

## Lecture 4: Using Supply/Demand to Explain Events

### Outline

1. Review Concepts
2. Three Panel Trade Diagram
3. World Oil Markets and China
4. Oil Market Policies: Global Carbon Tax
5. Hurricane Katrina/Event Shock
6. Impacts on Agricultural Markets

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## I. Review of Supply/Demand

- Demand Curve Slopes +/-??
- Supply Curve Slopes +/-??
- Movement along demand curve reflects??
- Movement along supply curve reflects??
- Shifts by the demand curve reflects??
- Market Demand curve sums up ??

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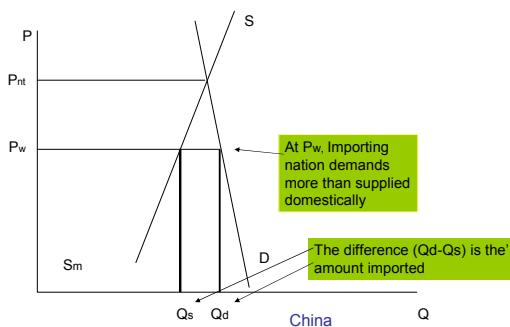
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## IMPORTING NATION



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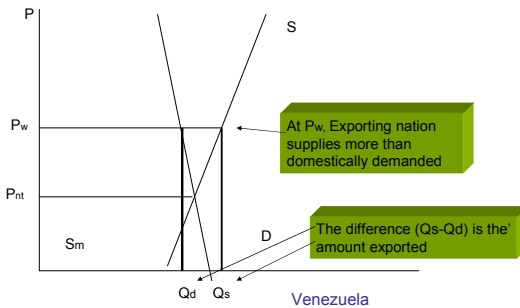
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## EXPORTING NATION




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## Combining Importers and Exporters

- Our two nations have economies that obviously benefit from oil trade.
- A graph of all importing nations would look similar to our one for China.
- A graph of all exporting nations would look similar to our one for Saudi Arabia.
- By combining exporters and importers in systematic way, we can identify an equilibrium world price.

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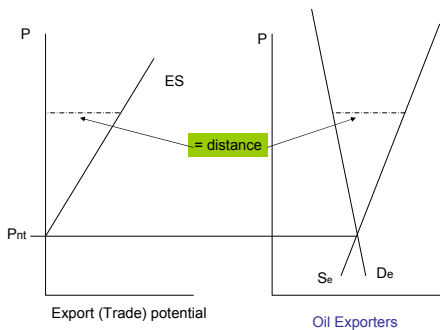
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## Exporter Excess Supply




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### Why is excess supply upward sloping?

- At higher and higher prices, exporting nations not bound by OPEC production constraints start producing more oil.
- Exploration increases
- Stocks (inventories) decline
- Domestic consumption declines at higher prices.

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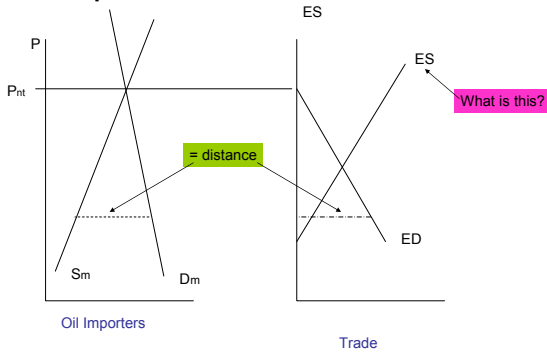
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### Importer Excess Demand




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### Why is excess demand downward sloping?

- As prices rise, importers demand less (people start driving less).
- As prices rise, suppliers in importing region increase output. (U.S. oil production rises.)

{So, bring all this together.....}

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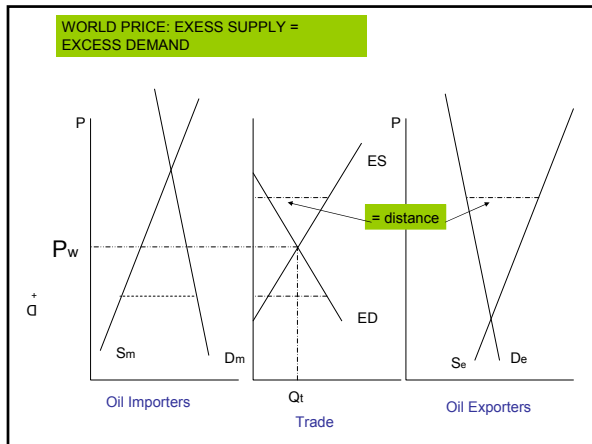
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**Work some examples**

- The emerging tiger
- The Gore "tax what you burn, not what you earn" policy.
- How could a hurricane cause gas prices to rise and cause oil prices to fall at the same time?

