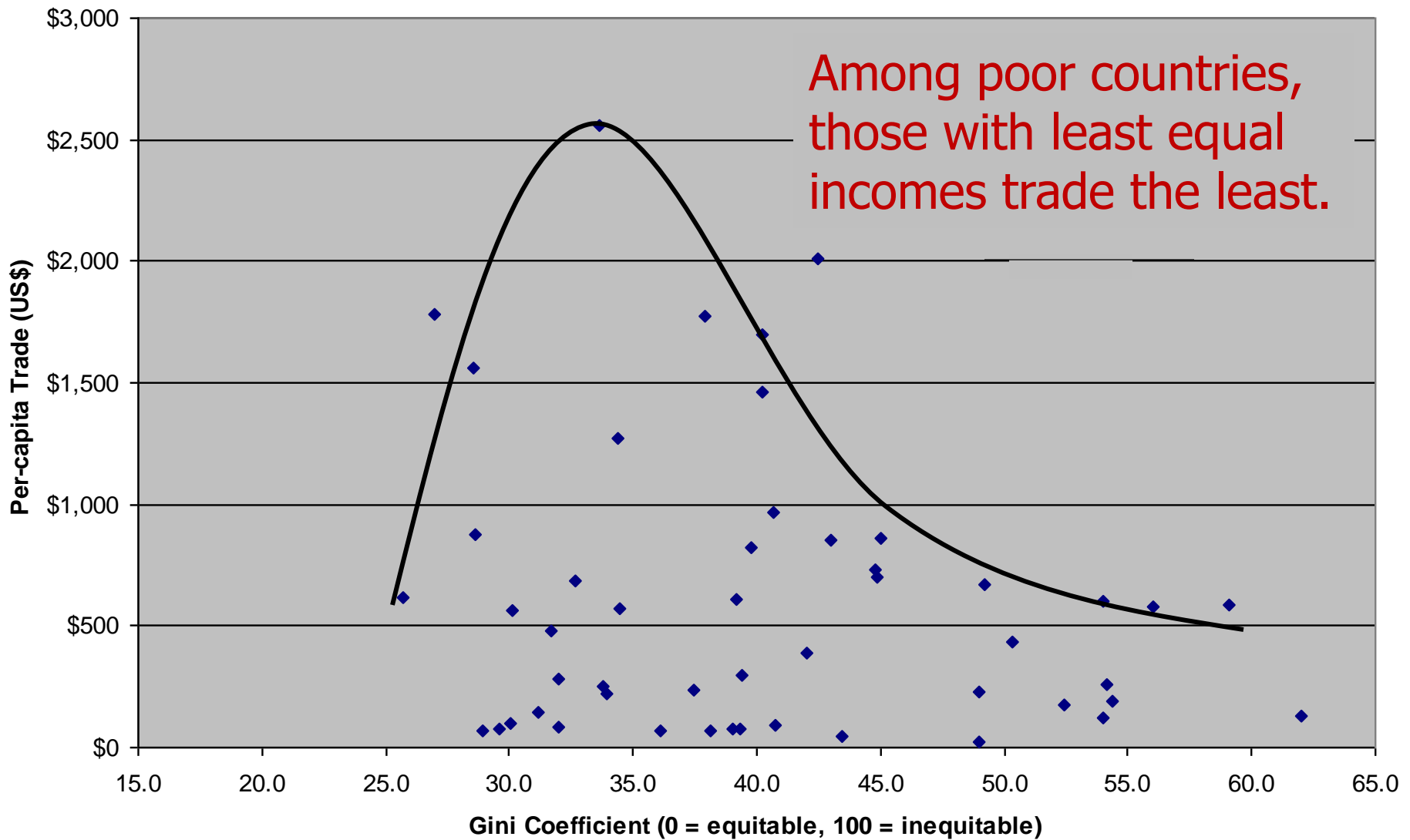
## Globalist Assumption:



Trade creates income across trading partners, therefore countries that trade more will have a more equitable income distribution.



*Data Source: International Financial Statistics, International Monetary Fund, and Measuring Income Inequality: A New Database, Deininger, Klaus, and Lyn Squire, World Bank.*



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# Trade and Well-Being



Protectionist Assumption:

