

Department of Business and Management.

Teaching: International Finance.

**Crude oil: history, market analysis and effects  
on advanced economies.**

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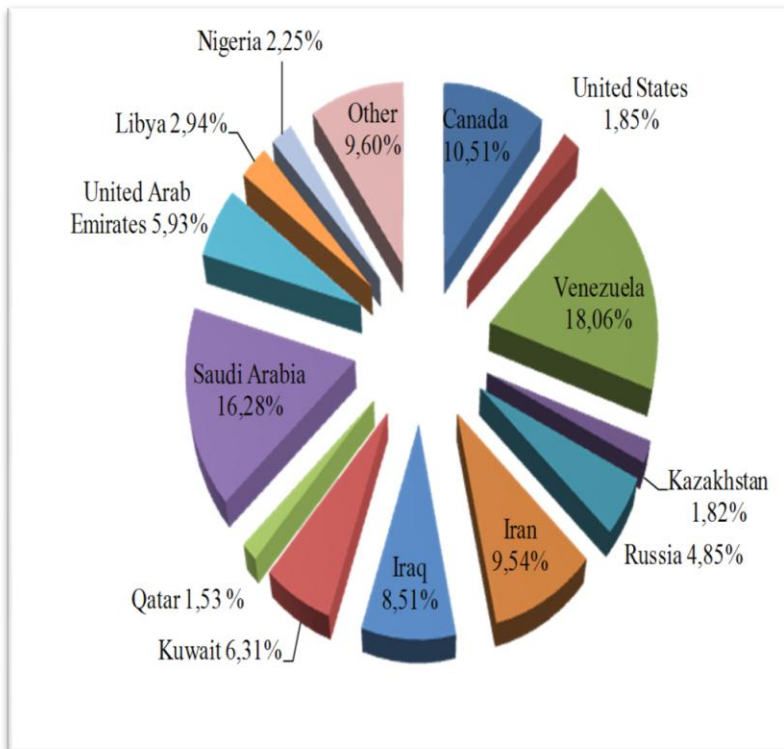
# History and structure of crude oil market and its derivatives market.

## History of crude oil market.

- I. From ancient times to the beginning of 1900<sup>th</sup> century.
- II. Baku and Absheron's importance.
- III. The great oil rush in North America and the Rockefeller empire.
- IV. First and Second World war.
- V. Post war period and OPEC foundation.
- VI. From 1960 to nowadays.

## Present structure of crude oil international market.

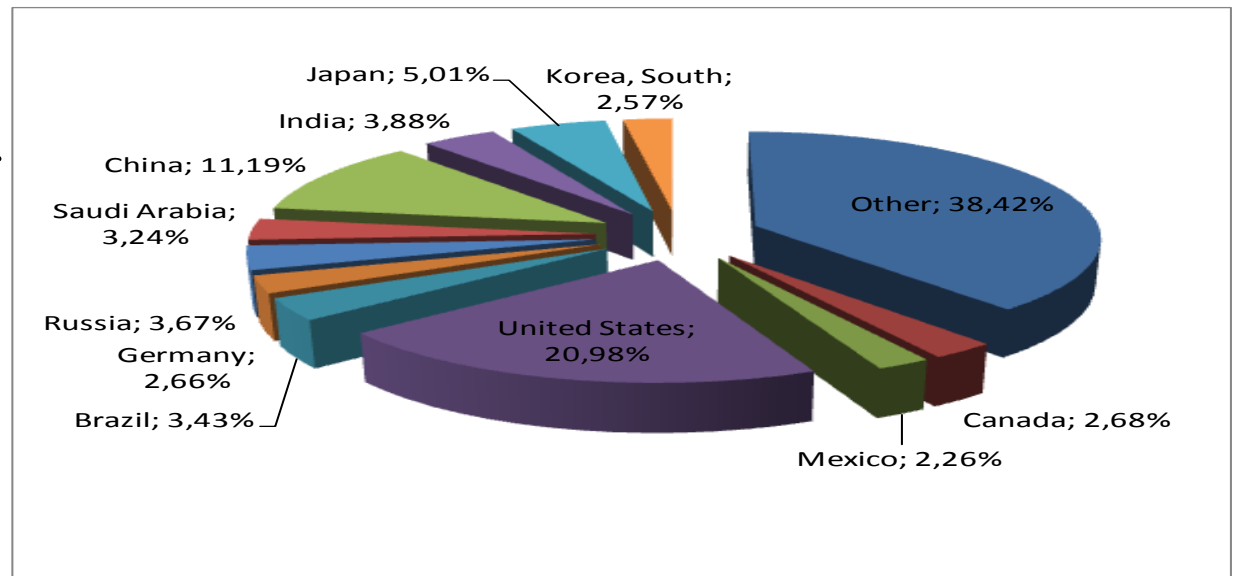
Crude oil distribution of international reserves.



