The Impact of Dollar Devaluation on World Oil Industry:
Do Exchange Rates Matter?

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- The Impact of Exchange Rates on Supply
  - Exchange Rates and Drilling Activities
  - Exchange Rates and Production
  - Exchange Rates and Exports
  - Exchange Rates and Purchasing Power
  - Exchange Rates and Inflation
- The Impact of Exchange Rates on Demand
  - The direct impact
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- Empirical Evidence
- Conclusions

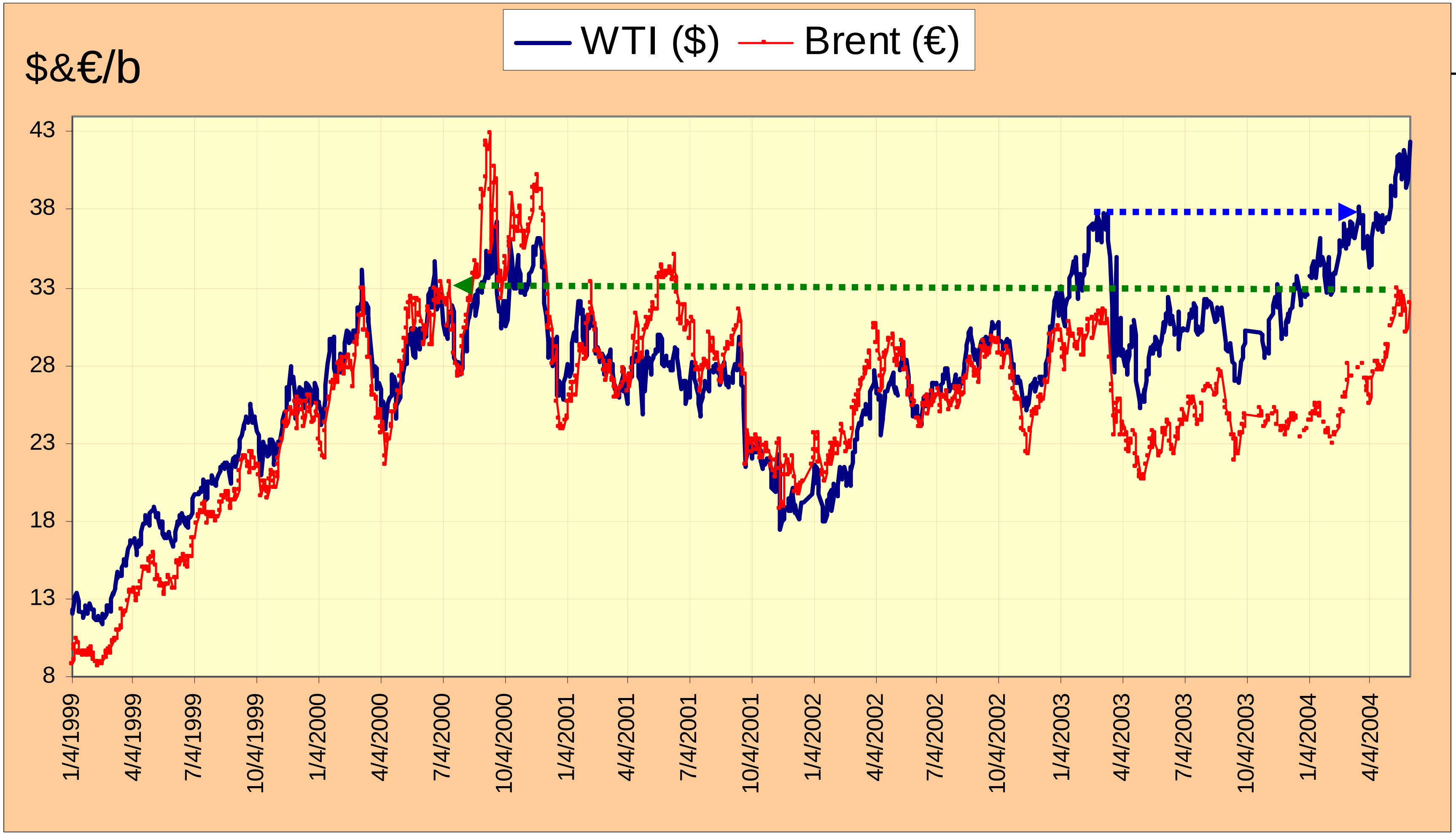
Facts

- Crude Oil is priced in US dollars while products are priced in local currencies.
- Oil revenues for countries and most oil companies are in US dollars.
- International oil companies operate around the world and use different currencies.
- Producing countries trade is denominated in US dollars and other world currencies.
- Producing countries have different trade partners.

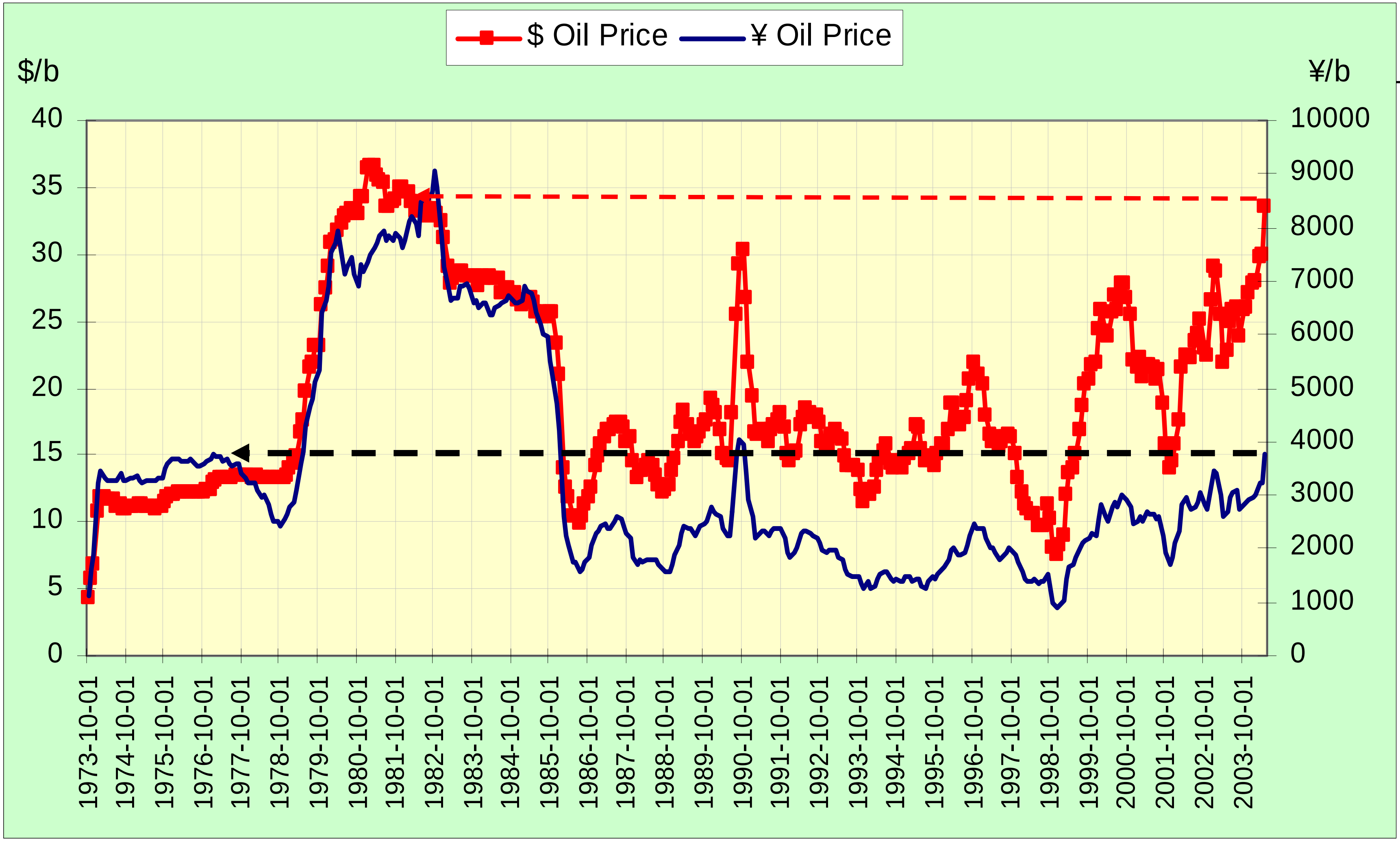
Observations

- Oil Prices are high only in dollars but they are relatively low in other currencies, especially the Euro and the yen.
- See the four figures below