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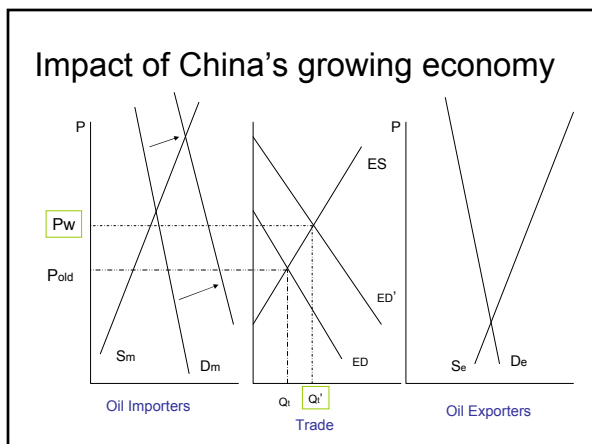
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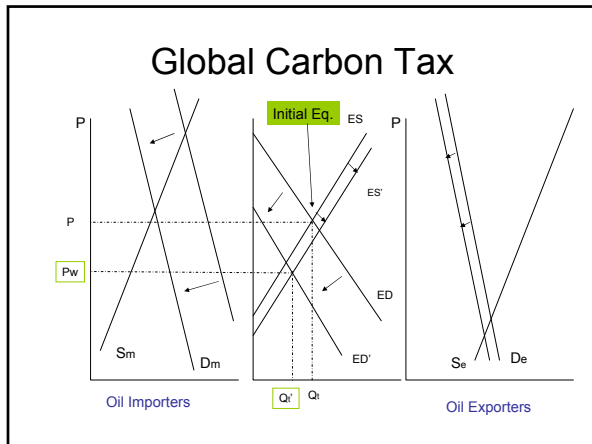
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### Carbon Tax on Final Consumption

- Depress world oil prices
- Increase retail prices for energy worldwide
- Reduce Greenhouse Gases
- Shift demand for non-carbon energy sources: Wind, geothermal, solar, etc.

Is "tax what you burn, not what you earn" feasible?"

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### Katrina

A. Shuts down oil supply into the US causing a glut to the ROW's importers.

B. Shuts down gasoline refineries leaving U.S. consumers with less gas supply.

Part A. is a left shift in the demand for oil by a major major importer.

Part B. is a left shift in the supply of gasoline to the U.S. retail market.

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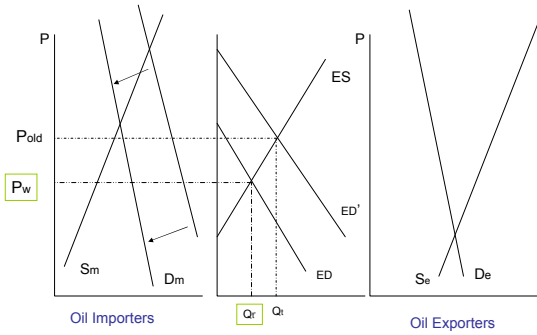
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### Katrina's impact on world oil price




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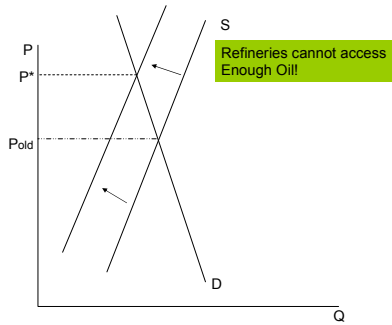
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### Retail Gasoline Market




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### Try one!

Set up a three panel trade diagram for corn and evaluate the recent collapse in oil and ethanol demand.

