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TRINIDAD & TOBAGO

Dutch Disease in Trinidad & Tobago: Then and Now

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Dutch Disease

- 1959 – Discovery of a large gas field in the Netherlands led to a slump in other economic sectors, particularly manufacturing.
- Natural resource boom leads to a large inflow of foreign currency.
- Local currency strengthens relative to other countries.
- Exports become more externally uncompetitive.
- Manufacturing sector becomes less competitive, and declines as a result.

Dutch Disease Model

- **1982** – First economic model developed to describe Dutch Disease – Corden and Neary

**Booming
Tradeable Sector**
(oil, gas, gold,
copper, cocoa,
coffee)

**Non-Tradeable
Sector**
(services)

**Non-Booming
Tradeable Sector**
(manufacturing,
agriculture)

Dutch Disease Model - Mechanism

- Resource Boom leads to Dutch disease via two effects:
 - Resource Movement Effect
 - Spending Effect

Dutch Disease Model - Mechanism

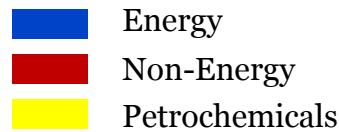
- **Resource Movement Effect:**
 - Increased demand for labour in booming sector
 - Wages increase in booming sector
 - Labour migrates from non-booming tradables sector to booming sector
 - Production declines in non-booming tradables sector.
 - This effect not significant in hydrocarbon booms since the sector accounts for a small share in total employment

Dutch Disease Model - Mechanism

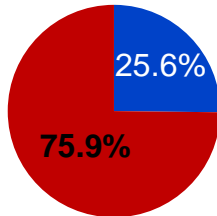
- Spending Effect:
 - Increased revenue from booming sector
 - Increased demand for non-tradable goods (services)
 - Demand for labour increases in non-tradable sector. Wages increase in that sector
 - Labour migrates from non-booming tradable sector to non-tradable sector
 - Price of non-tradable goods increases relative to tradables.
 - REER appreciates
 - Manufacturing sector becomes less competitive

Dutch Disease: Relevant to T&T?

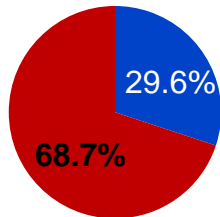
Trinidad & Tobago: Sectoral Contribution to Real GDP



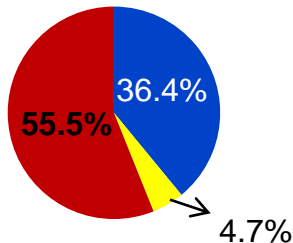
1966



1990



2011



Source: CSO

Economic Contribution – Energy Sector, 2011

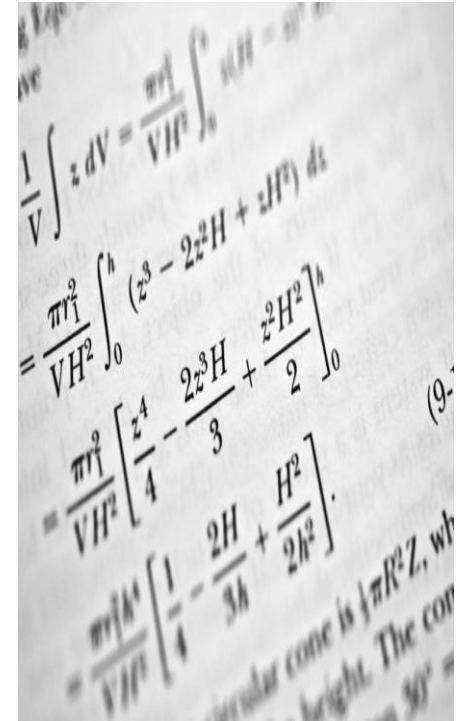
% of Nominal GDP	46.8
% of Government Revenue	57.5
% of Exports Receipts	82.3
% of Total Employment	3.0

Sources: CSO and Ministry of Finance

In Trinidad and Tobago, the heavy concentration in energy warrants a check-up for Dutch Disease effects.

Trinidad & Tobago presented a “classic” case

- i. A large oil sector with a boom in 1970s
- ii. Transmission via government budget
- iii. Relative prices changed in favor of nontradeables
- iv. Factor rewards followed suit
- v. Factors moved into nontradeables
- vi. (Non-booming) tradeables sector squeezed
- vii. Post-boom problems due to rigidities—not easy to reverse patterns created during boom times!



e.g. Hilaire, “The Effects of Trinidad & Tobago’s Oil Boom on Relative Prices, Wages and Labour Flows”, *Social & Economic Studies* (1992)

So what's the story 25 years later?