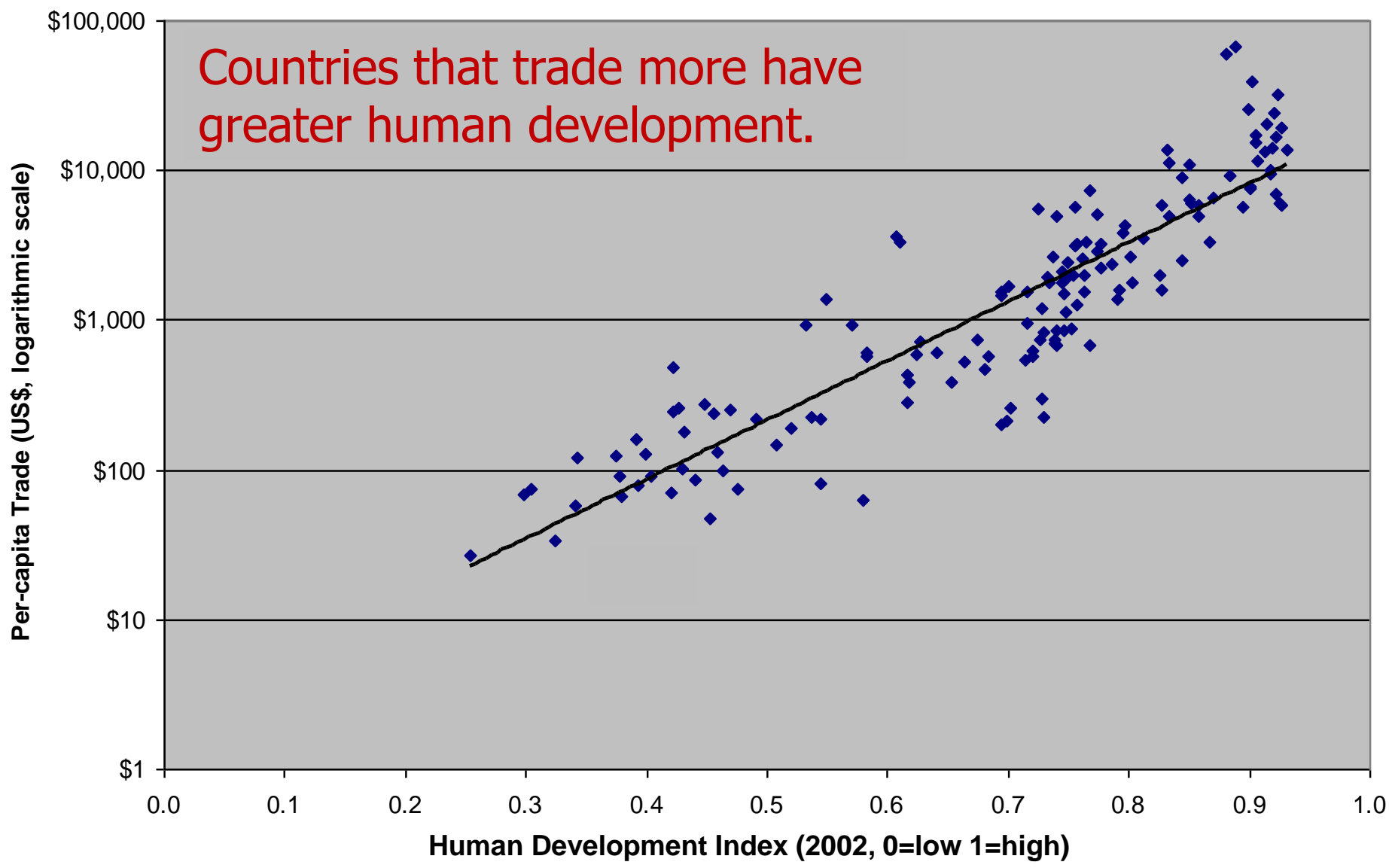
Trade degrades quality of life.

Globalist Assumption:

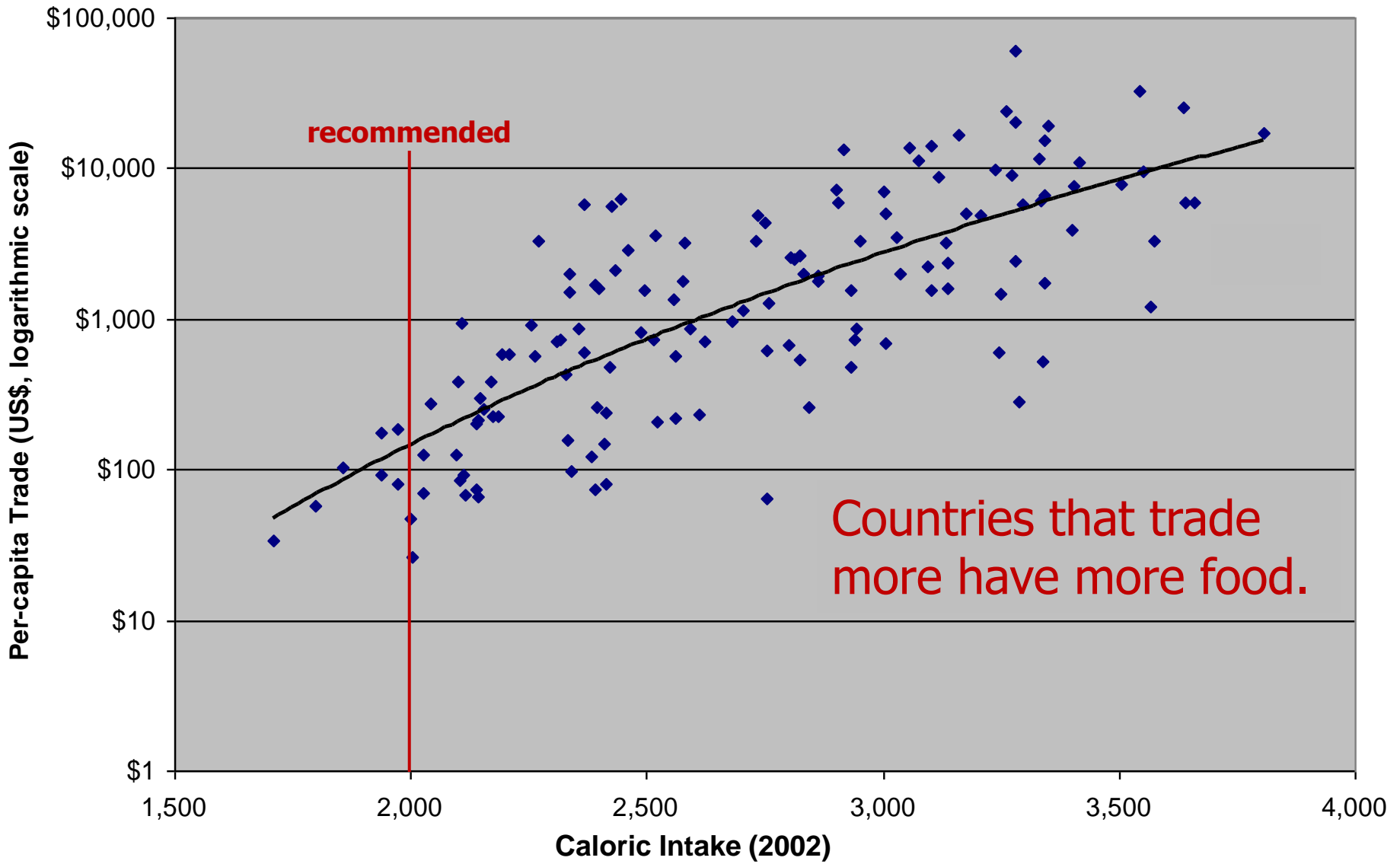
Trade enhances quality of life.



Countries that trade more have greater human development.



