14.54 International Trade
— Lecture 2: The Basics —

Today's Plan

1. What Does the World Economy Look Like?
    1. What does the world trade?
    2. Who trades with whom?
2. Some General Comments about the Theory of International Trade
    1. A note on trade surpluses and deficits
    2. Where do gains from trade come from?
    3. Why might you be worried about international trade?
    4. A note on trade models

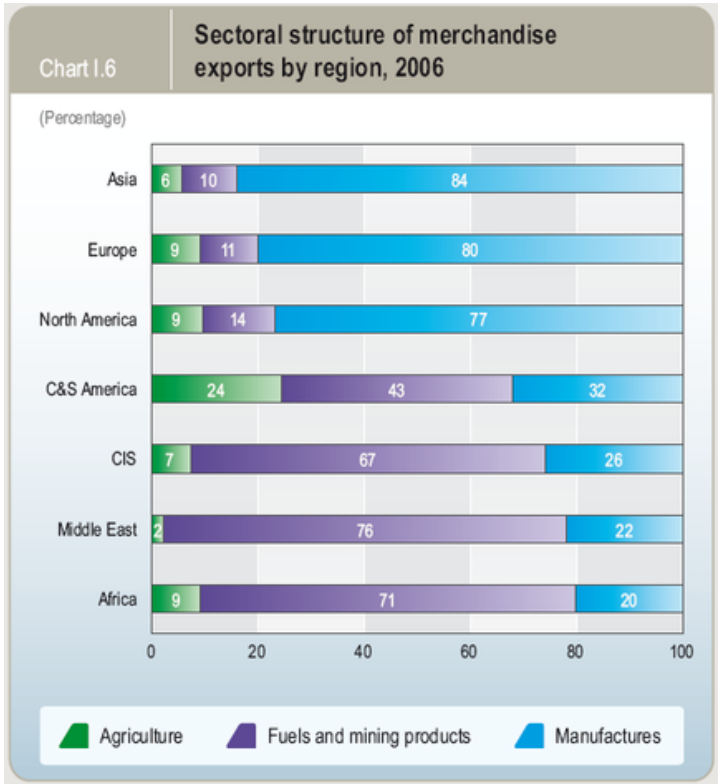
What Does the World Trade?

Figures 2-1, 2-2, 2-3, 2-5, and 2-6 from *International Economics* by Paul Krugman, Maurice Obstfeld, and Marc Melitz removed due to copyright restrictions.

- Mostly manufactured goods
- Trade in services is the next most important segment

What Does the World Trade?

- Though mining (including fuels, i.e. oil & gas) are the dominant segment for some countries



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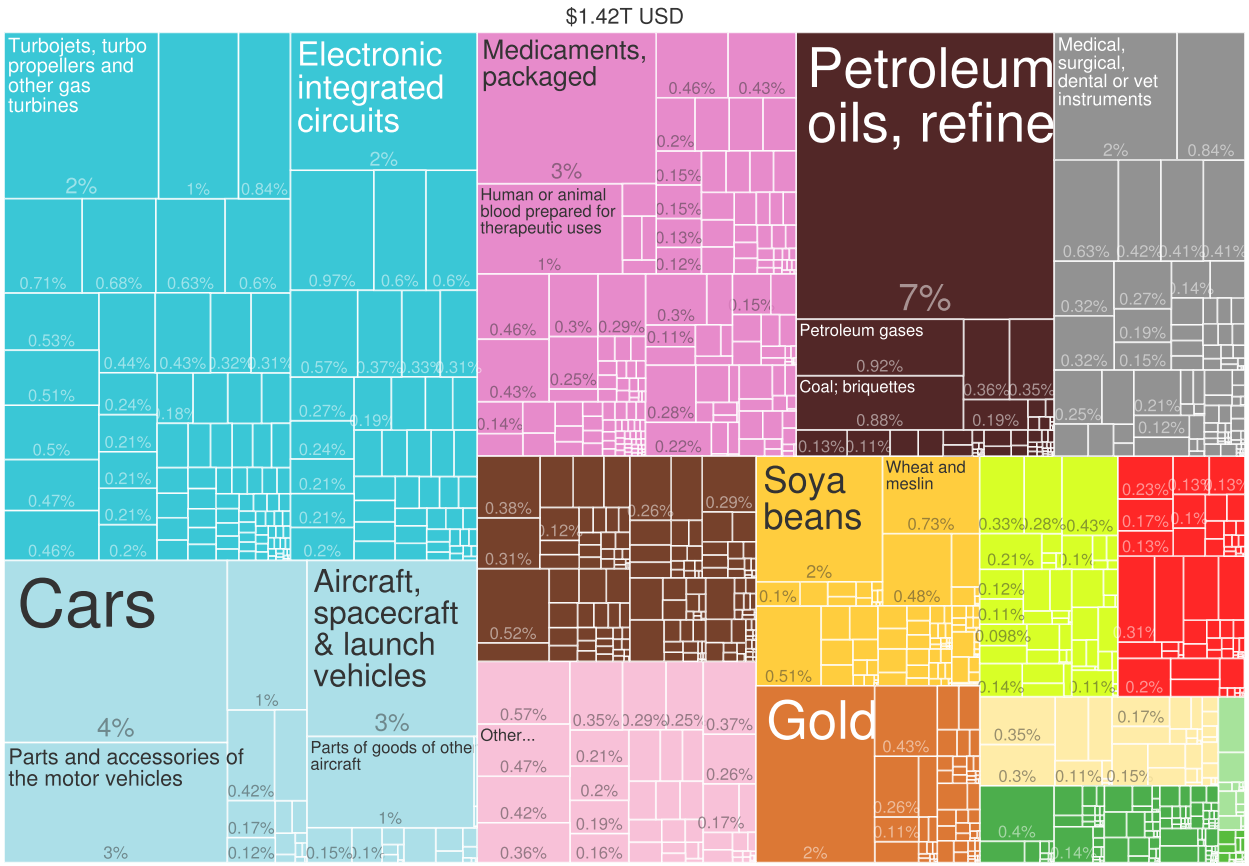
What Did XXX Export in 2013?