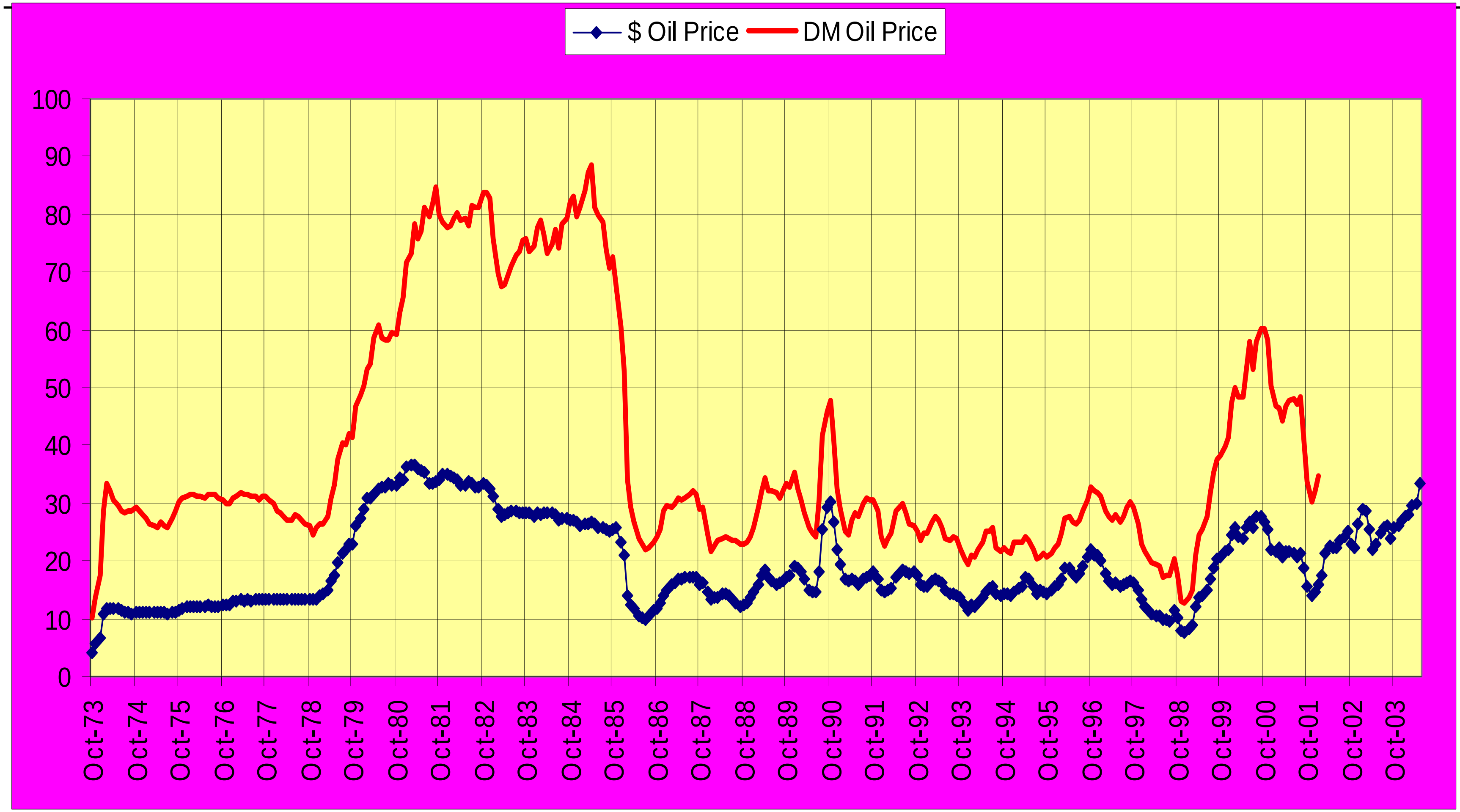
Oil Prices in Dollar and Euro



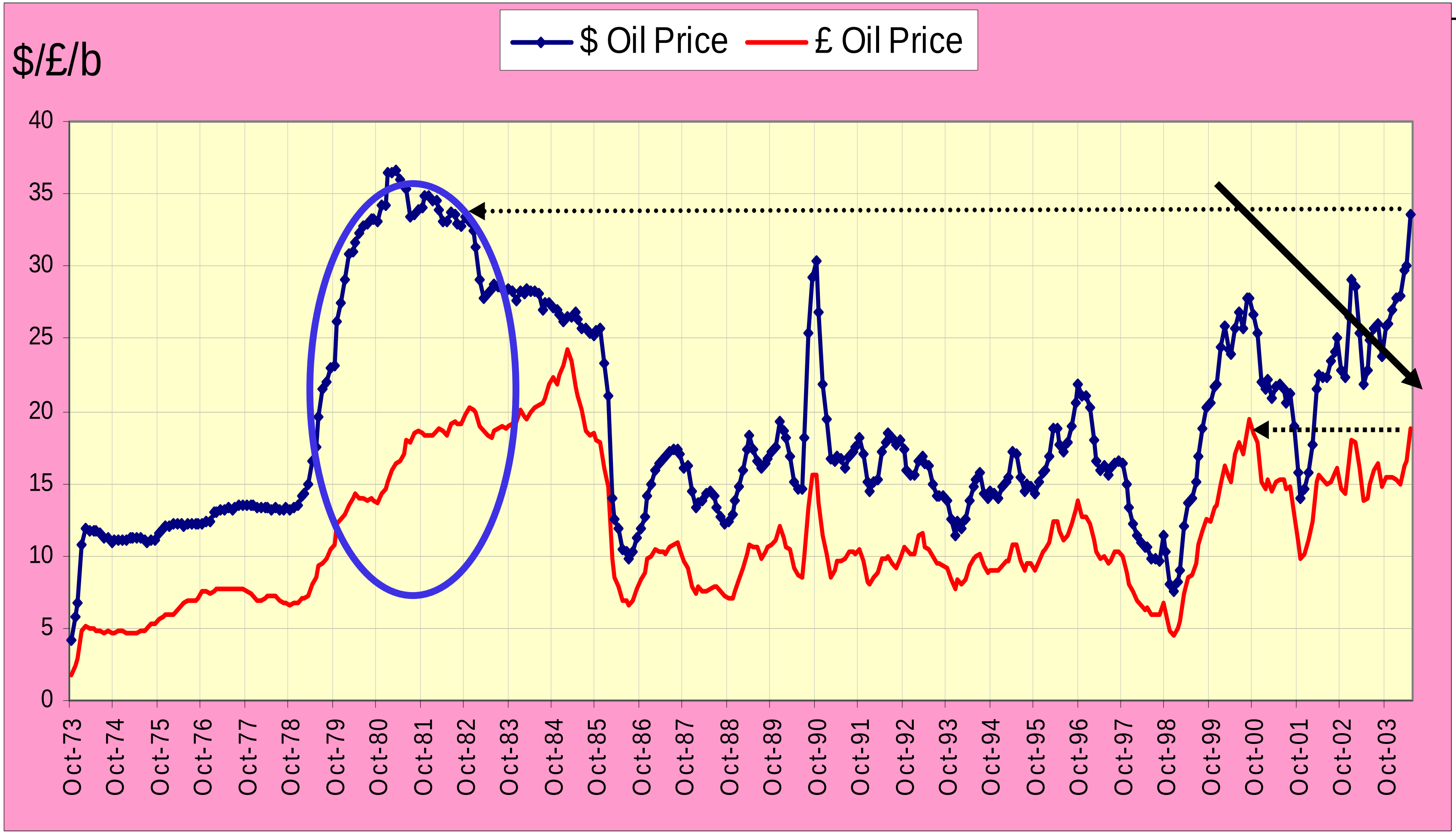
Oil Prices Dollar and Yen



Oil Prices in Dollar and DM



Oil Prices in Dollar and Sterling



Results

- Dollar devaluation reduces oil supply and increases oil demand.
- Dollar devaluation reduces drilling activties in some areas such as the North Sea.
- Dollar devaluation reduces drilling activities in the oil producing countries. It reduces their purchasing power and causes inflation.
- Dollar devaluation increases oil demand in Europe and Japan
- Dollar devaluation increases oil demand in the US as US tourists spend their vacations in the US instead of Europe.

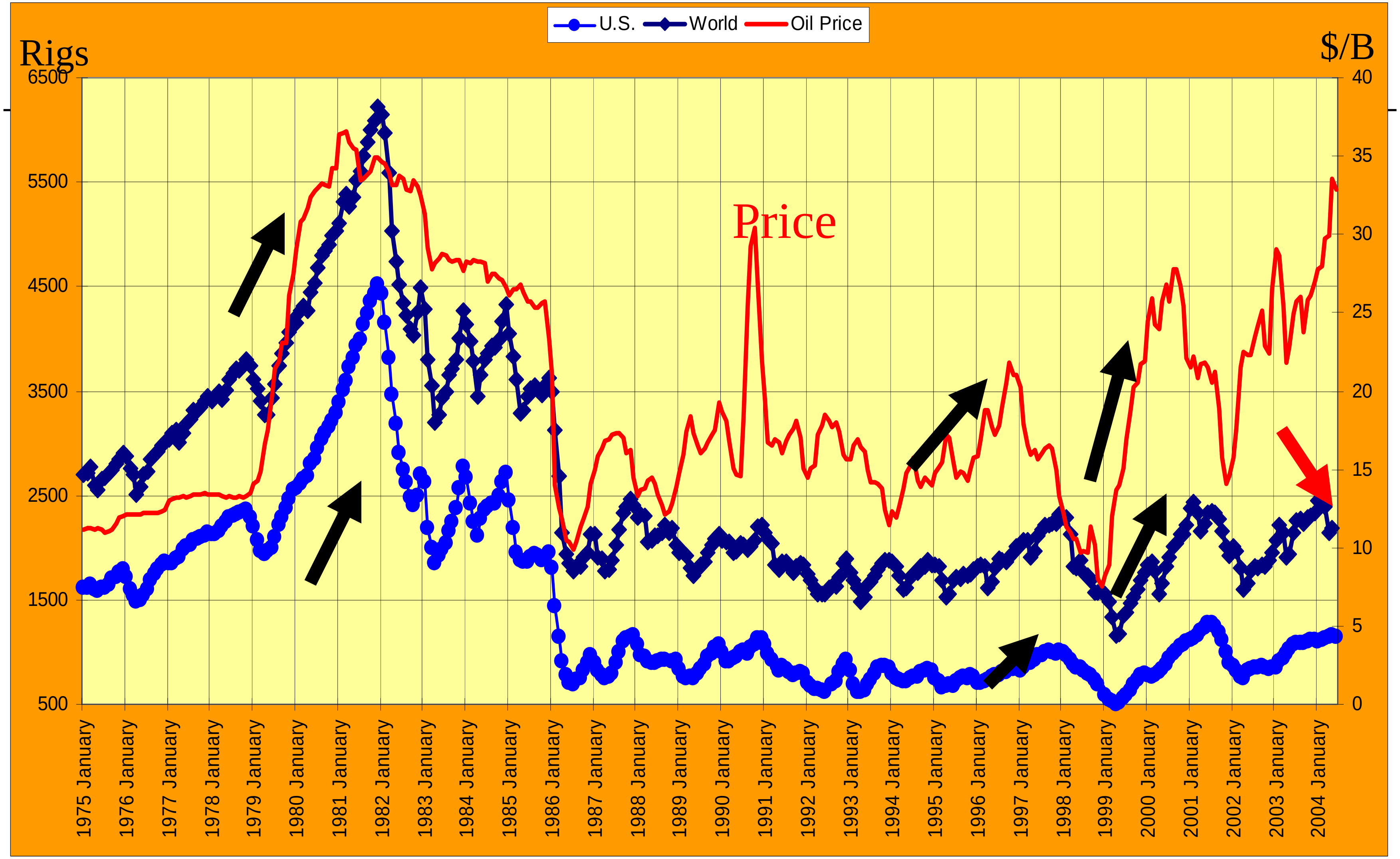
Observations on Drilling Activities

- Drilling activities are highly correlated with oil prices
- There is a lag when prices increase. No lag when prices decrease.
- Changes in the world rig count are misleading. They follow changes in US.
- This pattern does not hold in recent months. Is it because of dollar devaluation?

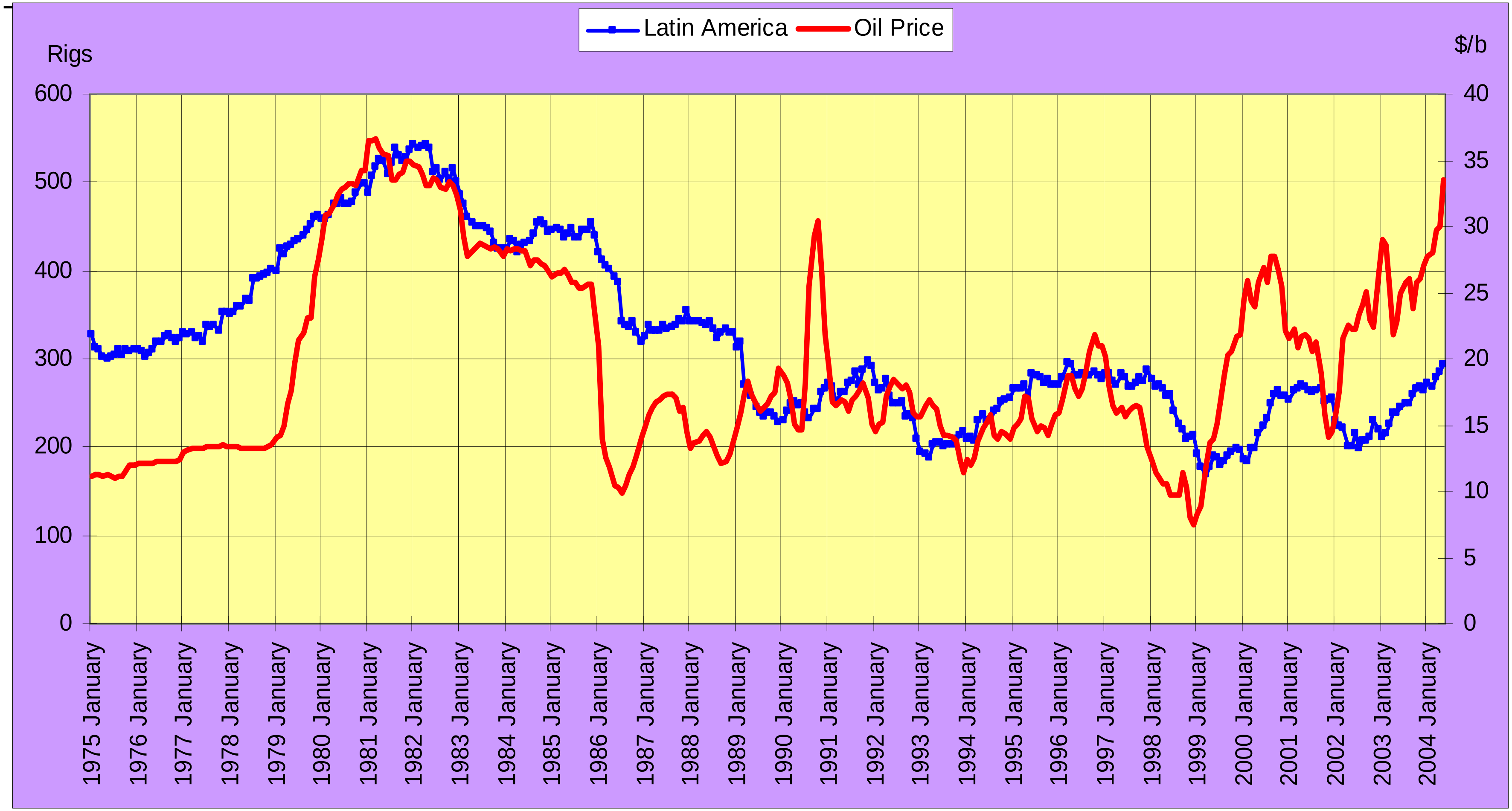
Observations on Drilling Activities

- Drilling activities in the Middle East and Latin America are highly correlated with oil prices in US dollars
- Drilling activities in Europe are positively correlated with oil prices in Euro and negatively correlated with oil prices in US dollars. As prices in Euro decrease (lower dollar), rig count decreases. As the dollar goes down, rig count goes down
- See the following six figures.