Data source: International Financial Statistics, IMF; World Development Indicators, World Bank



*Data source: International Financial Statistics, IMF; World Development Indicators, World Bank*

# Trade and Power

Protectionist Assumption:

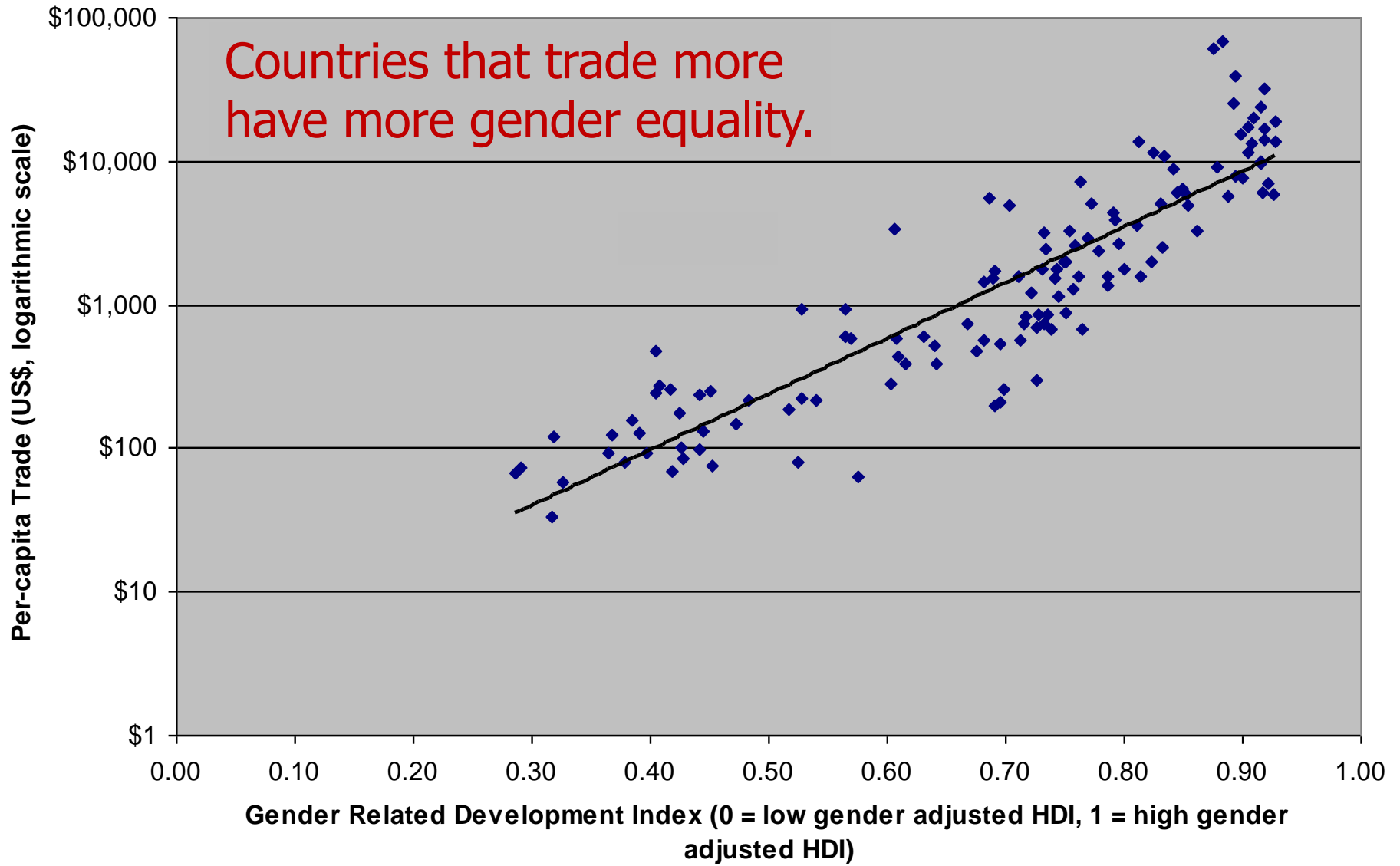


Trade exploits the weak.

Globalist Assumption:

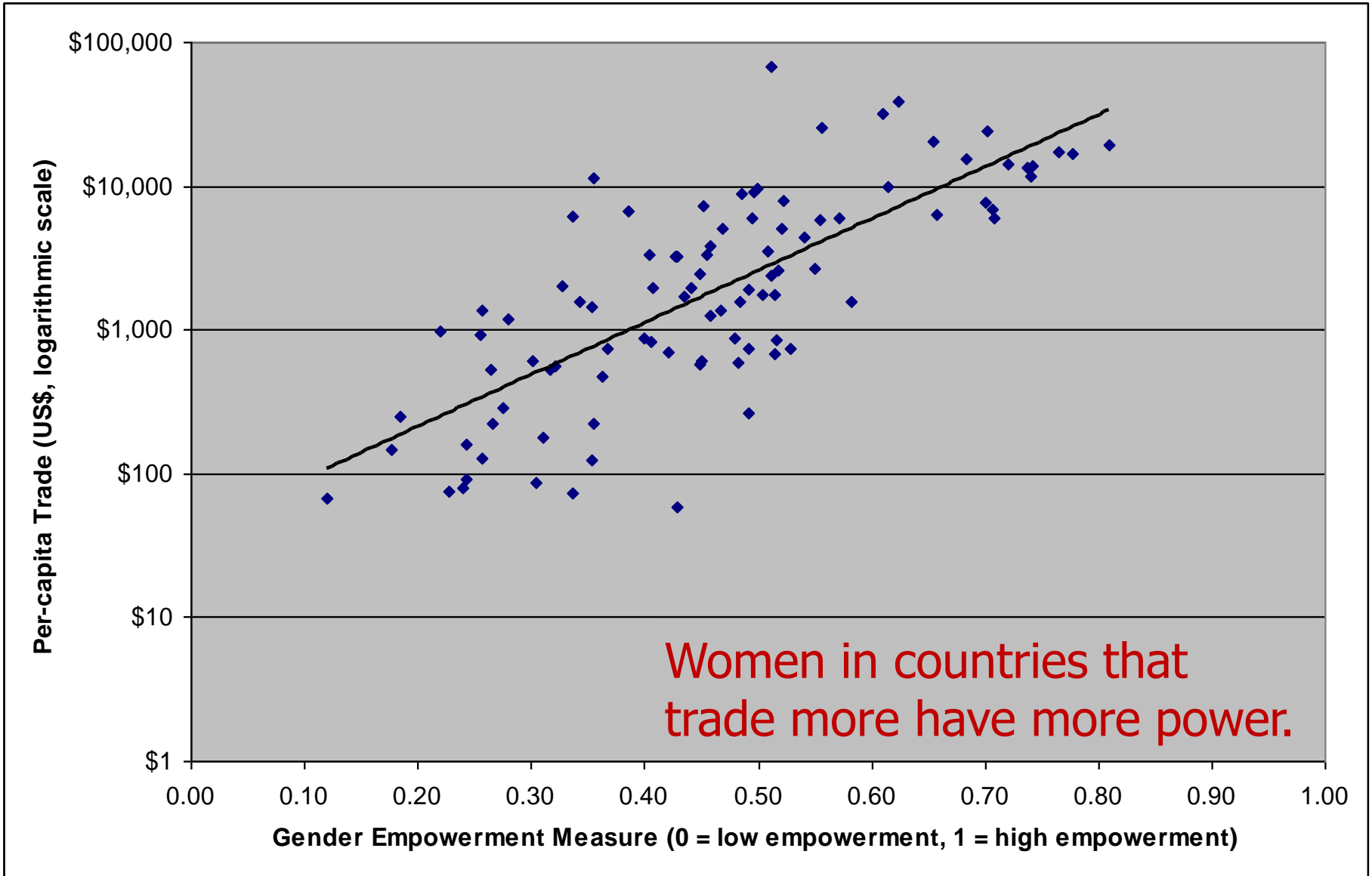


Trade empowers the weak.

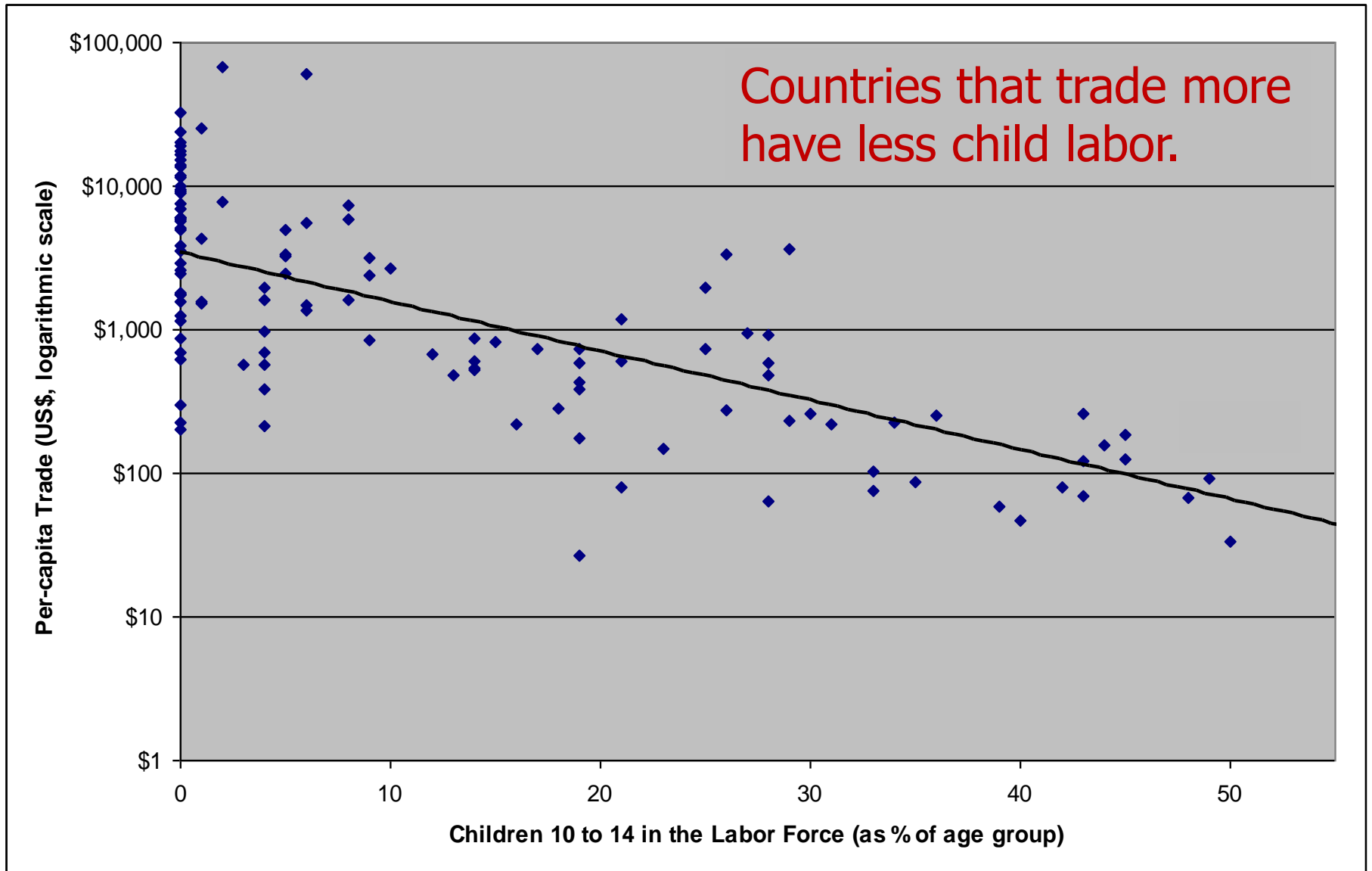


*Data source: International Financial Statistics, International Monetary Fund, and World Development Indicators, World Bank.*