International oil production: main players.

| 2014  |                      |            |            |
|-------|----------------------|------------|------------|
| Rank  | Country              | Production | Percentage |
| 1     | United States        | 12342,501  | 13,70%     |
| 2     | Saudi Arabia         | 11600,355  | 12,87%     |
| 3     | Russia               | 10533,742  | 11,69%     |
| 4     | China                | 4459,4127  | 4,95%      |
| 5     | Canada               | 4073,8684  | 4,52%      |
| 6     | United Arab Emirates | 3229,5877  | 3,58%      |
| 7     | Iran                 | 3192,3704  | 3,54%      |
| 8     | Iraq                 | 3057,6915  | 3,39%      |
| 9     | Mexico               | 2907,8338  | 3,23%      |
| 10    | Kuwait               | 2811,8424  | 3,12%      |
| 11    | Brazil               | 2693,8659  | 2,99%      |
| 12    | Venezuela            | 2489,2424  | 2,76%      |
| 13    | Nigeria              | 2371,5132  | 2,63%      |
| 14    | Qatar                | 2067,2991  | 2,29%      |
| 15    | Angola               | 1889,4155  | 2,10%      |
| 16    | Norway               | 1826,0955  | 2,03%      |
| 17    | Algeria              | 1762,746   | 1,96%      |
| 18    | Kazakhstan           | 1658,275   | 1,84%      |
| 19    | Colombia             | 1028,4737  | 1,14%      |
|       |                      | 75996,132  | 84,34%     |
| World |                      | 90109.314  |            |

## World oil consumptions.



Main international market of crude oil and others commodity derivatives market.

Commodity market: real operating mode.

- Spot vs futures contracts
- Hedging vs Speculation

Main international markets of crude oil.

- WTI- West Texas Intermediate (quotation 60 Usd/bbl)
- Brent (quotation 64 Usd/bbl)

# Three main effects of crude oil exporters on global economies: three different points of view.

Crude oil price crisis and its effects on advanced economies.

Different types of oil crisis.

- Supply: negative (supply decrease, typically '70 cases) and positive (supply increase).
- Demand: positive (demand increase) and negative (demand decrease) types, introduced after modern oil shock and crisis.

The macroeconomic analysis.

The New Keynesian Phillips Curve model:

$$\pi_t = \pi_{t+1}^e + \lambda mc_t + \varepsilon_t$$

$\pi_t$  = inflation rate in period t.

$\pi_{t+1}^e$  = inflation expectation in the period t+1.

$\lambda$  = structural parameter, capturing the Phillips curve's slope.

$\varepsilon_t$  = a random variable that considers the possibility of exogenous shock.

$mc_t$  = the marginal cost of the firms in the economy. This variable is structured in this specific and fundamental formula:

$$mc_t = (1 - \alpha_m)(w_t - p_t) + [\alpha_m + (1 - \alpha_m)\phi]o_t + (1 - \alpha_m - \alpha_n)n_t$$

$\alpha_m$  = the part of oil in the advanced economy (m) production.  $\phi$  = the part of oil in the advanced economy (m) consumption.

$w_t$  = the nominal wage level in the period t.

$o_t$  = the real price of oil in the period t.

$p_t$  = the price level in the period t.

$n_t$  = employment in the period t.

## Oil supply shock.

Suppose an exogenous contraction in the oil world supply, like '70s oil crisis.

The inflation raise and the first round effects depend on:

coefficient of  $o_t$ ,  $\alpha_m + (1 - \alpha_m)\phi$   
 $\lambda$ , the structural parameter

size directly proportional to the inflation raise.