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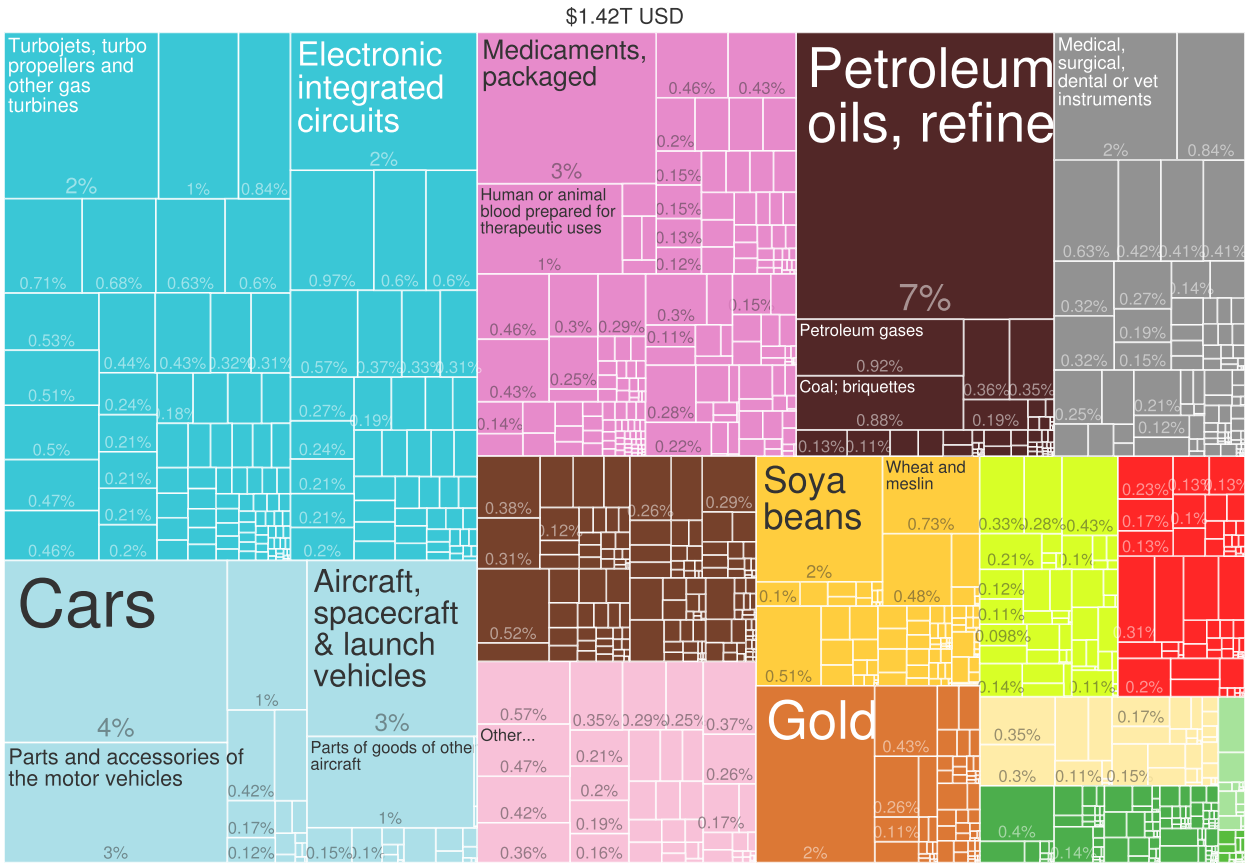
What Did the U.S. Export in 2013?



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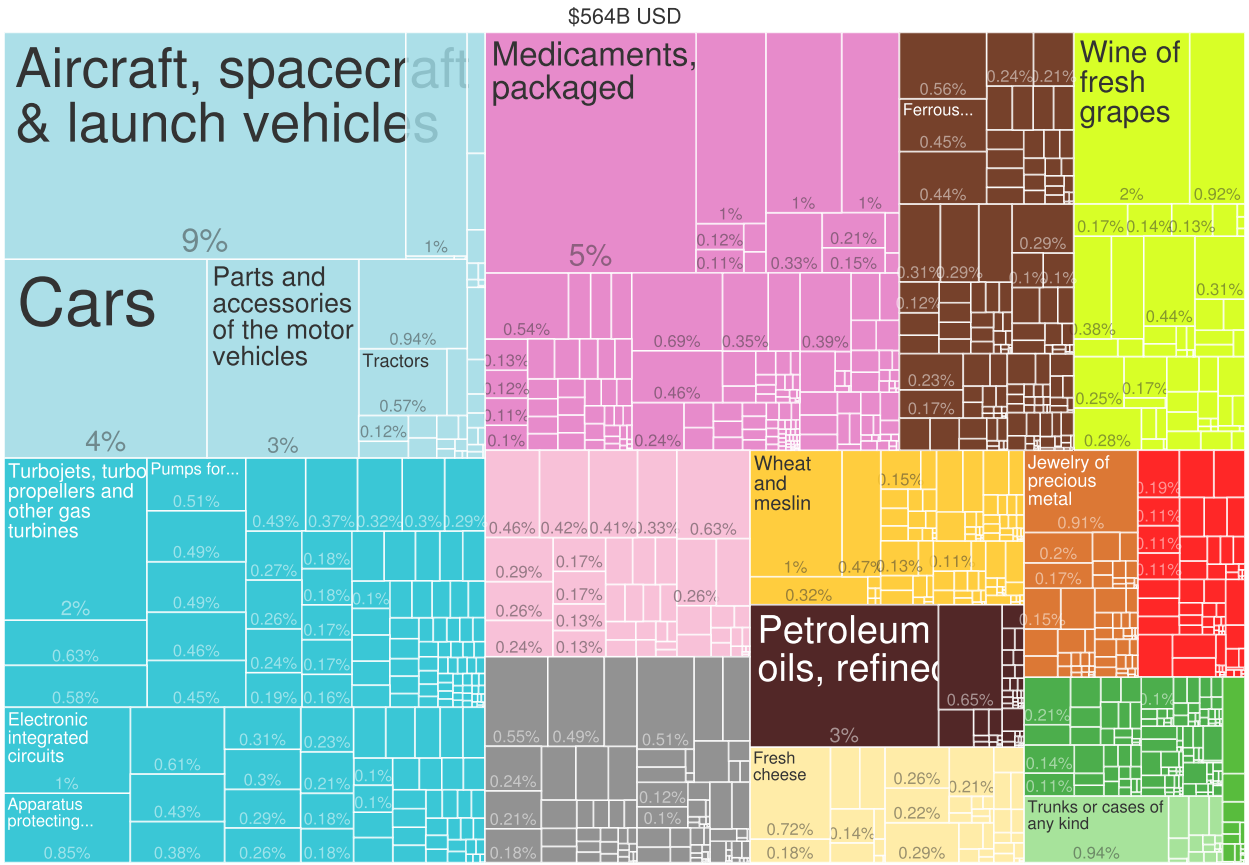