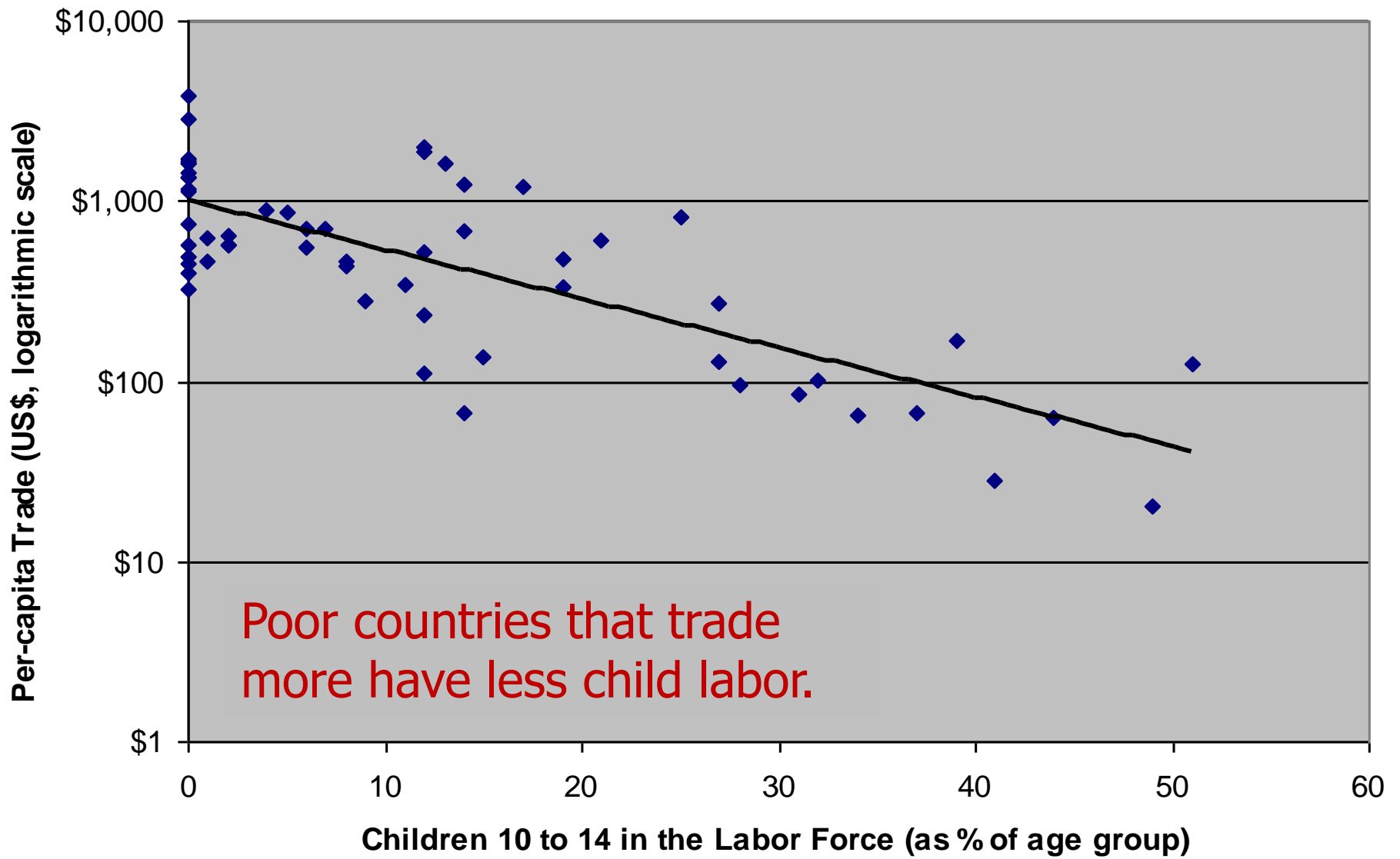




*Data source: International Financial Statistics, International Monetary Fund, and World Development Indicators, World Bank.*



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# Trade and Jobs

Protectionist Assumption:

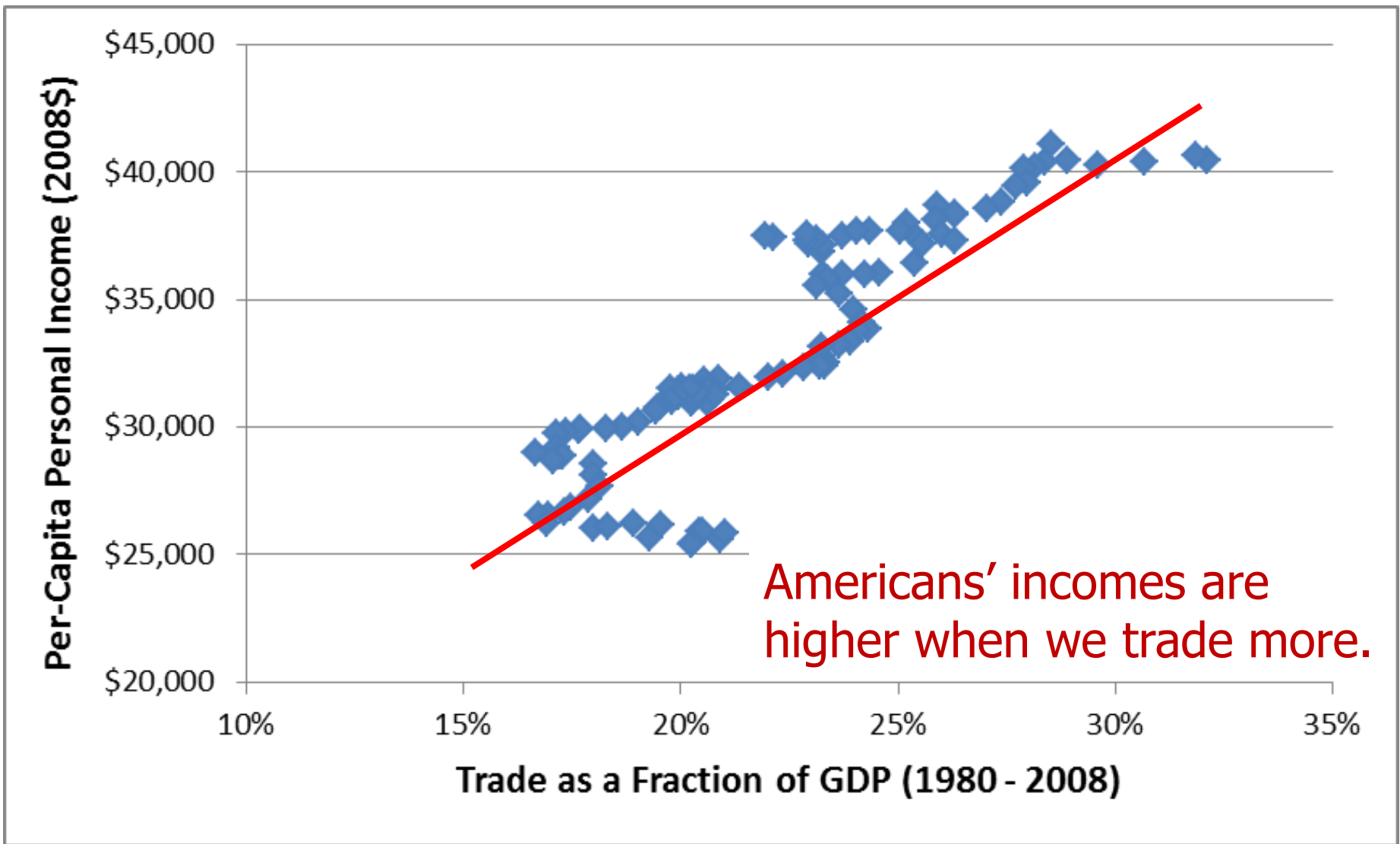


Trade destroys jobs.

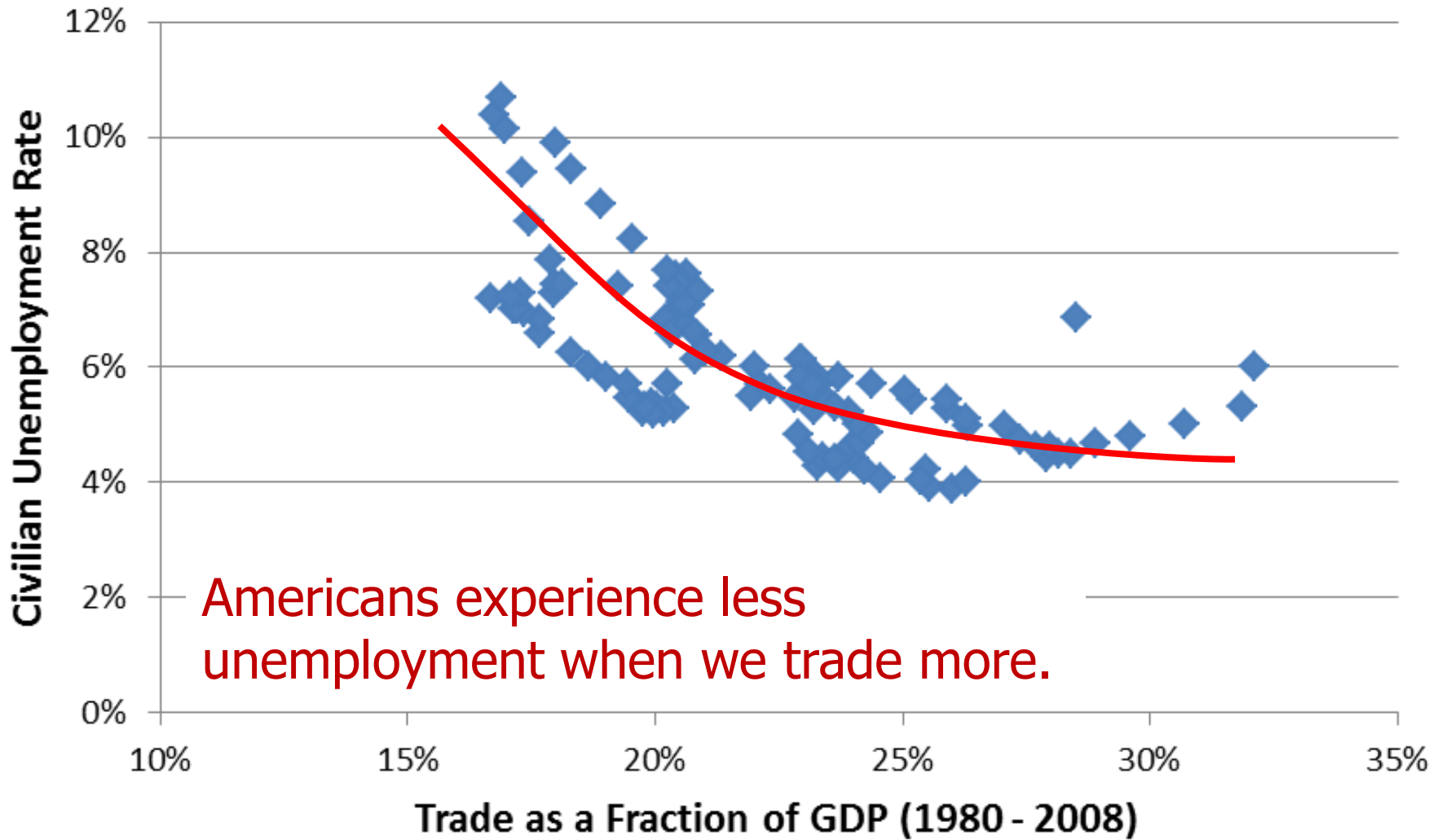
Globalist Assumption:



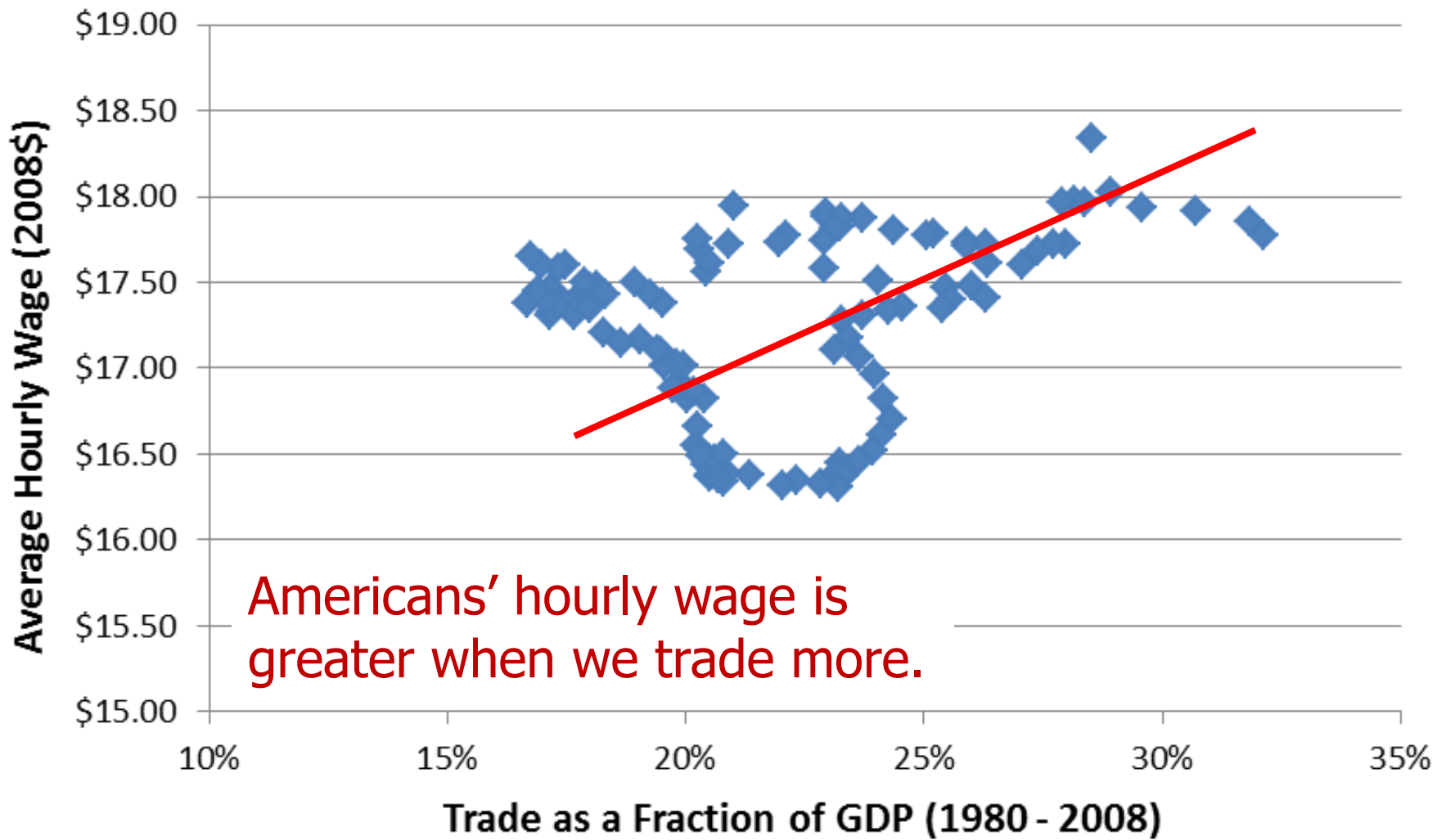
Trade creates jobs.



*Data source: Bureau of Labor Statistics, and Bureau of Economic Analysis*



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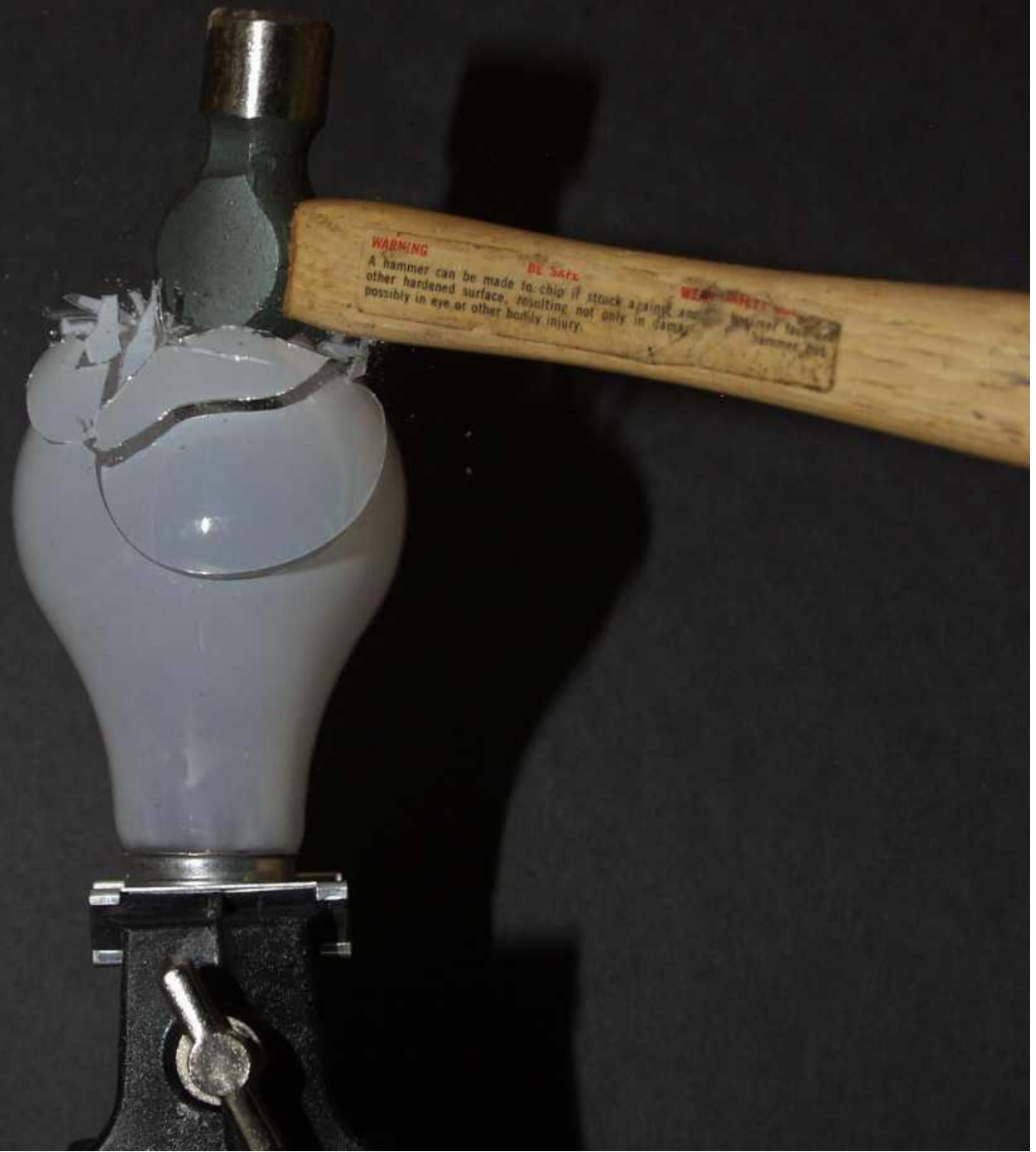