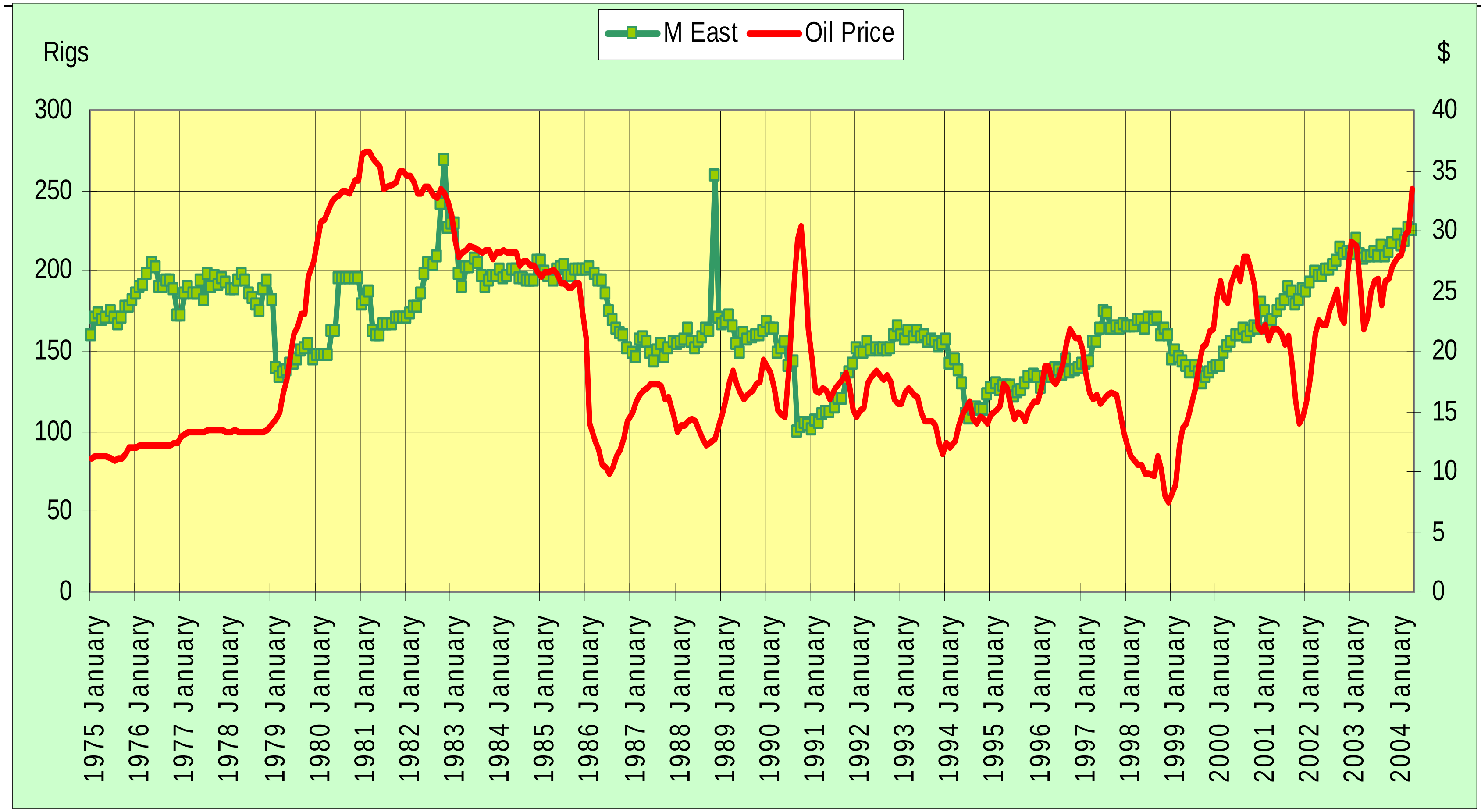
Oil Prices and Rig Count



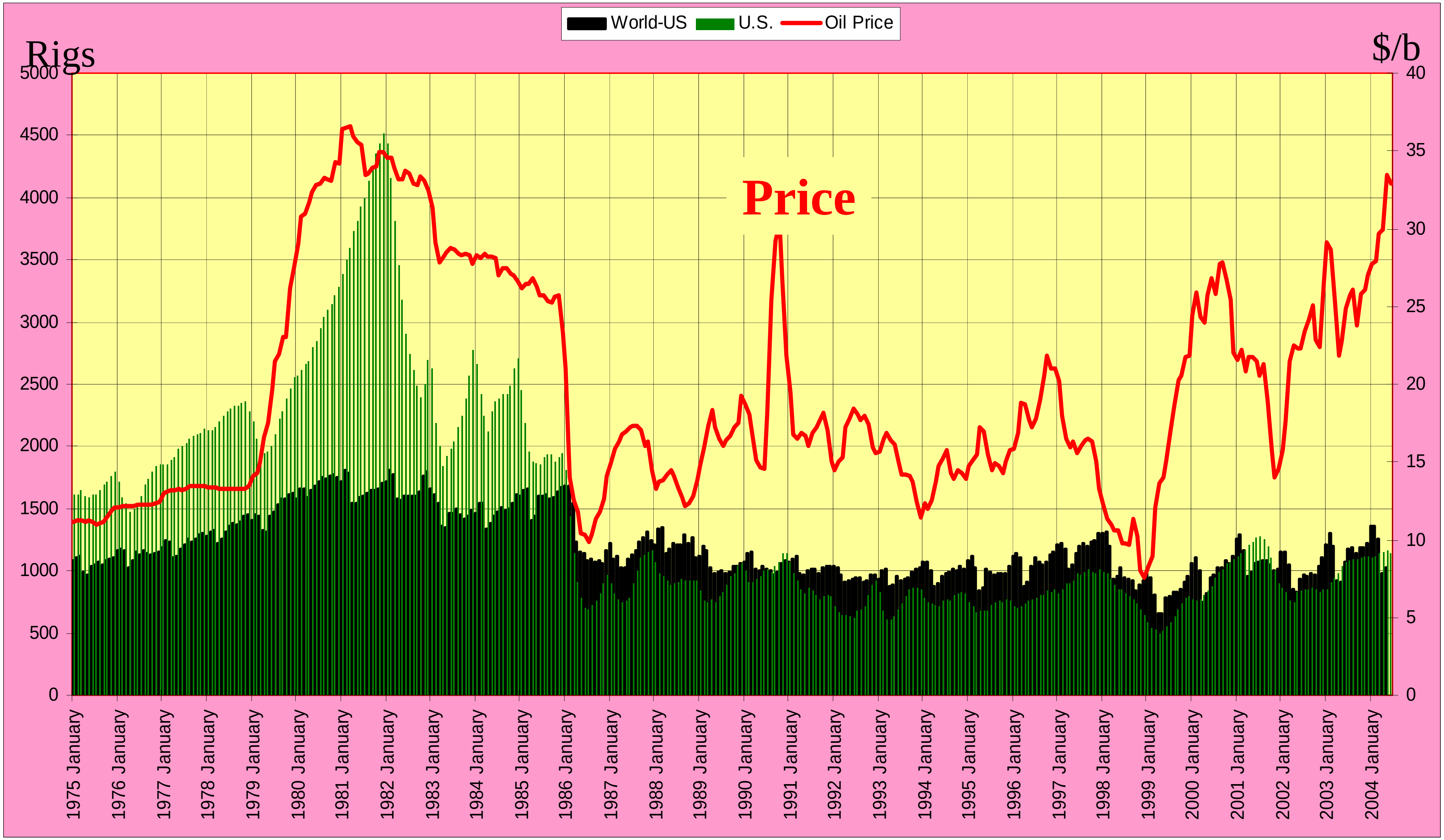
Oil Prices ($) and Rig Count (Latin America)



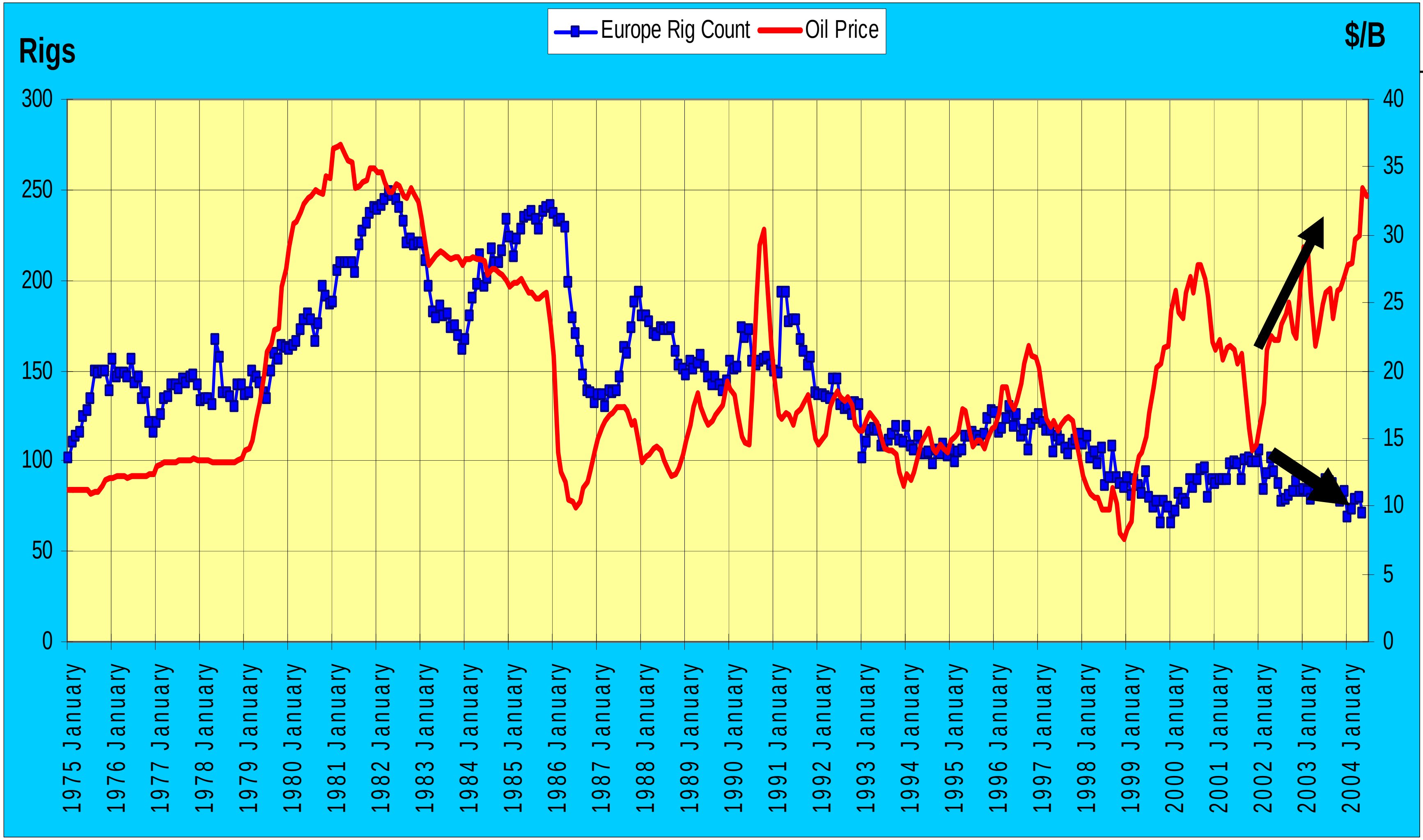
Oil Prices and Rig Count (Middle East)