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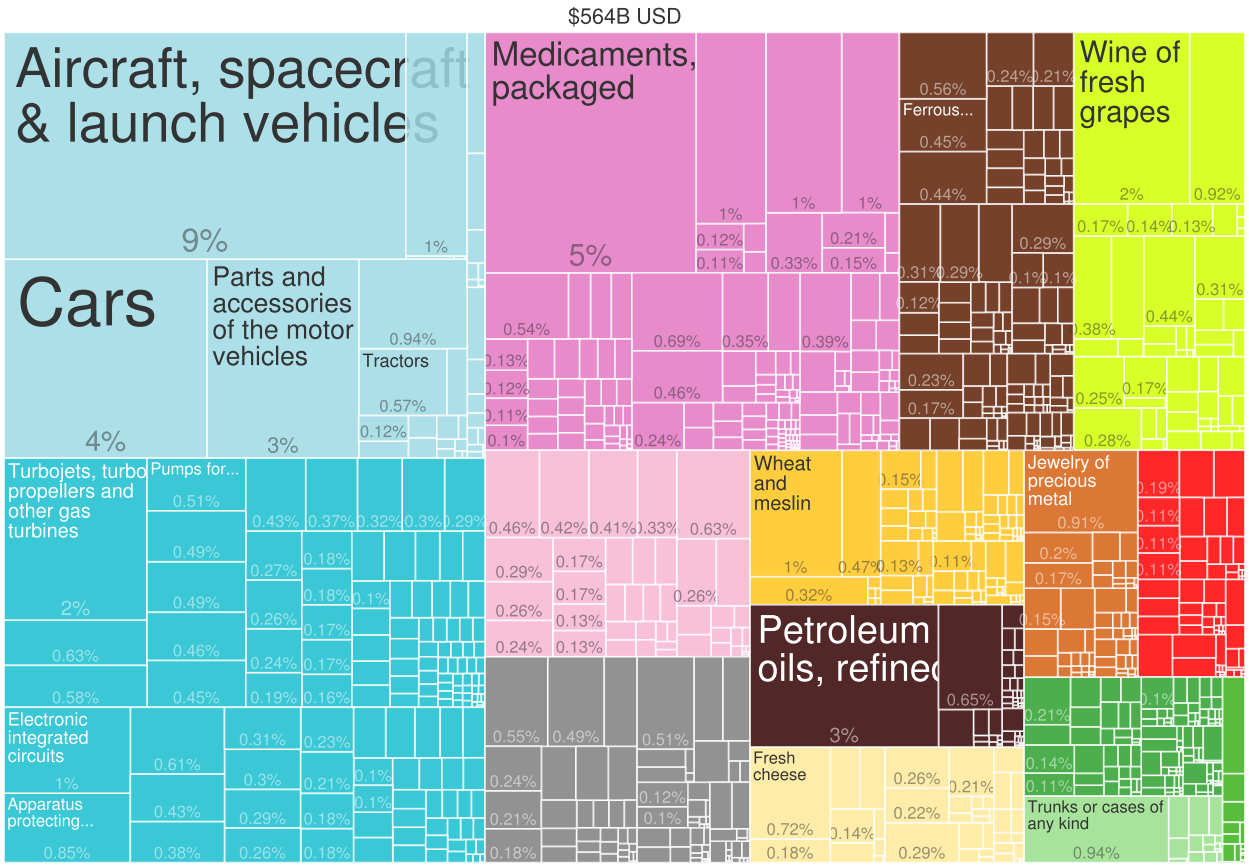
What Did France Export in 2013?