The second round effects observed are two:

-wage indexation, leads to nominal wages' rise and hit this coefficient  $(1 - \alpha_m)$

-lack of central bank credibility, isn't able to fix the inflation target to the inflation expectation of the period,  $\pi_{t+1}^e$

## Oil demand shock.

Suppose, two countries have trade relationship but the first one is the advanced(m) and the second one the emerging(eme) economy. The different economic maturity leads to different assumptions:

$$\begin{aligned} n\alpha_m &< \alpha_{eme} \\ w_{t;m} &> 2w_{t;eme} \\ p_{t;m} &> 2p_{t;eme} \end{aligned}$$

Given the trading opportunity between the 2 countries, the oil demand raises. Suppose this increase is too high to be satisfy.

This time in the advanced economy, the first effect of higher production costs and inflation rise will be surpassed by the secondary positive reaction: the depressing importing costs and low oil part in the economy production.



## Dutch disease: the theory and the case.

### Brief history and definition.

The economic term “Dutch Disease” was first stated in the magazine “*The Economist*” published in November 26, 1977. It describes the phenomenon of the contraction of the traditional manufacturing sector, due to the rapid expansion of the extractive sector. It also includes all the negative consequences arising from large increases in a country's income. Another consequence of the process is the increased specialization in the resource and non tradable sector leaving the economy more vulnerable to resource specific shocks. The term disease exactly derives by the appreciation of the real exchange rate and the factor reallocation among the different industrial sectors.

Historically different cases are found to be represented as Dutch Disease:

- 16th century, gold and other kind of wealth moved from the Americas into Spain;
- 18th century, the gold rush in Australia;
- in 1970's to 1990's, the discovery of oil in the North Sea by two European states, United Kingdom and Norway;
- the current oil production and situation in Russia.

# The macroeconomic studies and analysis.

## The Corden and Neary model.

Assume a small open economy. It has three sectors. All these have different price levels (e and m sector prices are fixed by international market).

$x_e$  = the energy sector, related to the natural resources.

$x_m$  = the manufacturing sector, traditional exporting sector.

$x_{nt}$  = the non traded goods sector, related to the domestic market.

We assume also that all outputs are used in the final consumptions and different other assumptions but the main two are:

-real exchange rates  $RER = Y_{nt}/Y_m$

(where Y are the sector output) and it is also  $RER = NER * \left(\frac{P_{soe}}{P_{int}}\right)$

-full employment in the labor market  $L = a_{e;l} + a_{m;l} + a_{nt;l}$

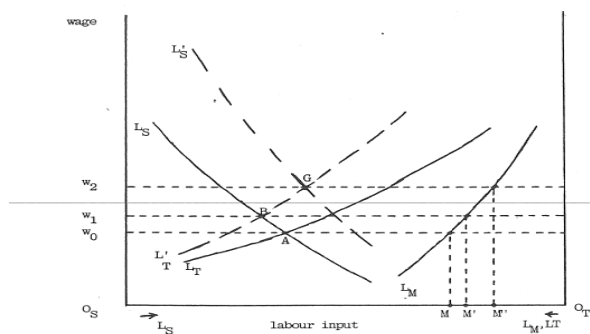


Figure 1: Impact of the Boom on the Labour Market

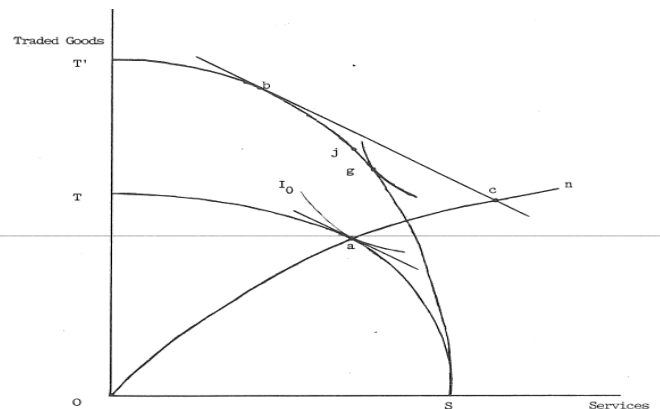


Figure 2: Impact of the Boom on the Commodity Market



## Crude oil discovery and Dutch Disease effects.

Analyze the effects on the small open economy of a country's new large oil field's discovery.

The first effect is the **resource movements**: the oil resources raise the value of the marginal product of labor in the energy sector thus the wage level increases. This increasing and higher request in the labor demand of the energy sector decreases the manufacturing employment level, driving to a direct de-industrialization effect to it. Instead the commodity market sector output increases and NT level of output decreases, with the initial RER doesn't change.