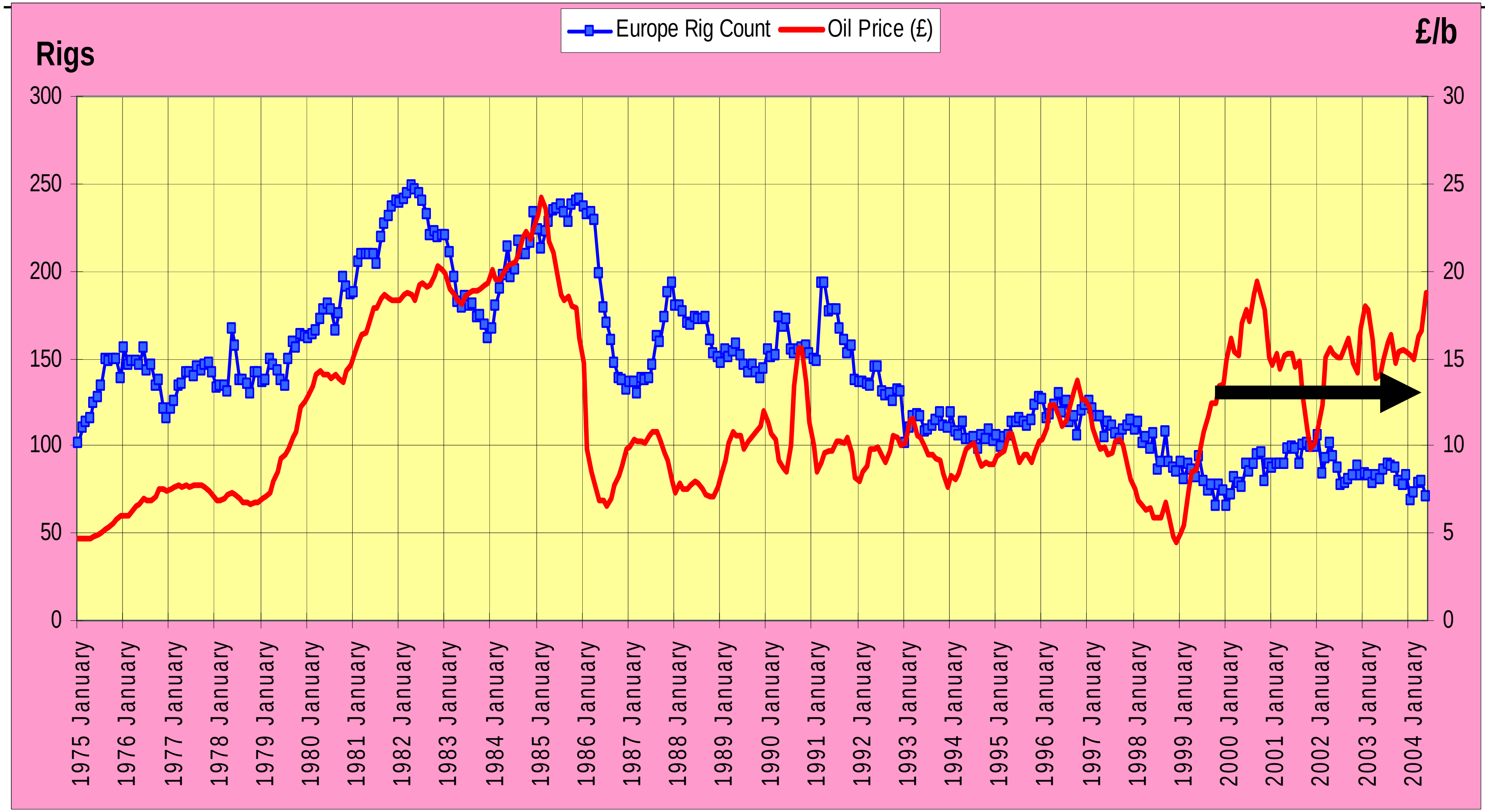
Rig Count: World-US, US, Vs. Oil Prices



Oil Prices ($) Vs Rig Count in Europe



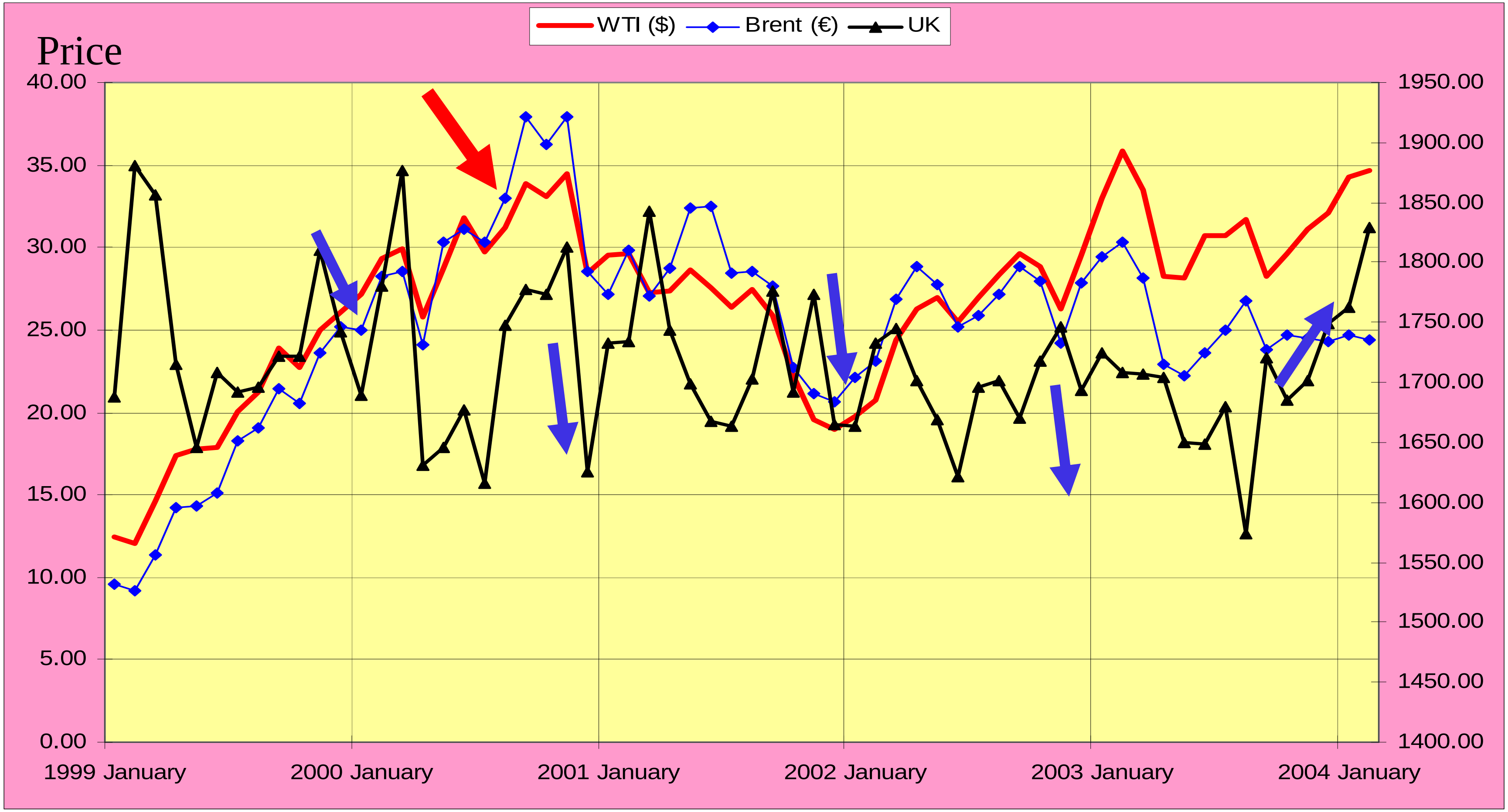
Oil Prices (£) Vs. # of Rigs in Europe



Oil Consumption in the UK

- Depreciation of the dollar increased consumption in recent months.
- Consumption declined sharply in the fourth quarter of 2000 when the dollar appreciated relative to the Sterling and the Euro.
- Dollar devaluation has little impact on other European countries because of high taxes on petroleum products.
- See the following Figure.

Oil Prices and Petroleum Consumption in the UK

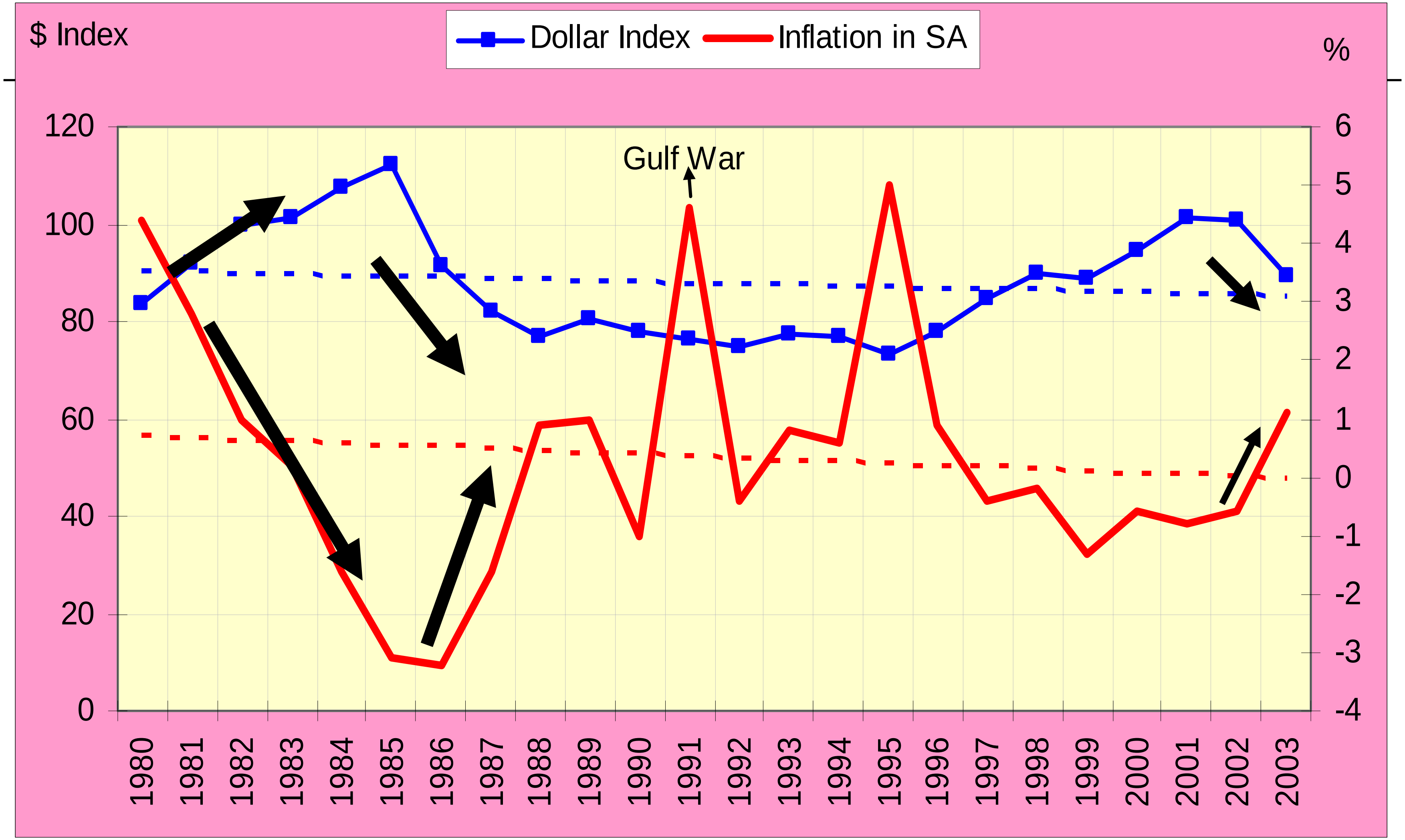


The Impact on Oil Producing Countries

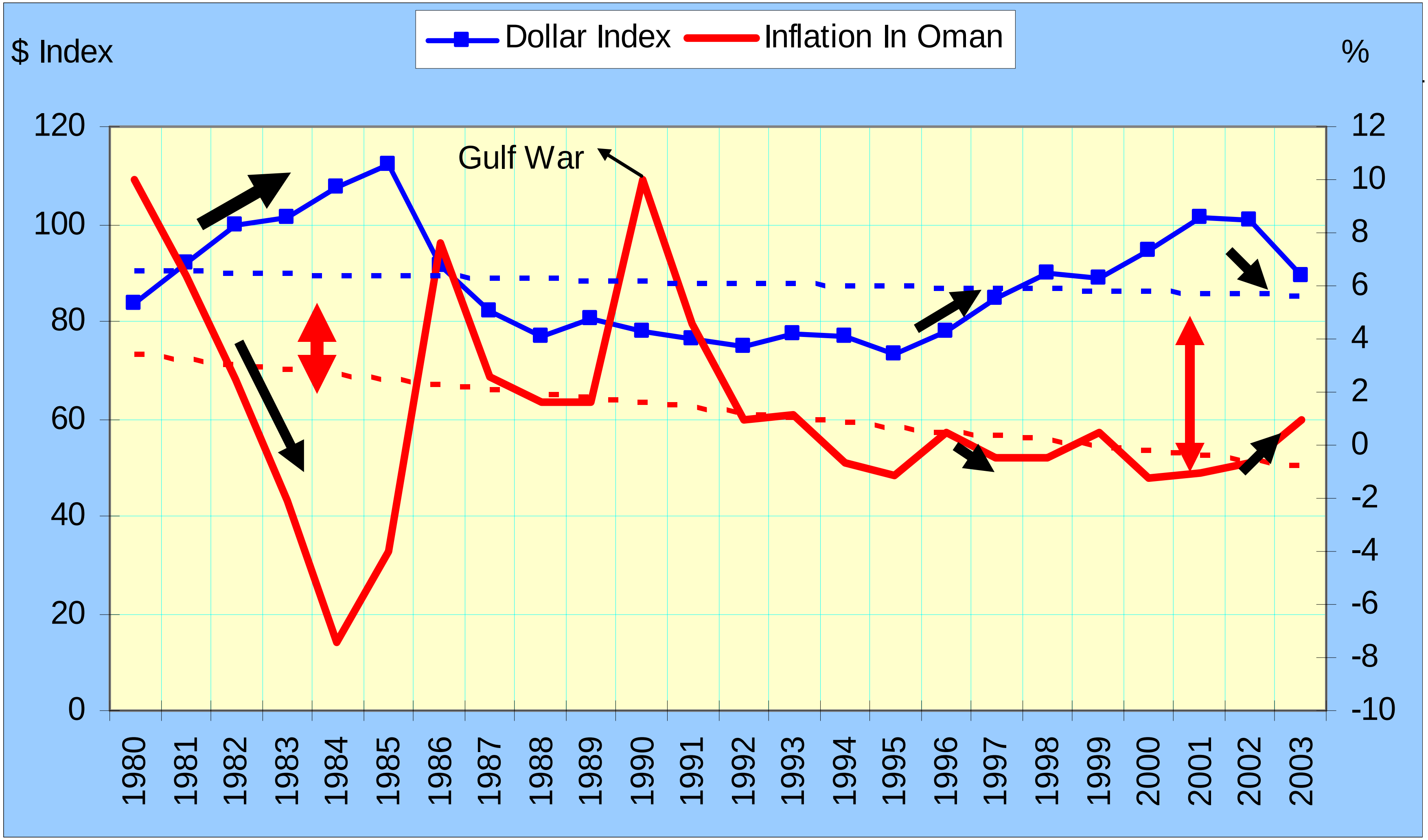
- Dollar Devaluation:
  - **Causes inflation**
  - **Reduces purchasing power**
  - **Increases cost of operations if spare parts are imported from Europe and Japan**
    - This would reduce upstream investment.
    - It will apply to US oil companies operating in OPEC.