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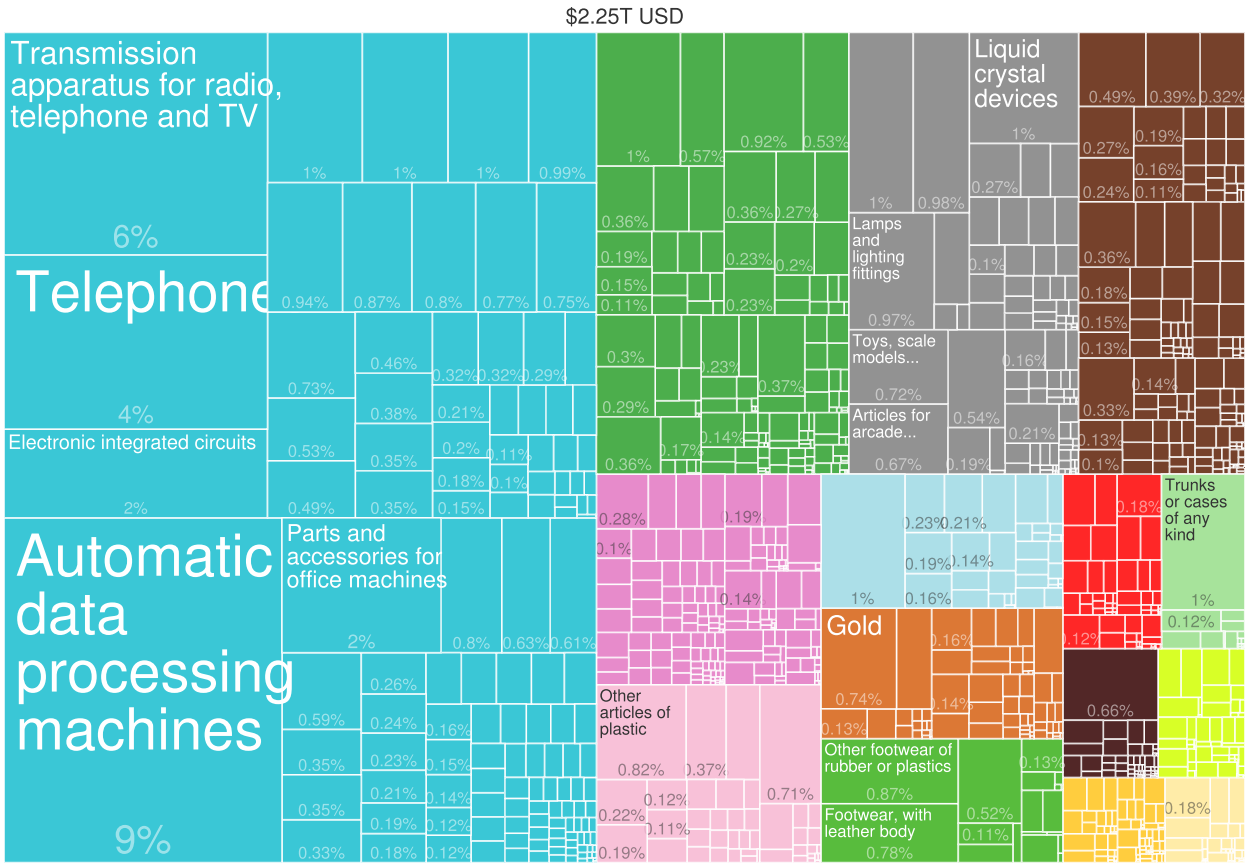

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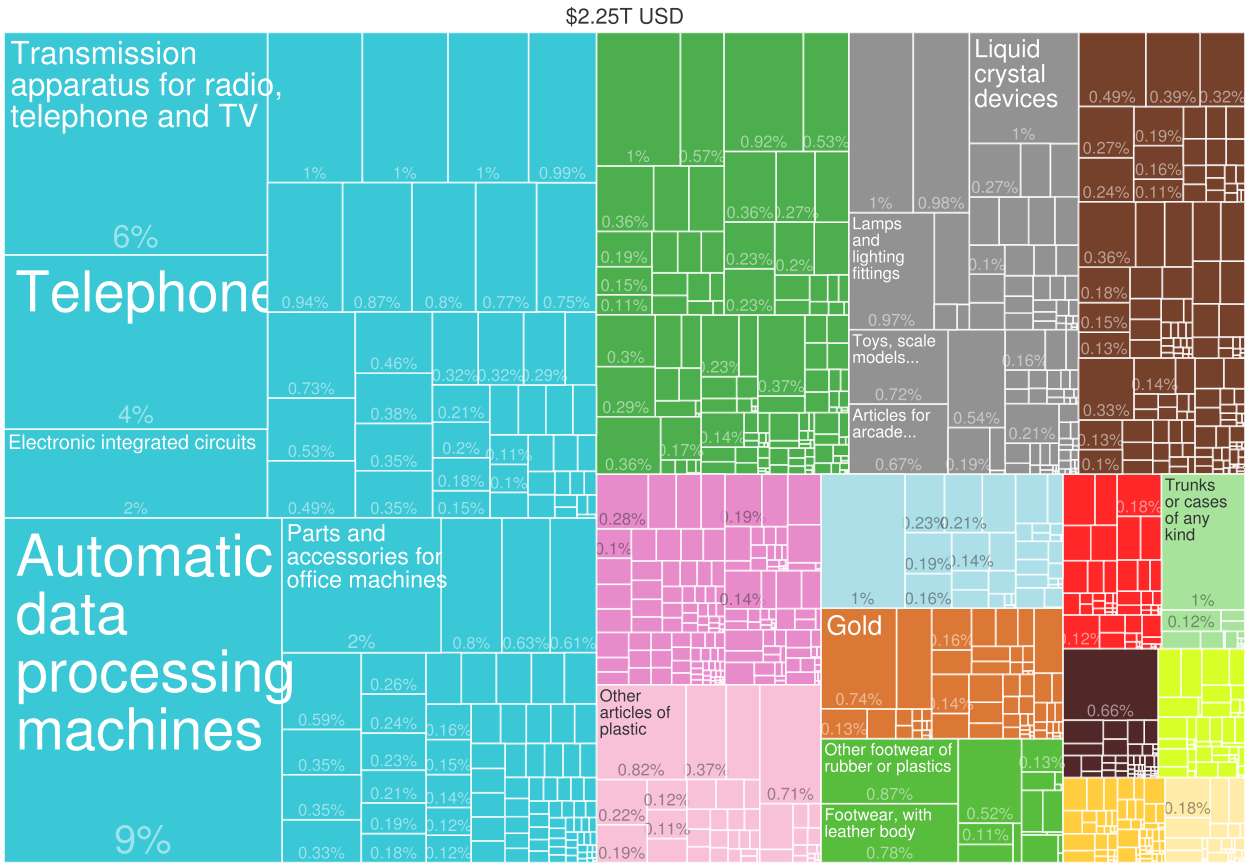
What Did China Export in 2013?