The second effect is the **spending effect**: the boom of oil sector leads to increase the national income. It can generate the increase in the imports, increasing the price level of the country of non tradable relative to tradable and the real appreciation of the exchange rate, that leads to an appreciation of the domestic currency. A further increase in the wage creates another part of bids for labor and capital out of the manufacturing sector; this is the second indirect phase of de-industrialization.

The possible solution and prevention instruments.

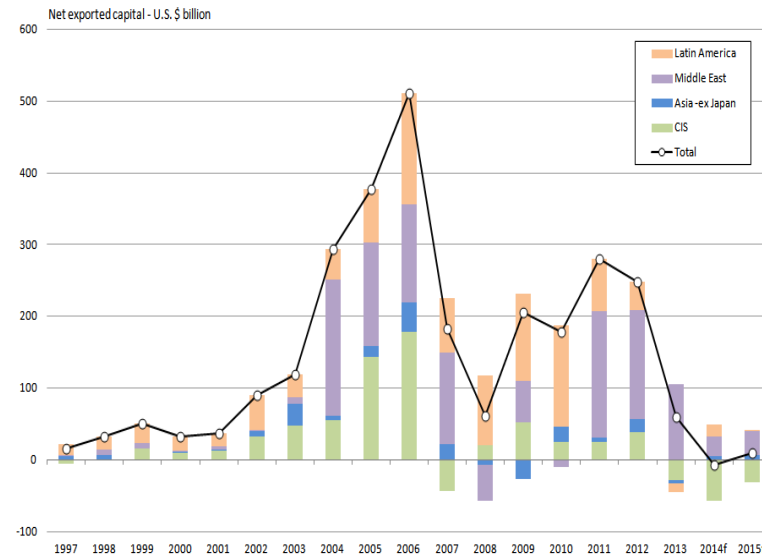
1. The fiscal policy: restricts the spending effect, saves revenues abroad (sovereign wealth fund), higher tax on luxury services and luxury imports.
2. The monetary and exchange rate policies: establish an inflation target, limitate the rise in the real exchange rate (purchasing foreign bonds, fixed and floating different situation), reduce foreign capital flows (moved from a budget deficit to a budget surplus).
3. The spending and structural policies: reallocate the taxes to improve the national infrastructures (better public transport, education and investing in technologies) greater income distribution and other different country's politics.

# Petrodollar recycling and its effects.

## Definition and brief history.

The term petrodollar was introduced by the professor of economics at the Georgetown University, Ibrahim Oweiss in the 1973. Today, the petrodollar recycling refers to the reflows to the rest of the world that result from the use that oil exporting countries make of their oil receipts.

Petrodollar exports to be negative in 2014 for first time in 18 years

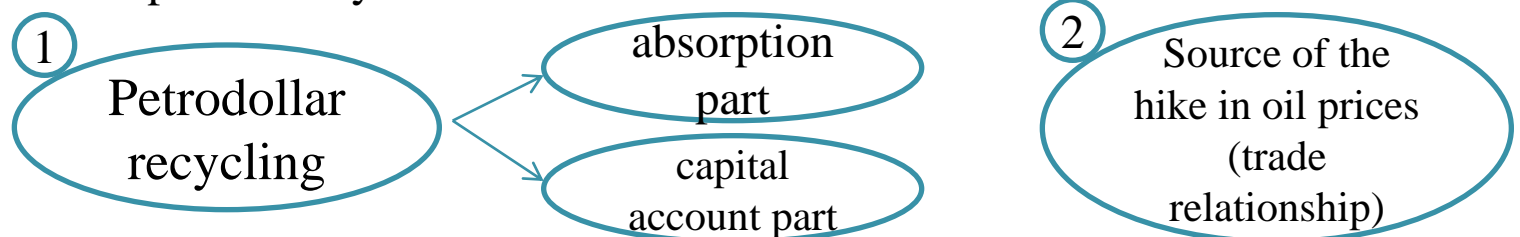


The macroeconomic studies and analysis.

Petrodollar recycling and other channels.

Consider a supply oil shock to describe the creation of the global imbalances.


The oil exporting country will have current account surplus instead the oil importing a deficit one. This direct effect could be significantly compensated by two different and distinct channels.



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