    - See next 14 figures on the relationship between dollar devaluation and inflation in the oil producing countries

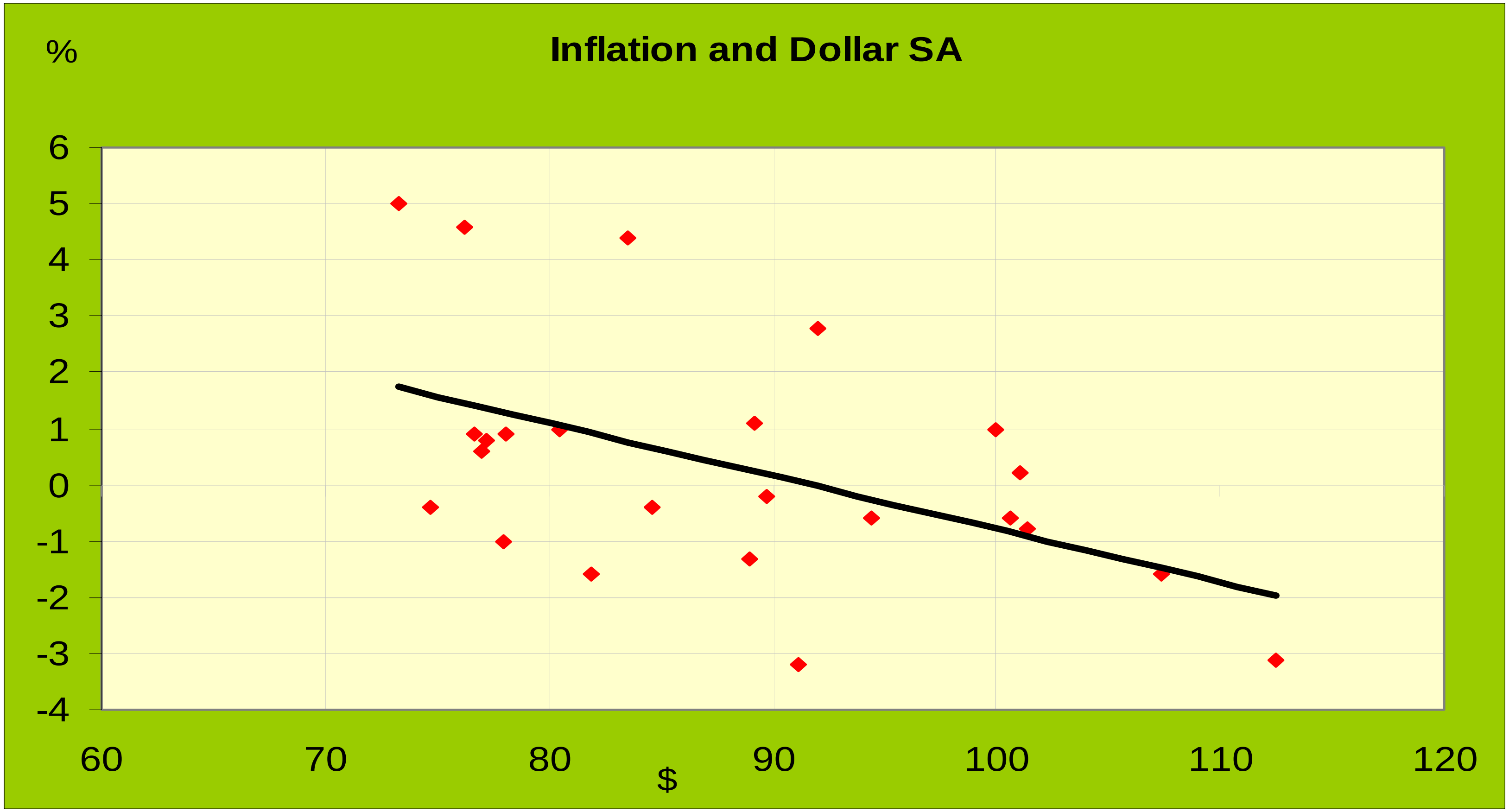
Inflation and Oil Prices (Saudi Arabia)



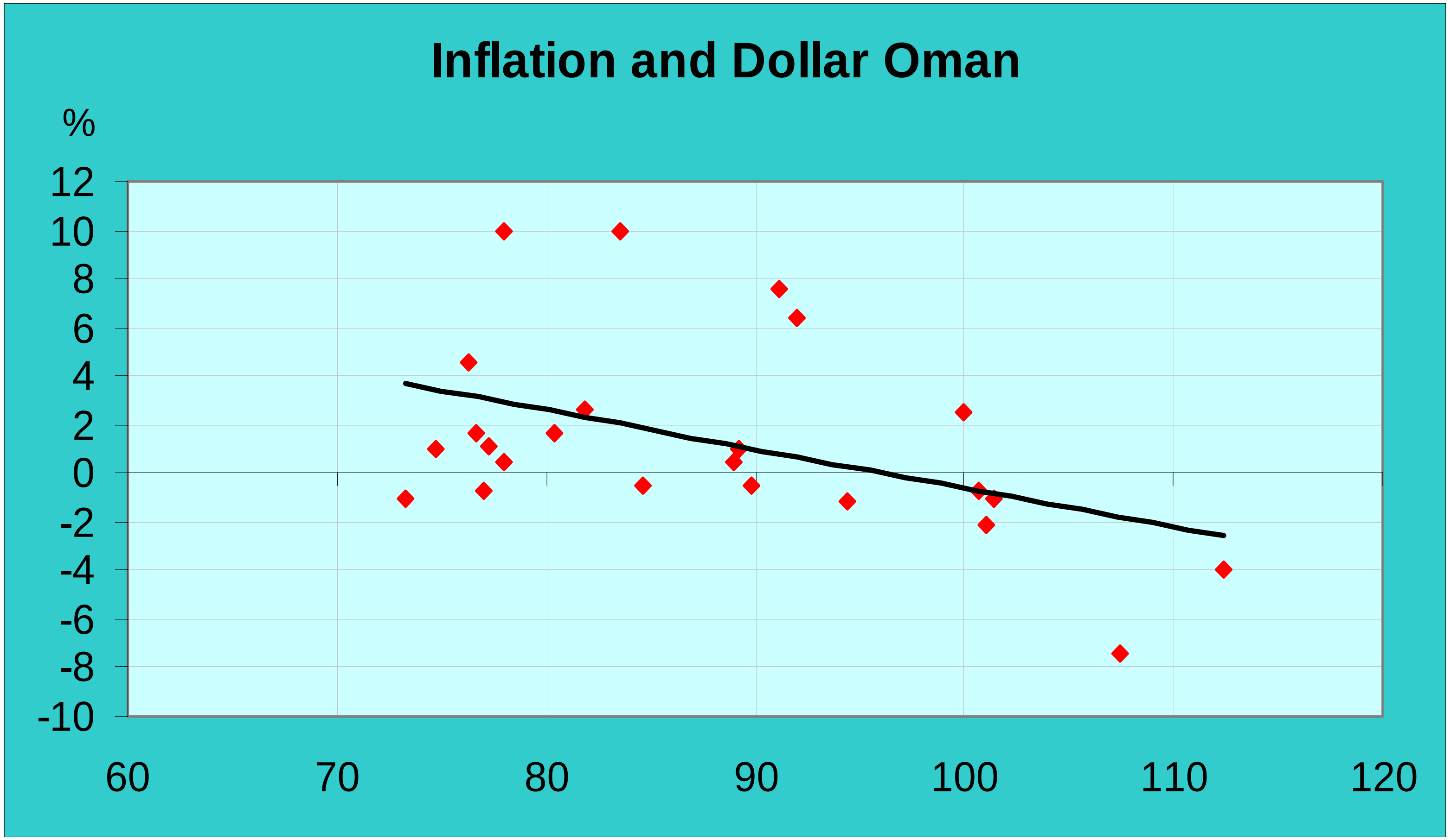
Inflation and Oil Prices (Oman)



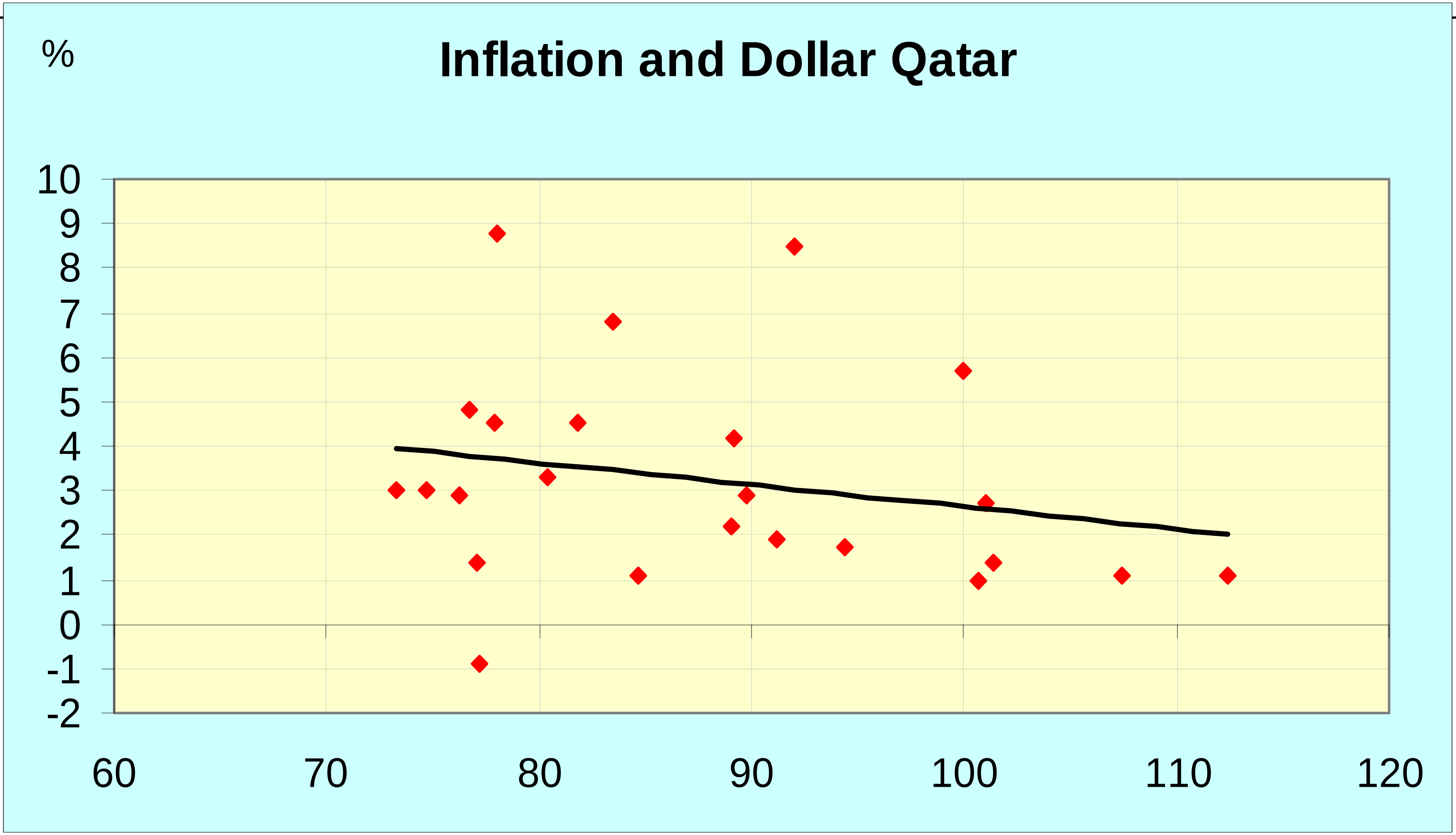
As the dollar increases, inflation decreases: Saudi Arabia



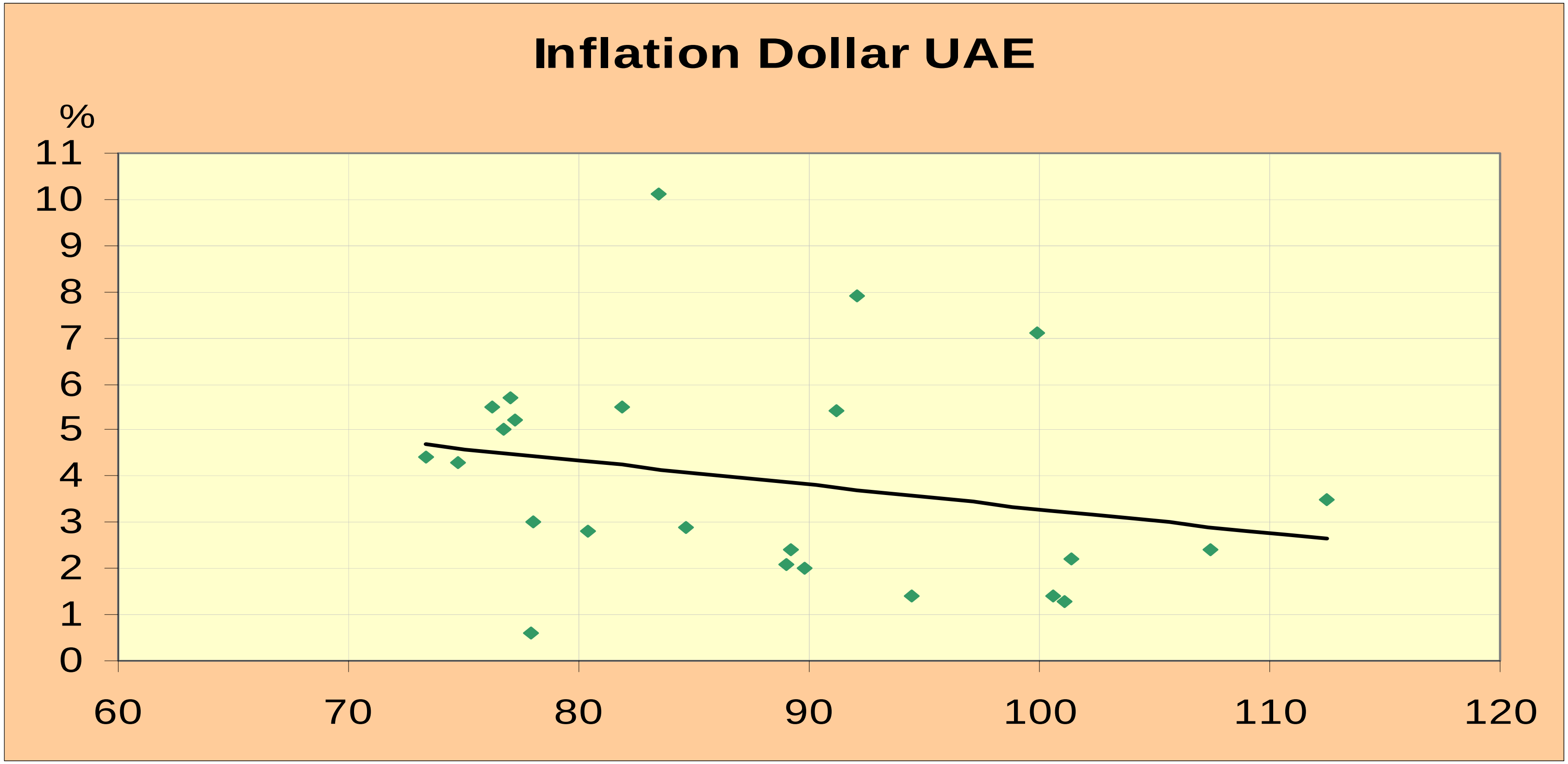
Oman


Inflation and Dollar Oman
%
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
60
70
80
90
100
110
120