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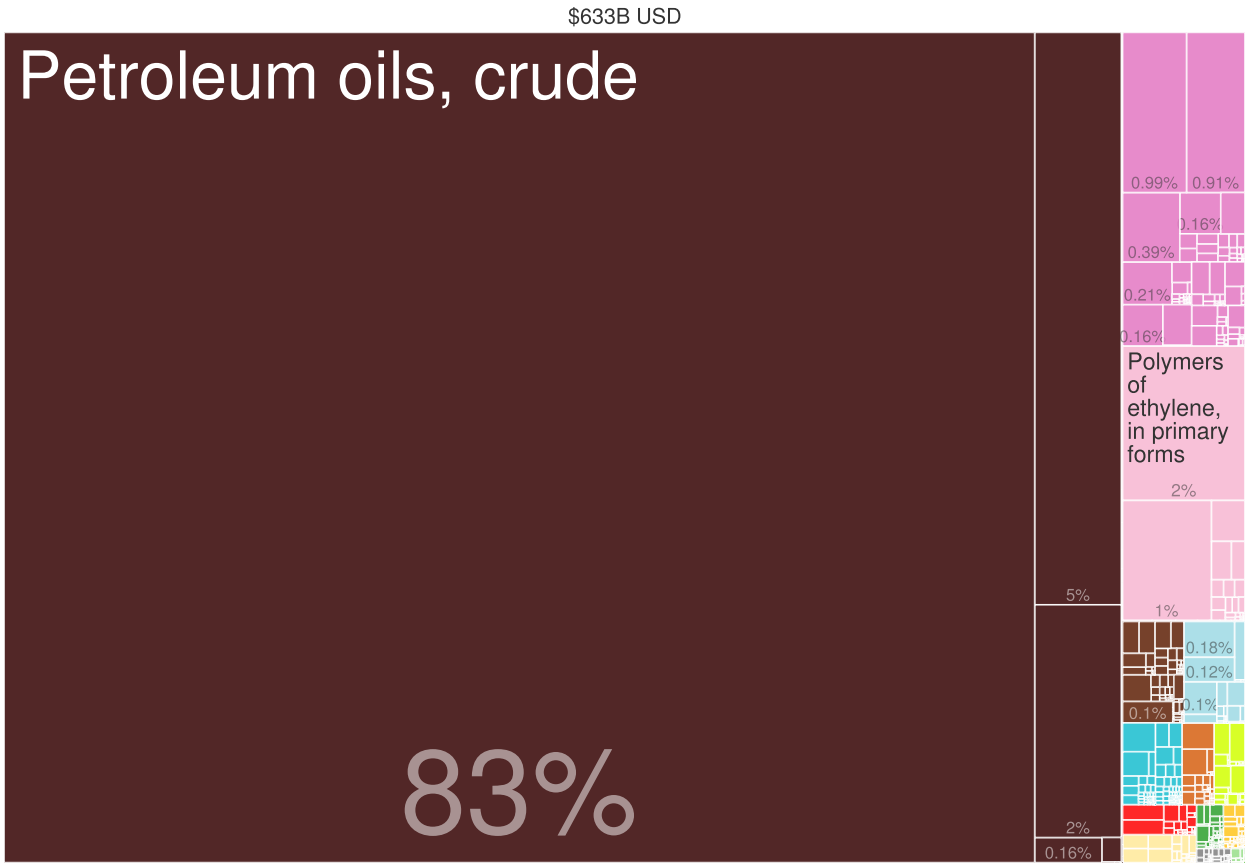