*Data source: Bureau of Labor Statistics, and Bureau of Economic Analysis*

Name two metrics that distinguish the first world from the third world.

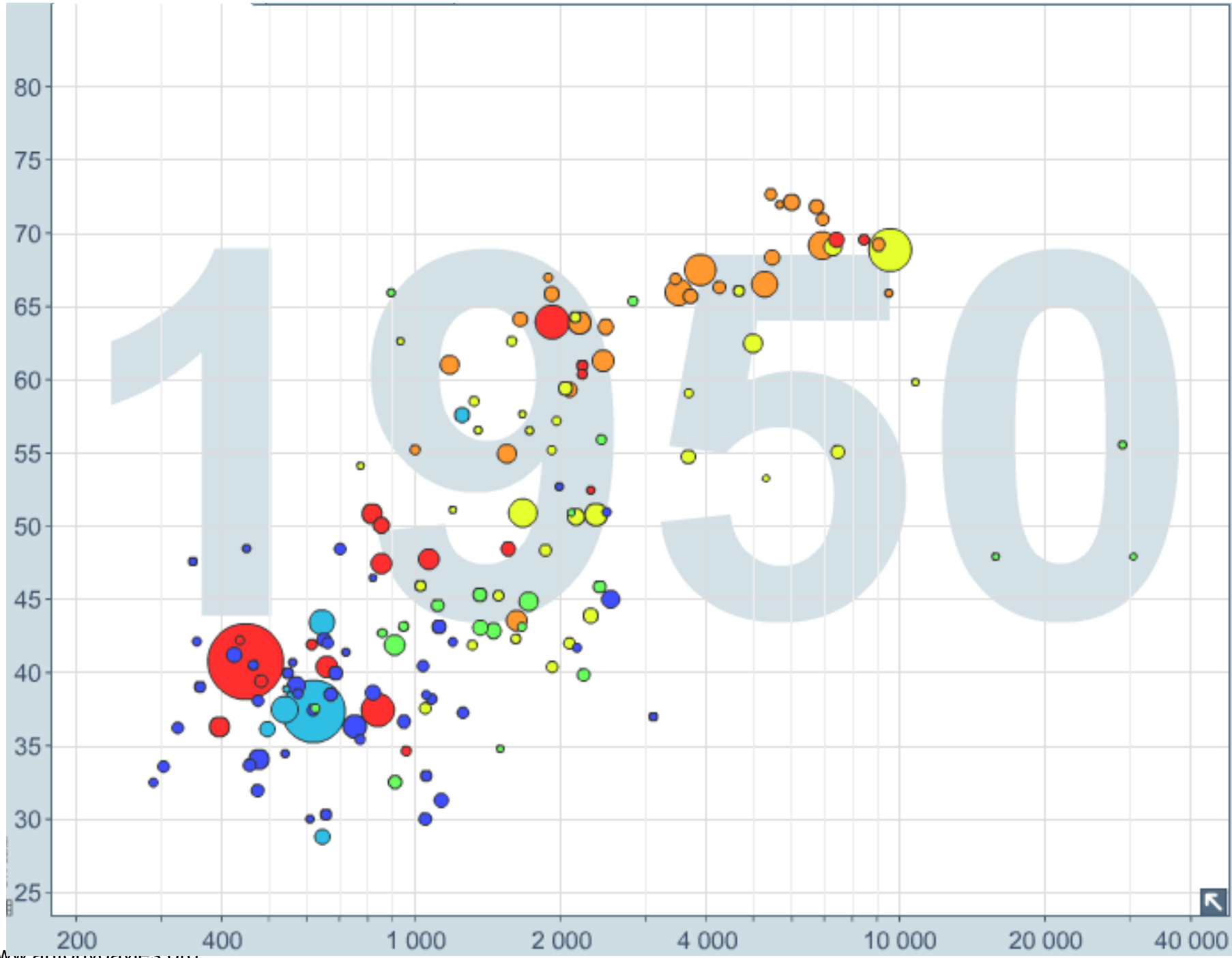


If you hit a light bulb with a hammer, will you make a mess?



**WARNING** **BE SAFE**  
A hammer can be made to chip if struck against another hardened surface, resulting not only in damage to the hammer but possibly in eye or other bodily injury.

**WEAR SAFETY GOGGLES**  
Always use safety goggles when using a hammer.



# Trade

**copies of this presentation can be found at  
[www.antonydavies.org](http://www.antonydavies.org)**