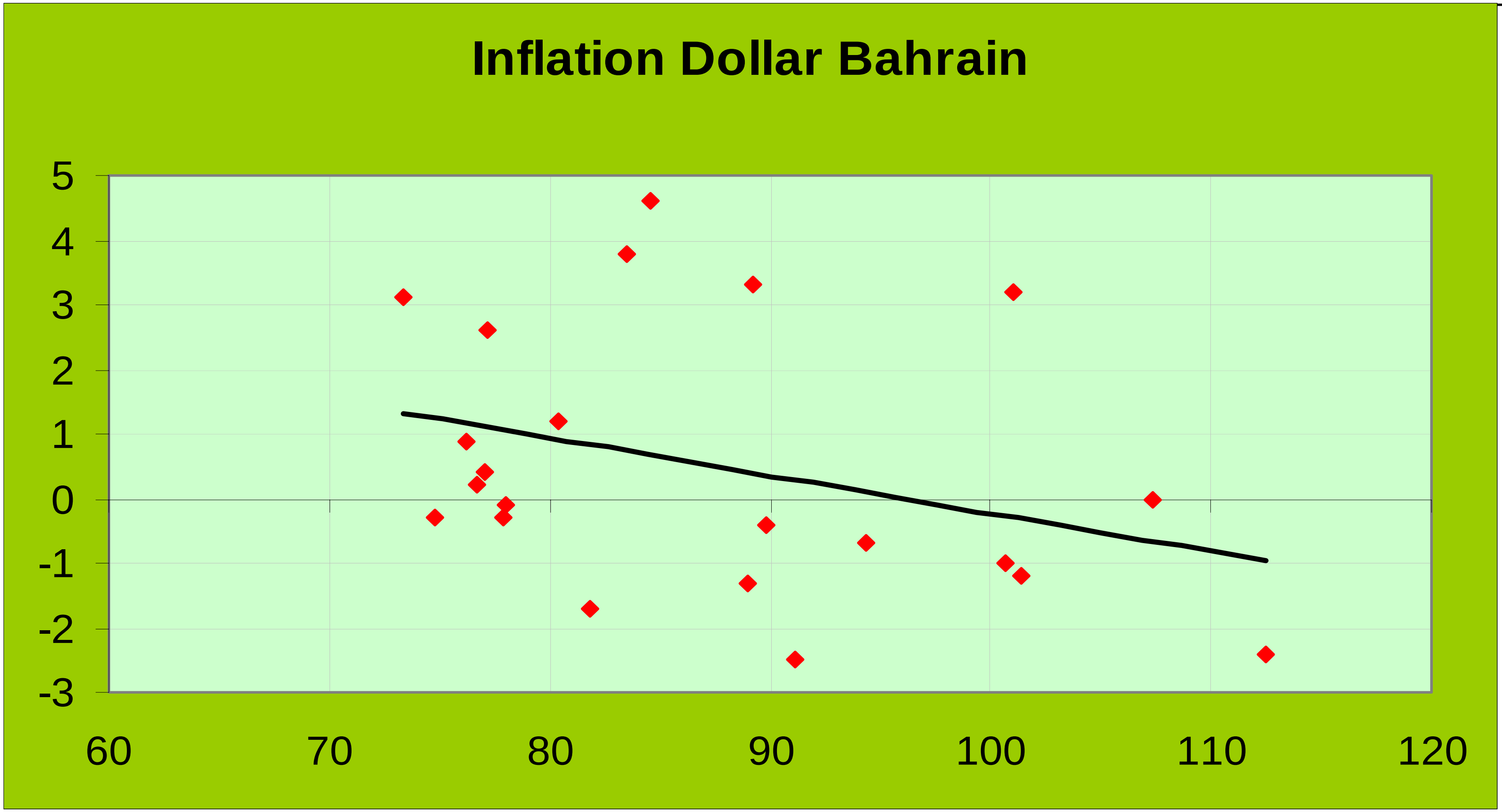
Qatar


%
Inflation and Dollar Qatar
10
9
8
7
6
5
4
3
2
1
0
-1
-2
60
70
80
90
100
110
120