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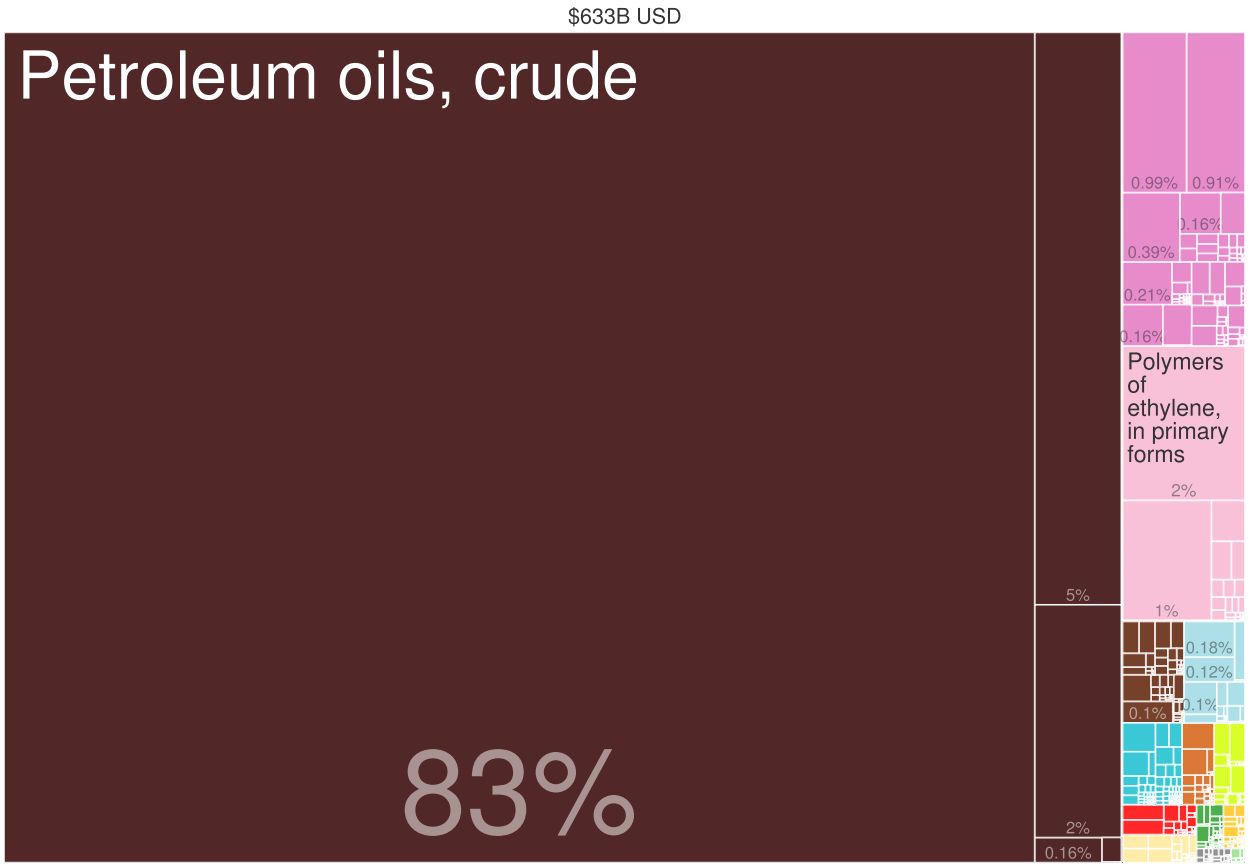
What Did Saudi Arabia Export in 2013?



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Changes in the Composition of Trade Over Time

- As economies develop, the share of manufacturing goods in merchandise trade increases
- Example of the U.S. over 100 years:

TABLE 2—COMMODITY COMPOSITION OF U.S. TRADE, 1890 AND 1990

Year	Percentage distribution: Exports	Imports
Agricultural Goods:		
1890	42.2	33.1
1990	11.5	5.6
Raw Materials:		
1890	36.6	22.8
1990	11.6	14.8
Manufactures:		
1890	21.2	44.1
1990	77.0	79.6

Notes: Figures may not total to 100 due to rounding. Agricultural goods includes processed foods.
Sources: U.S. Bureau of the Census (1975), series U213–24; *Statistical Abstract of the United States* (1991 pp. 811–14).

Source: Irwin, AER, 1996

- The United Kingdom (the first country to industrialize) already concentrated 75% of its exports in manufacturing in 1910! (it is also a country where natural resources are relatively scarce)

Changes in the Composition of Trade Over Time

- The same pattern holds for developing countries over the last 50 years:

Figures 2-1, 2-2, 2-3, 2-5, and 2-6 from *International Economics* by Paul Krugman, Maurice Obstfeld, and Marc Melitz removed due to copyright restrictions.

Current Composition of U.S. Imports and Exports

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- Dominant sectors in U.S. total trade are characterized by intra-industry trade
- Sectors with largest (negative) trade imbalances do not dominate U.S. imports

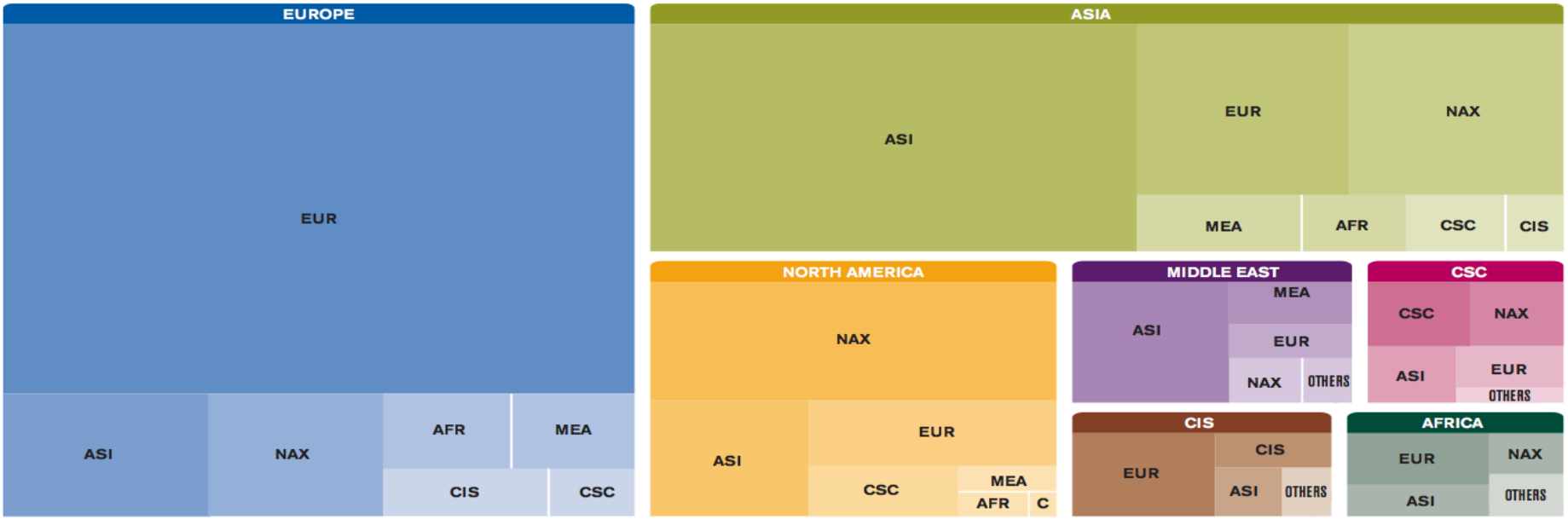
Intra-Industry Trade Dominates U.S. Trade with Mexico