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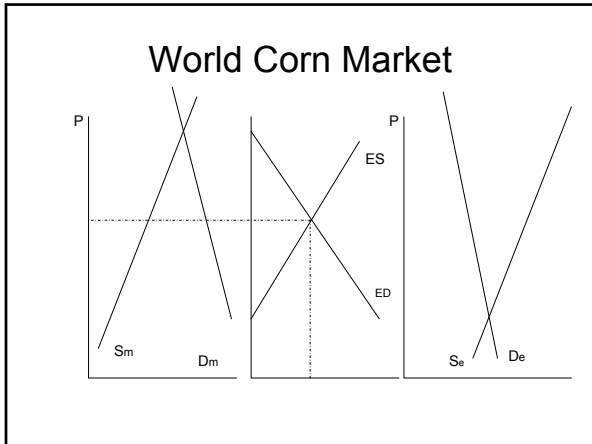
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### Lecture 5: Production

- Economists refer to production as an input-output process.
- Firms combine fixed factors of production with variable factors of production to produce output.

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### Factors of Production

Fixed Factors are inputs that cannot be changed in “short run” production processes.

Examples: Milking barns, tractors, buildings, trucks, consulting and accounting fees, etc.

Variable Factors are inputs that are “usually” adjusted along with the level of output.

Examples: Energy, labor, medicines, etc.

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## Why worry about the differences?

- Hugely important. Fixed inputs provide no information about what the firm should do short run.
- Profit maximizing decisions in the short-run deal with market conditions, output levels and variable costs.

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## Production

Assume a production process that uses only one variable input.

For today's class, we will use corn production/acre as a function of Nitrogen Fertilizer.

Production Function:  $Y=f(N)$ .

We might imagine that our total productivity (Y) increases as N rises but then peaks and goes down when too much is applied.

Marginal Productivity tells us how much Y changes when N changes:

$$MP=\Delta Y/\Delta N$$

I.E.: adding one pound of N does what to Yield???

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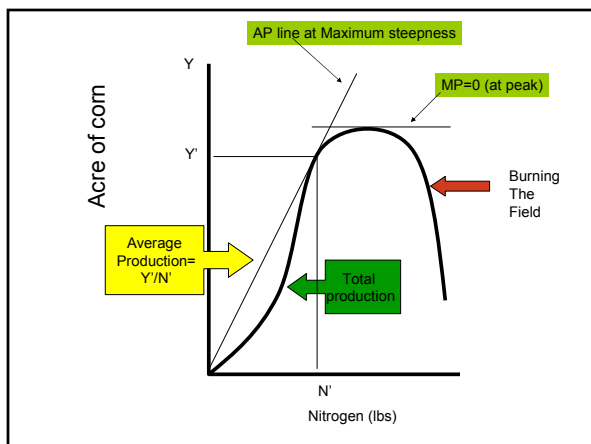
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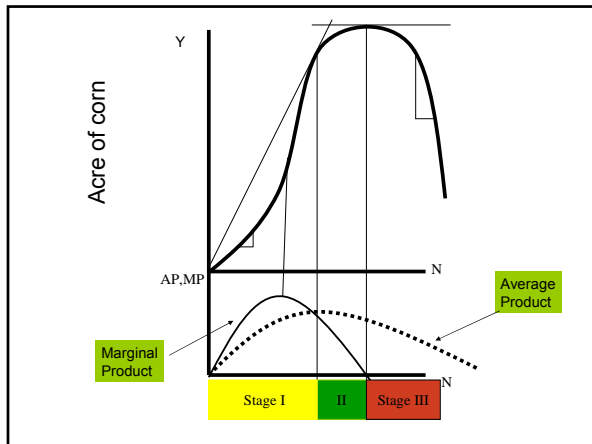
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### Stage I

- Stages I is an irrational area of production.
- In Stage I, you can always do better by adding a little more N. This keeps going until Average productivity peaks or until MP crosses AP from above.

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### Stage III

- Stage III is obviously an irrational area of production.
- Production is actually falling.
- Marginal productivity is negative which means adding a unit of N “burns the field even more than where you were before.”

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## Stage II

- Stage II is the rational region of production.

Why and what identifies the “best N”?

Increasing N still increases Y. We need the input price of N and the output price of Corn to find the optimal N to apply.

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