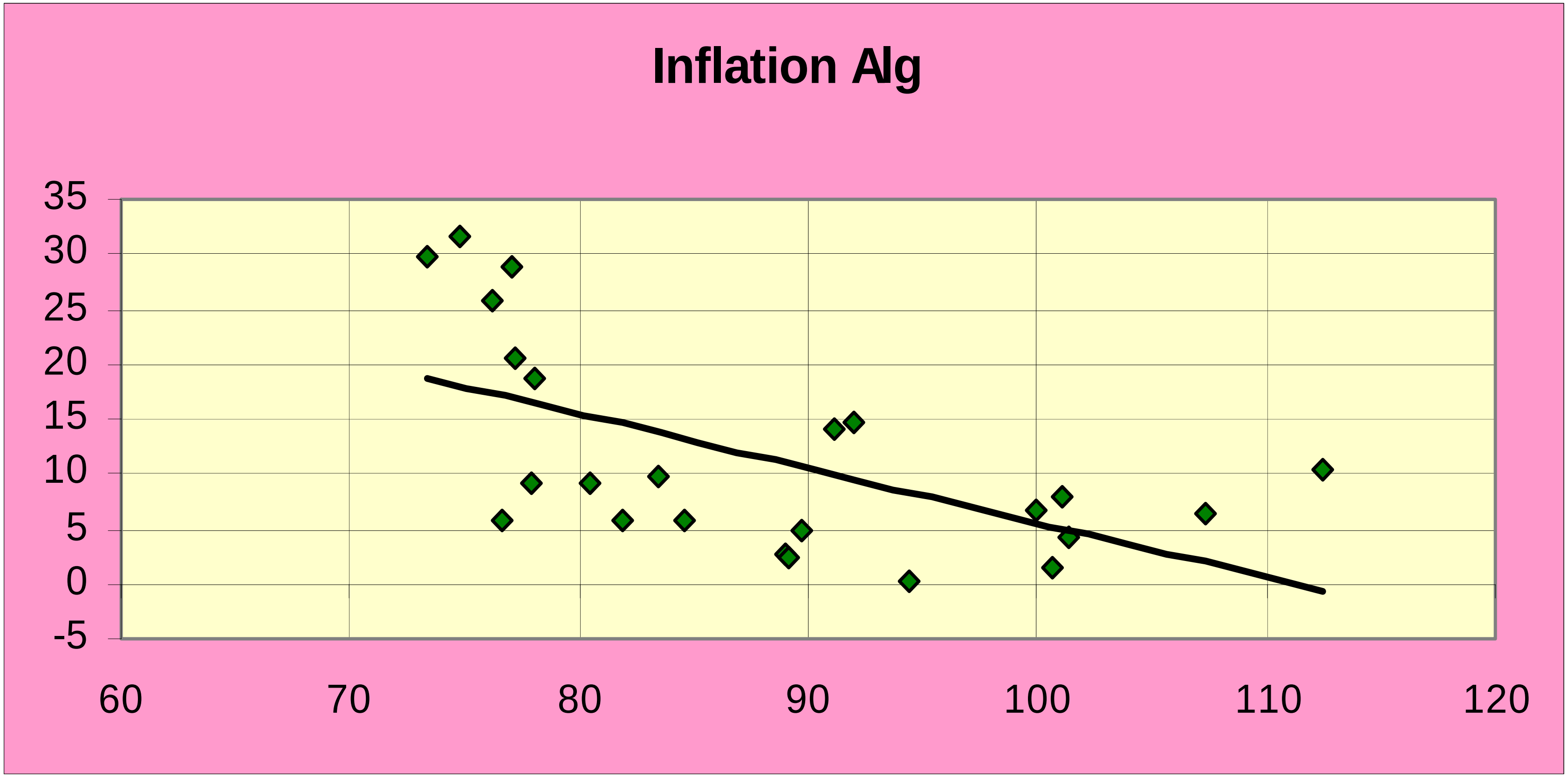
UAE



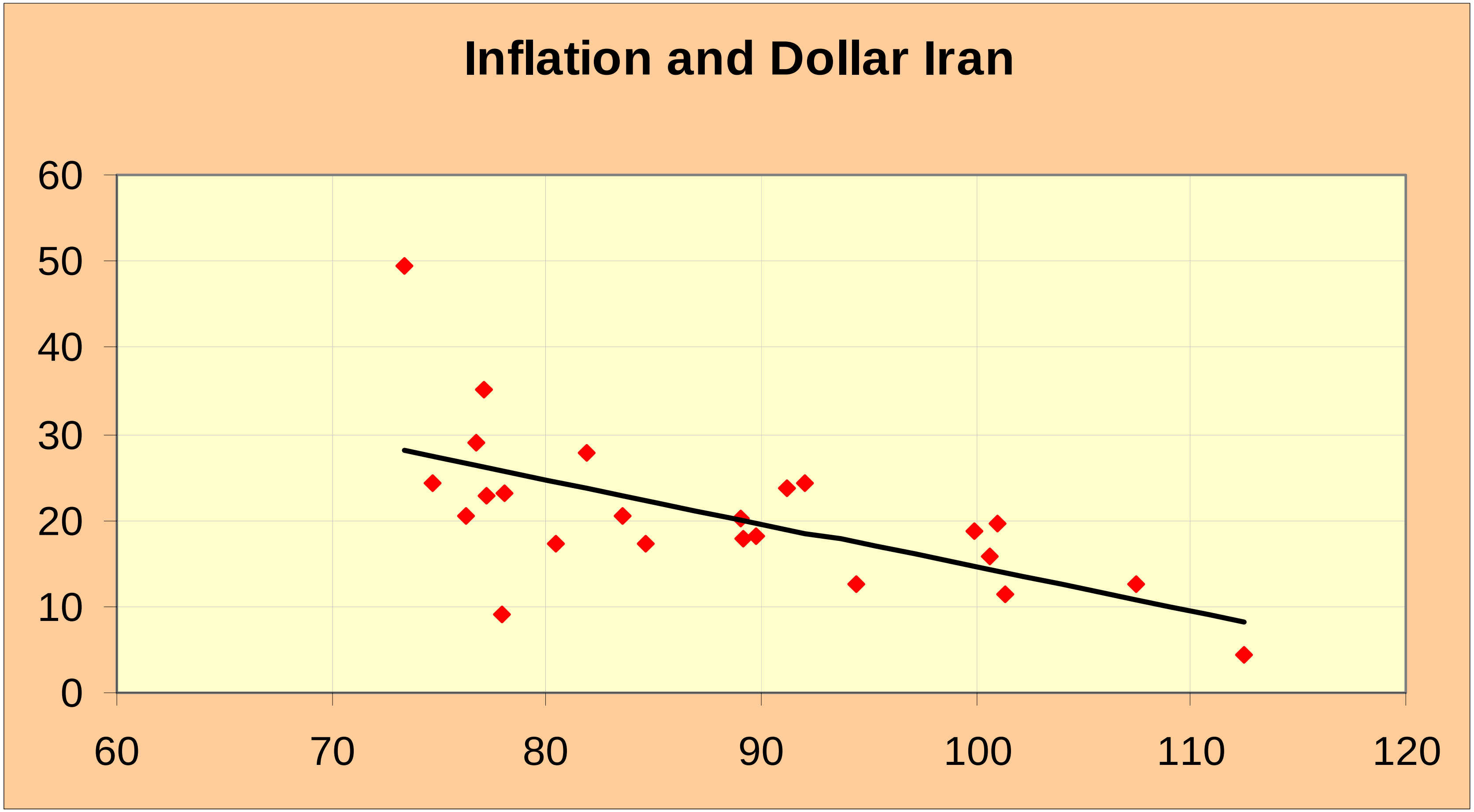
Bahrain



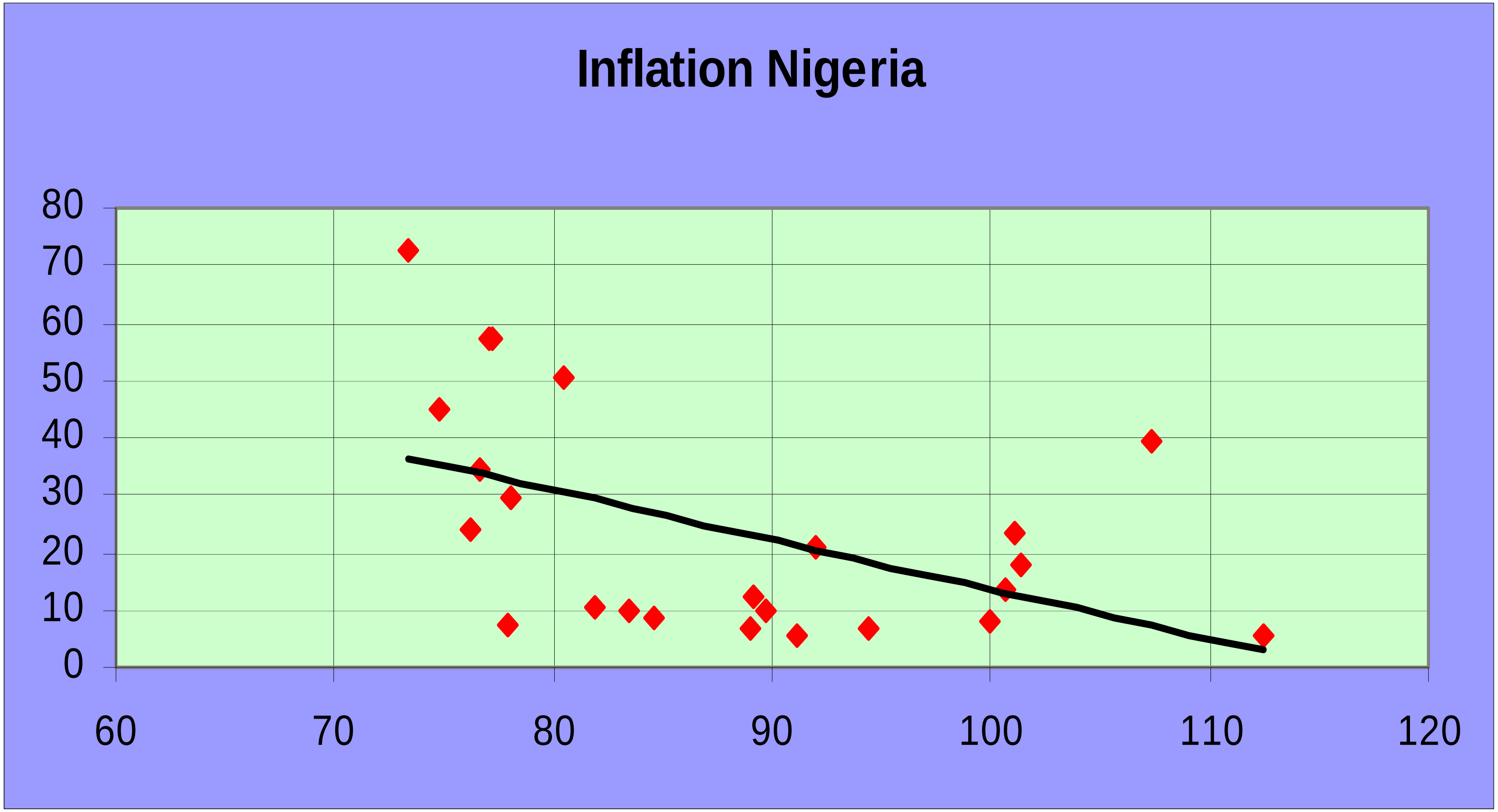
Algeria



Iran

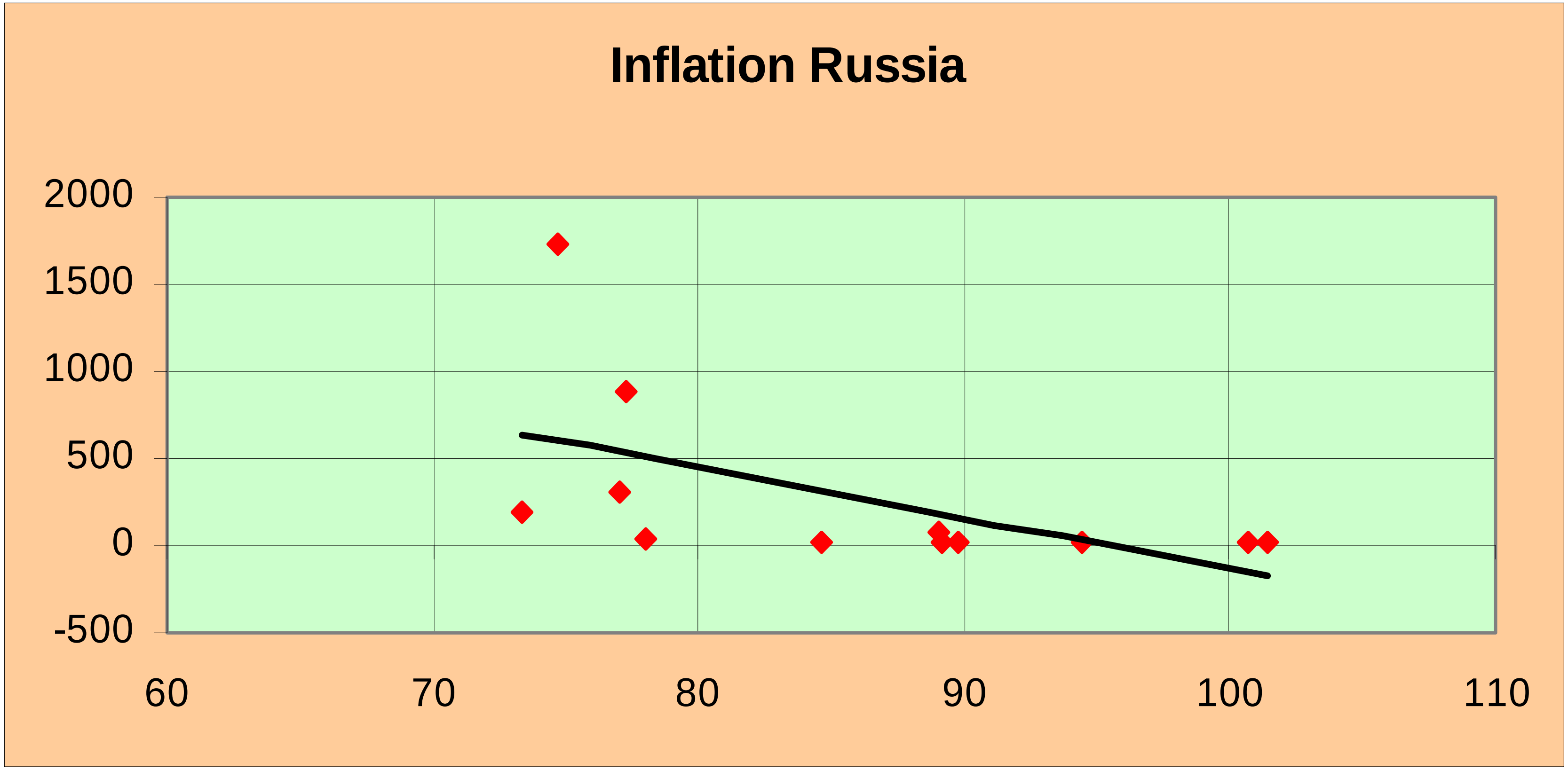

Inflation and Dollar Iran
60
50
40
30
20
10
0
60
70
80
90
100
110
120

Nigeria

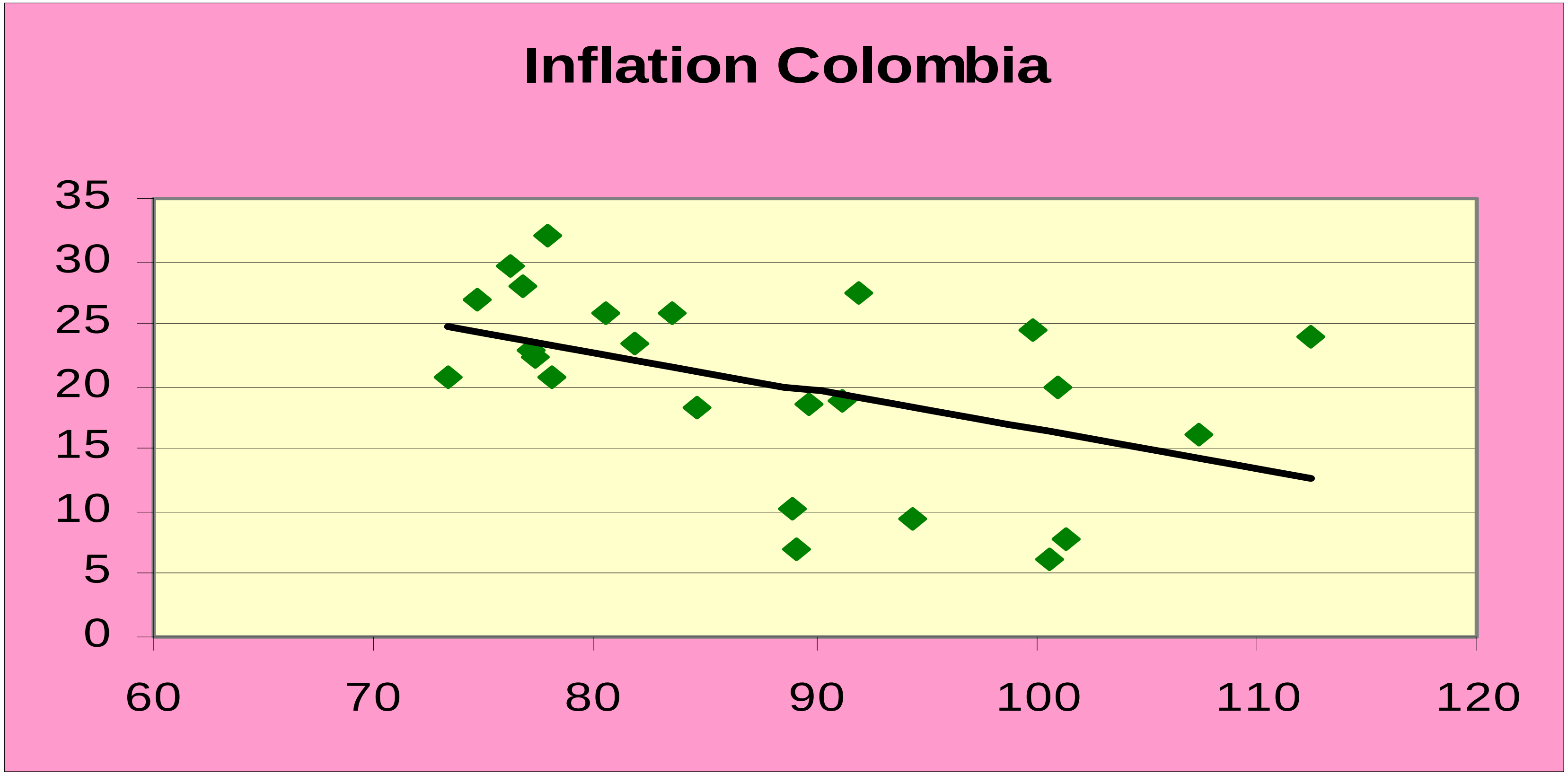


Inflation Nigeria
80
70
60
50
40
30
20
10
0
60
70
80
90
100
110
120

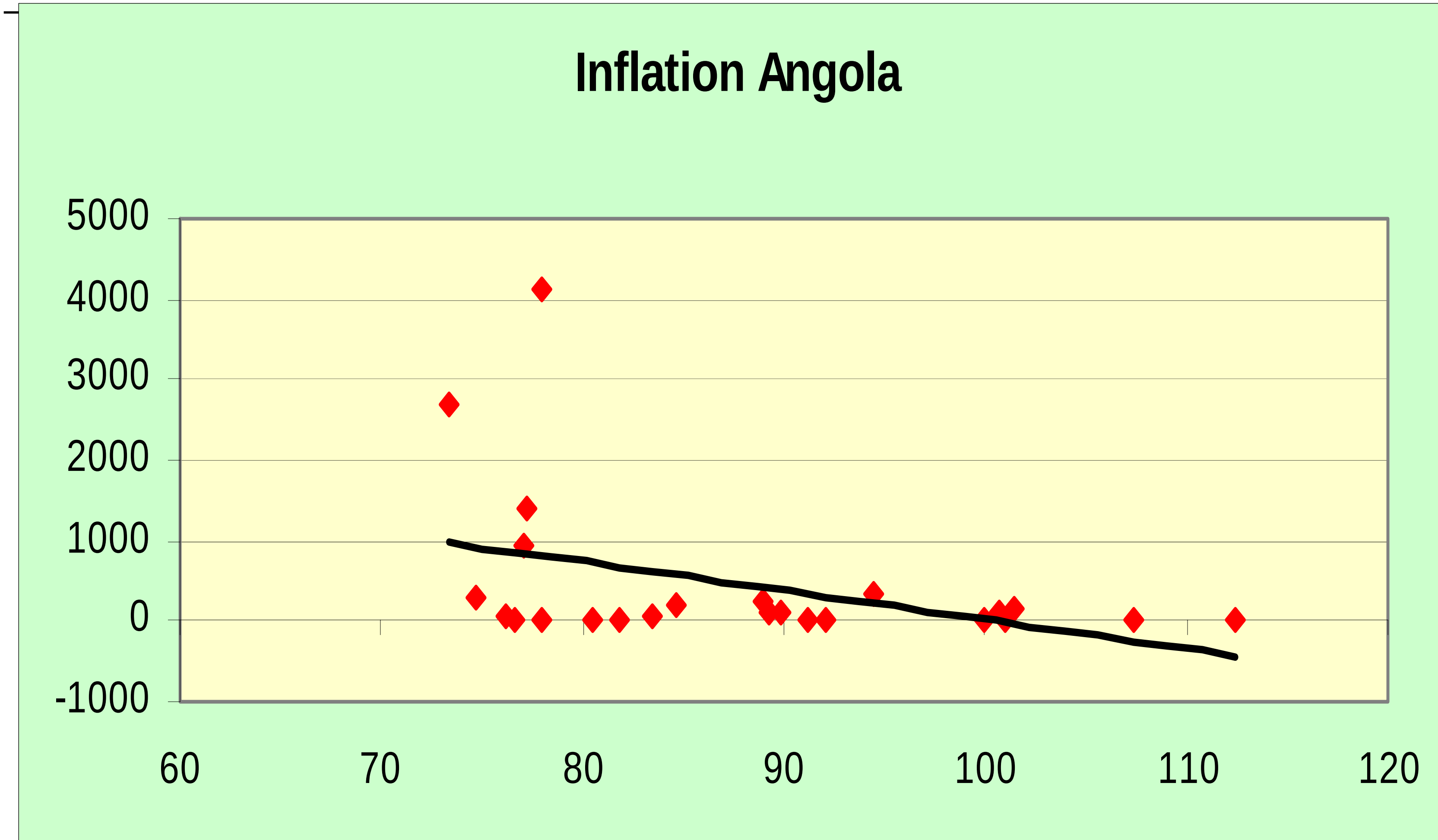
Russia



Colombia



Angola


Inflation Angola
5000
4000
3000
2000
1000
0
-1000
60
70
80
90
100
110
120

Observations

1. **The exchange rate-inflation effect declines as the percentage of oil exports in total exports declines.**