Table 2
U.S. Trade With Mexico, 1998

Imports from Mexico	Billions of dollars	Percent
All commodities	94.7	100
Electrical machinery and equipment and related parts	25.8	27
Vehicles, other than railway	16.7	18
Nuclear reactors, boilers, machinery and mechanical	11.6	12
Mineral fuels, mineral oils	5.3	6
Articles of apparel and clothing accessories	3.8	4
Insulated wiring sets for vehicles, ships, and aircraft	3.7	4
Optical, photographic, cinematic, measuring	3.3	3
Total for top seven imports	**70.2**	**74**
Exports to Mexico		
All commodities	79.0	100
Electrical machinery and equipment and related parts	18.8	24
Nuclear reactors, boilers, machinery and mechanical	11.2	14
Vehicles, other than railway	8.0	10
Plastics and articles thereof	5.0	6
Optical, photographic, cinematic, measuring	2.3	3
Parts and accessories for vehicles	1.9	2
Paper and paperboard	1.9	2
Total for top seven exports	**49.1**	**61**

Who Trades With Whom?

World merchandise exports by region and destination, 2009



NAX: North America / **CSC**: Central and South America and the Caribbean / **EUR**: Europe
CIS: Commonwealth of Independent States / **AFR**: Africa / **MEA**: Middle East / **ASI**: Asia

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Who Trades With Whom? The U.S. Example

Figures 2-1, 2-2, 2-3, 2-5, and 2-6 from *International Economics* by Paul Krugman, Maurice Obstfeld, and Marc Melitz removed due to copyright restrictions.

- Geography (distance) and size (GDP) are the most important determinants of bilateral trade flows
- Note that the world's largest economies (after the U.S.) are: Japan, Germany, United Kingdom, France, and China

Why Is Country Size So Important For Trade Volumes?

- Larger economies produce more goods and services, so there is more to sell on export markets
- Larger economies generate more income from the sale of goods and services
  - Higher income increases demand for all goods –including imported goods
- This is why trade is very concentrated among developed countries:
  - 50% of current world trade is between developed economies (countries in OECD & EU 25)
  - 12% of current world trade is between developing economies

The Effect of Size on U.S.-E.U. Trade

Figures 2-1, 2-2, 2-3, 2-5, and 2-6 from *International Economics* by Paul Krugman, Maurice Obstfeld, and Marc Melitz removed due to copyright restrictions.

Distance Greatly Reduces the Amount of Trade

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The Gravity Equation for Bilateral Trade

- Empirically, one can estimate the effects of country size and distance on bilateral trade by fitting the following 'gravity' equation:

$$T_{ij} = \frac{A(Yi)^a(Yj)^b}{(D_{ij})^c}$$

  where T_{ij} is bilateral trade between countries i and j, D_{ij} is the distance separating them, and Y is country income
- The parameters a, b, and c are estimated from the regression (as well as the constant A)
- Note: this is called a 'gravity' equation due to the similarity with Newton's law of gravitational force

Estimating the Gravity Equation for Bilateral Trade

- Using bilateral trade data for all countries in the world, the best .fit of the gravity equation

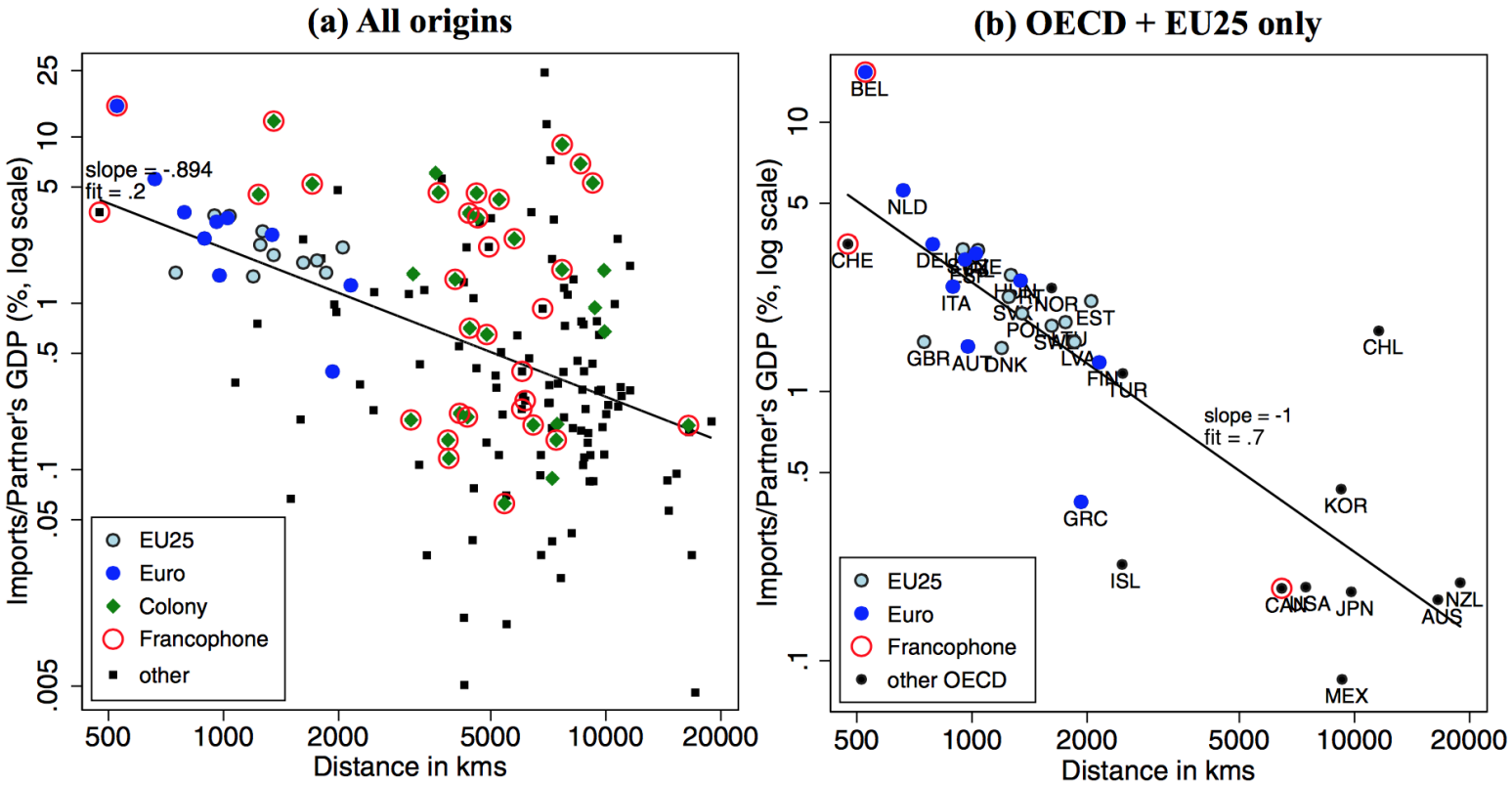
$$T_{ij} = \frac{A(Yi)^a(Yj)^b}{(D_{ij})^c}$$

  yields coefficients a, b, and c that are very close to 1
- Trade is roughly proportional to country size (just like gravitational force and mass)
- On average doubling the distance between two countries of similar size will halve their bilateral trade
- Surprisingly, even with substantial reductions in transportation costs, the effect of distance has not changed much over the last 50 years!

Other Determinants of Bilateral Trade Flows

- Although country size and distance are the main determinants of bilateral trade, other characteristics of country-pair relationships also matter for trade:
  - Sharing a common border (beyond the effect of distance)
  - Sharing a common language
  - Former colonial ties
  - Being part of a free-trade agreement
  - Immigration flows
  - Other cultural ties

France's Imports in 2006 Follow Gravity



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Trade Deficits and Surpluses

- The factors that generate trade (how much and what a country trades) are very distinct from the factors that generate trade deficits or surpluses
  - ... and their consequences are very different too
- A country trade deficit/surplus means that a country is borrowing/lending from the rest of the world
  - ...and has nothing to do with what and how much that country trades

Trade Deficits and Surpluses

- For example, the U.S. is currently running a very large trade deficit (above 5% of GDP)
  - This means that the U.S. is borrowing that amount from the rest of the world
  - ... by selling financial assets (U.S. treasury bonds, stocks, corporate bonds, etc...) equal in value to the trade deficit
- The determinants of country trade deficits/surpluses are studied in a separate course on international macroeconomics (second half of textbook)
- In this course, we will not worry about country lending borrowing and almost always assume that a country's trade balance is zero
  - Although almost all of the same results would hold if any other trade balance amount were assumed

Where Do Gains From Trade Come From?

- International trade (just like other forms of trade) almost always represent a mutually beneficial transaction between buyer and seller
  - So buyers (consumers who buy imports) and sellers (firms that export) find this trade beneficial
  - Of course, other sellers (domestic firms that make similar goods) would be better off without that competition
    - ... and workers employed by those domestic firms may be better off without that international trade
    - ... although they would still be worse off as consumers
- Countries go to great length to reduce internal trade barriers
  - If trade within countries is beneficial, why would international trade be so different?
- Does it matter whether countries are similar or very different?
  - Different technologies
  - Different factor prices (labor, capital, raw materials)

International Trade is Like Technological Change

- In many ways, an opportunity to trade has the same effects as the introduction of a new technology
- **Scenario 1: Trade**
  - Factors of production (labor, capital, materials) are used to produce a set of goods (using available production technologies) that are exported
  - In return for a different set of goods that are imported
- **Scenario 2: New Technology**
  - A new technology is introduced that transforms the same production factors (labor, capital, materials) into the set of goods that are imported
- **What are the effects of new technologies?**
  - Overall beneficial, but generally induces both winners and losers
  - Trade generates contraction and expansions of particular sectors just like technology
  - In the long run, the types of jobs available may be very different
- Same reasoning can be applied to trading partner!

Some Reasons To Be Concerned About Trade

- In some circumstances, one might care about what goes on in the black box of the new technology:
  - Differences in non-economic labor market conditions
    - Rights to organize
    - Working conditions
    - Child labor
- In many cases, one should also ask how restrictions to trade will help to improve those conditions!

Other Reasons To Be Concerned: Market Failures

- Infant industries
- Foreign monopolies
- Externalities
  - e.g. effects on the environment
- Public goods
  - 'Cultural' goods
- None of these nullify the gains from trade, but imply that governments may be able to improve aggregate welfare by imposing some restrictions on trade
- However, these arguments for trade restrictions are also extensively abused and often only serve to shield inefficient domestic producers from international competition

What To Keep In Mind With Economic Models

- Always a drastic simplification of reality
- You should not ask:
  - Does this model realistically represent the world economy?
  - It doesn't!!!
- Rather, ask:
  - How do the simplifications affect the answers given by the model?
  - Would some realistic changes to the model overturn those answers?

The Main Building Blocks of International Trade Models

- Factors of production are substantially more mobile within countries than between countries
  - Will most often assume that factors cannot move across countries
  - This leads to important differences in factor abundance across countries
- Production technologies may be specific to countries
  - Tied to human capital or government institutions
- These differences in factor availability and technologies are large relative to differences in consumer tastes across countries
  - ... so will often assume same consumer tastes across countries

14.54 International Trade

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