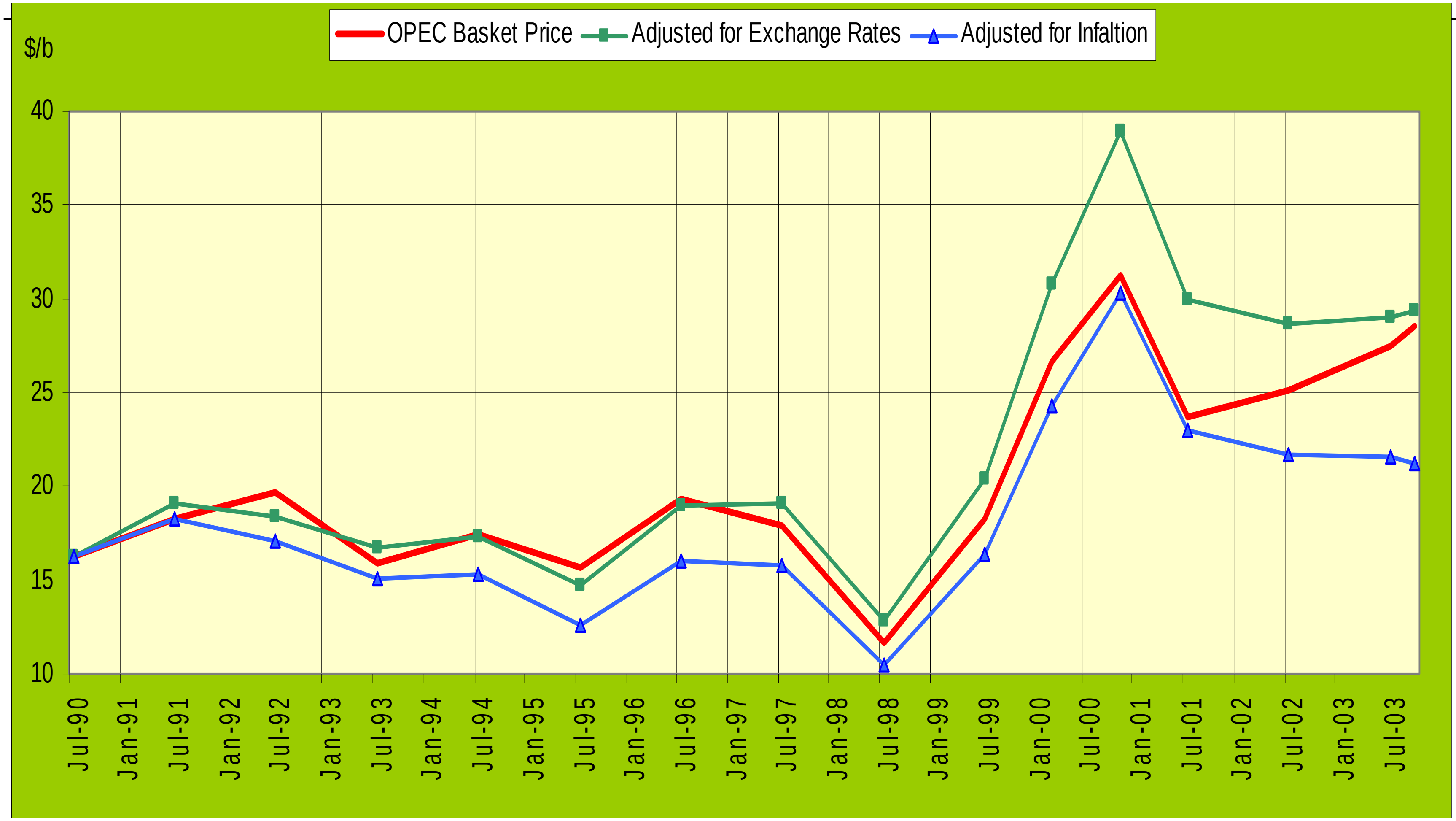
2. The relationship between dollar devaluation and inflation in the oil producing countries does not hold if:

- **The local currency is not pegged to the dollar**
- **The economy is diversified**
- **The dependence on oil is small**
  - Norway, Indonesia, Gabon, and Mexico
  - Out of 18 oil producing countries, only four countries found not have an inverse relationship between the value of the dollar and inflation.

Loss of Purchasing Power

- The Following Figure shows OPEC basket prices (red), prices adjusted for exchange rates (Green), and Prices adjusted for exchange rates and import prices (blue).
- Losses due to import prices are much larger than losses (some times gains) due to exchange rates.
- OPEc should address import prices rather than currency exchange rates!

Loss of Purchasing Power

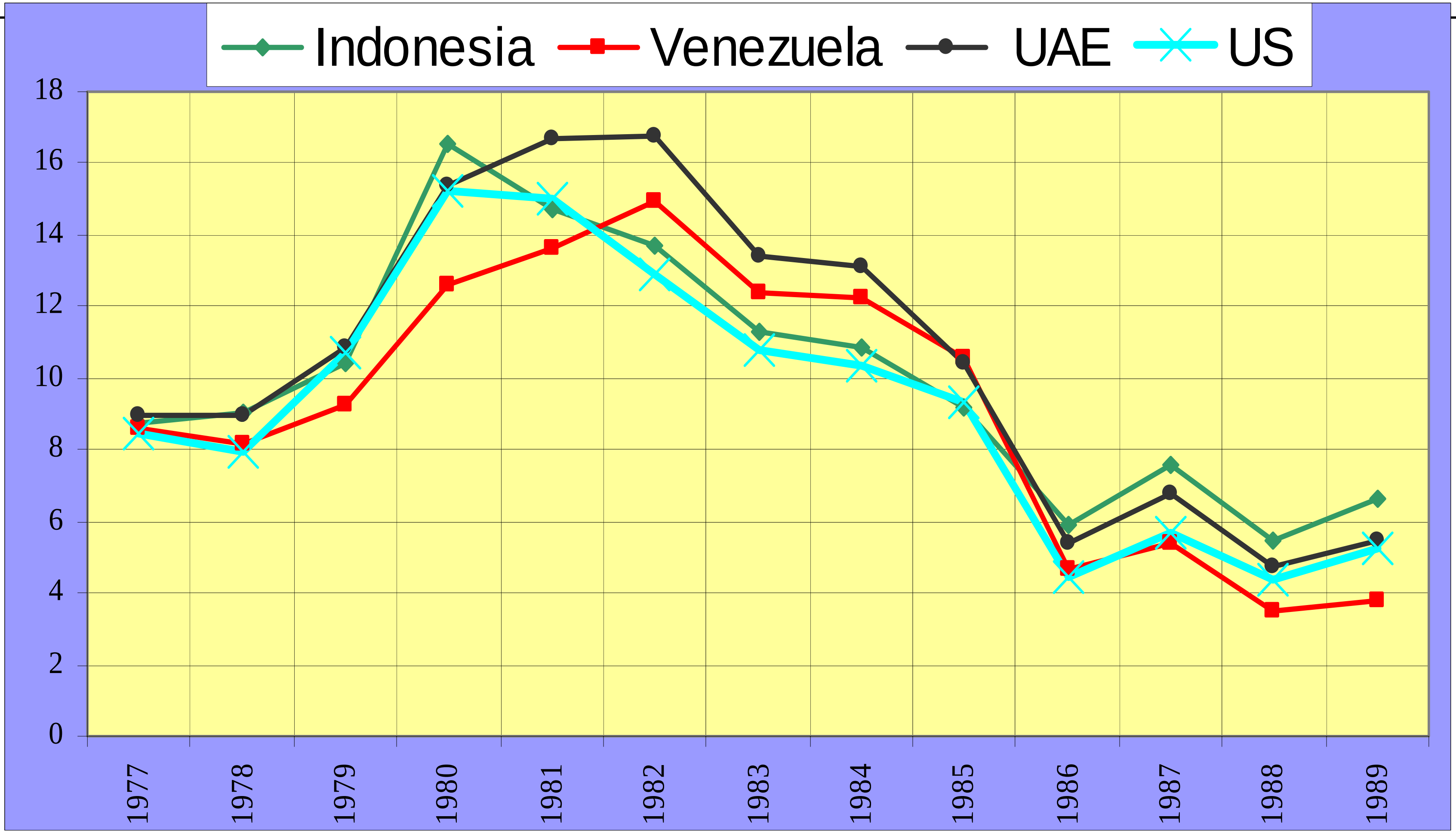


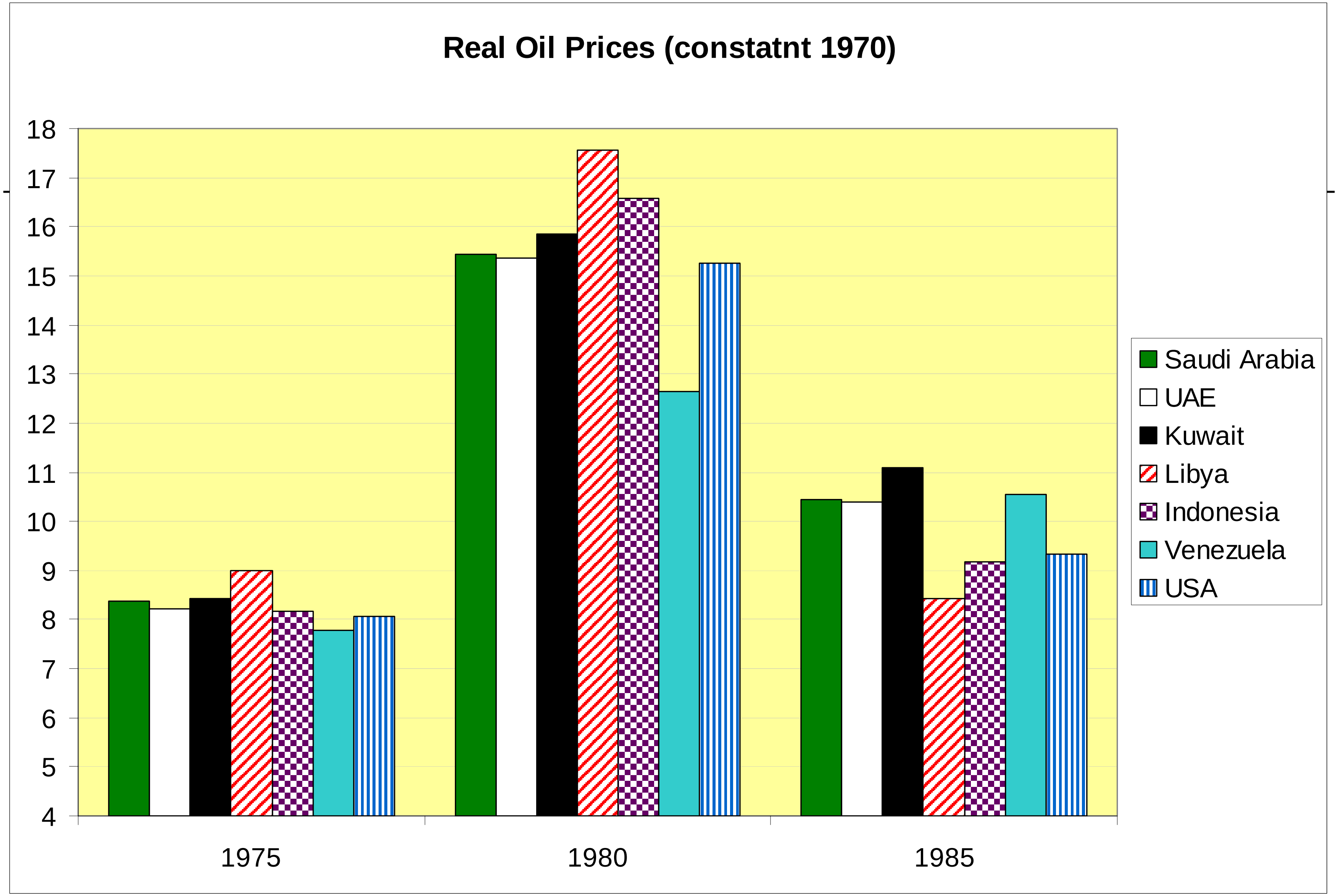
Loss of Purchasing Power

- **The following two Figures show oil prices after adjusting them for purchasing power (adjusted for import prices and exchange rates) for three OPEC members. The US real price of oil (adjusted for US inflation) is added for comparison.**

- **OPEC members have different trading partners. Therefore, the effect of dollar devaluation differ from one country to another.**

Purchasing Power Oil Prices




Real Oil Prices (constatnt 1970)
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
1975
1980
1985
Saudi Arabia
UAE
Kuwait
Libya
Indonesia
Venezuela
USA

Results

- Dollar depreciation reduces activities in upstream through different channels including lower return on investment, increasing cost, inflation, and purchasing power
- Dollar devaluation increases demand in countries with appreciated currencies because of increase in purchasing power.
- Dollar devaluation increases demand in the US as tourists prefer to spend their vacations in the US.

Results

- Studies that focus on demand elasticities must use oil prices denominated in national currencies, not in US dollars.
- Studies that focus on the relationship between energy prices and economic growth must use oil prices denominated in national currencies, not in US dollars.
- Exchange rates may explain several issues in international energy markets that researchers are not able to sort out or agree on.