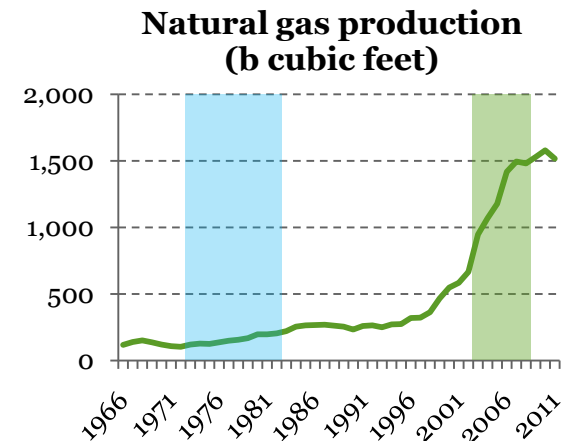
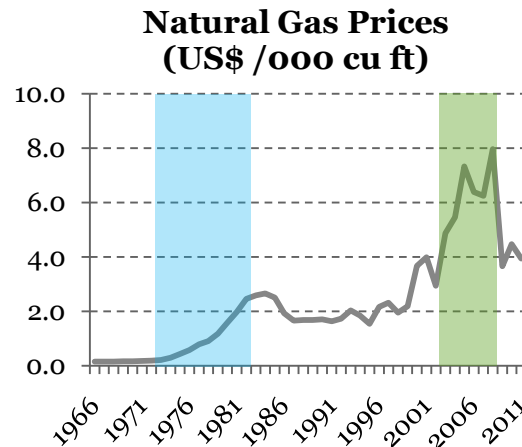
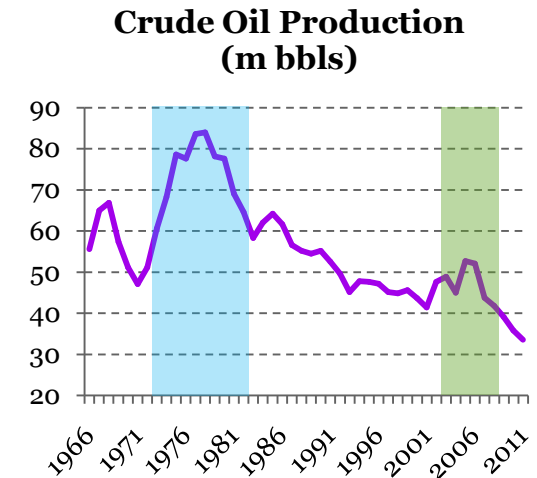
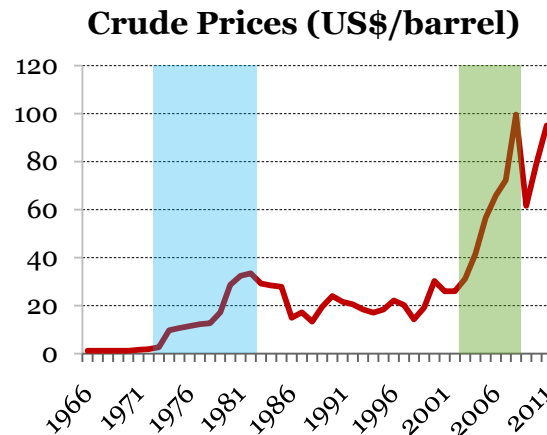
- There was another boom in the 2000s.
- Did the Dutch disease hit again?*
- In answering this let's compare:
 1. Characteristics of the 2 booms
 2. Fiscal activity
 3. Relative price changes and extent of real appreciation
 4. Wage and labour movements
 5. Changes in the structure of the economy
- Based on this, let's see what lessons there could be for the future.



*A related question is posed by Céspedes and Velasco “Was this time different?: Fiscal Policy in Commodity Republics” , mimeo September 2011.

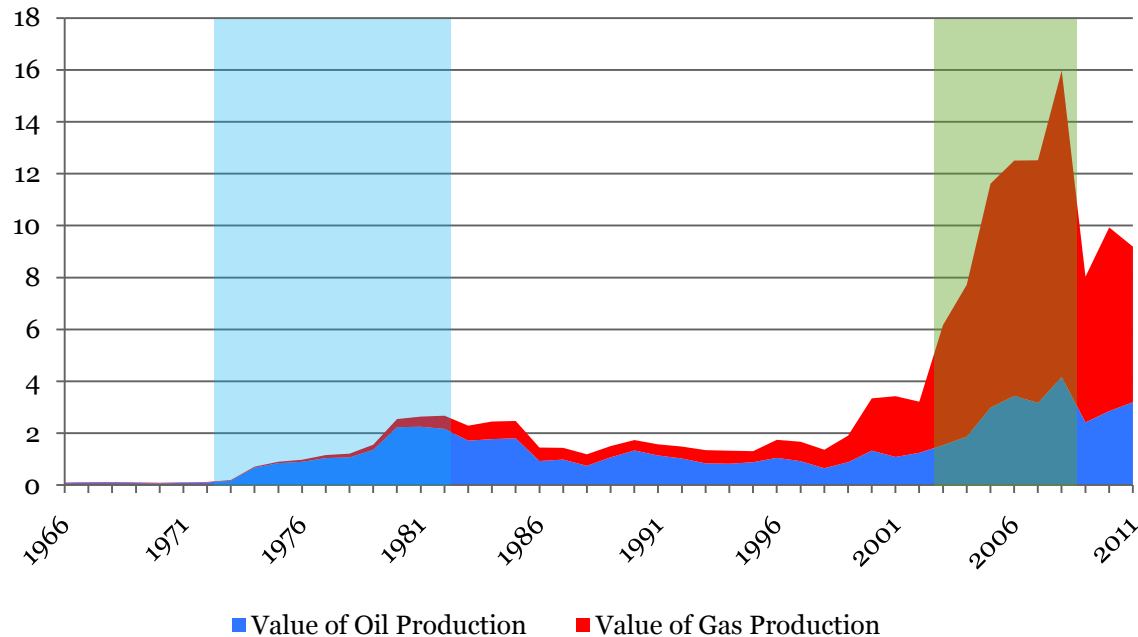
1. There were similarities but also differences in the origin of the second boom

- Boom I (73-82) was based on an oil price shock and incorporated an increase in oil production
- In boom II (02-08) oil prices also jumped but oil production slipped
- Moreover in boom II there was a surge in natural gas production and prices.



Overall, the gas effect dominated boom II

Value of Oil and Gas Production (US\$ b)



- Boom II was also shorter and less ‘intense’ than boom I:
- Average value of oil/gas production in boom I was 1,302% above the preceding 3-year average; in boom II it was 233% above the preceding 3-year period.

Volatility

- Volatility measure – Coefficient of variation

$$\text{Coefficient of variation} = \frac{\sum (x_i - \bar{x})^2}{\bar{x}}$$

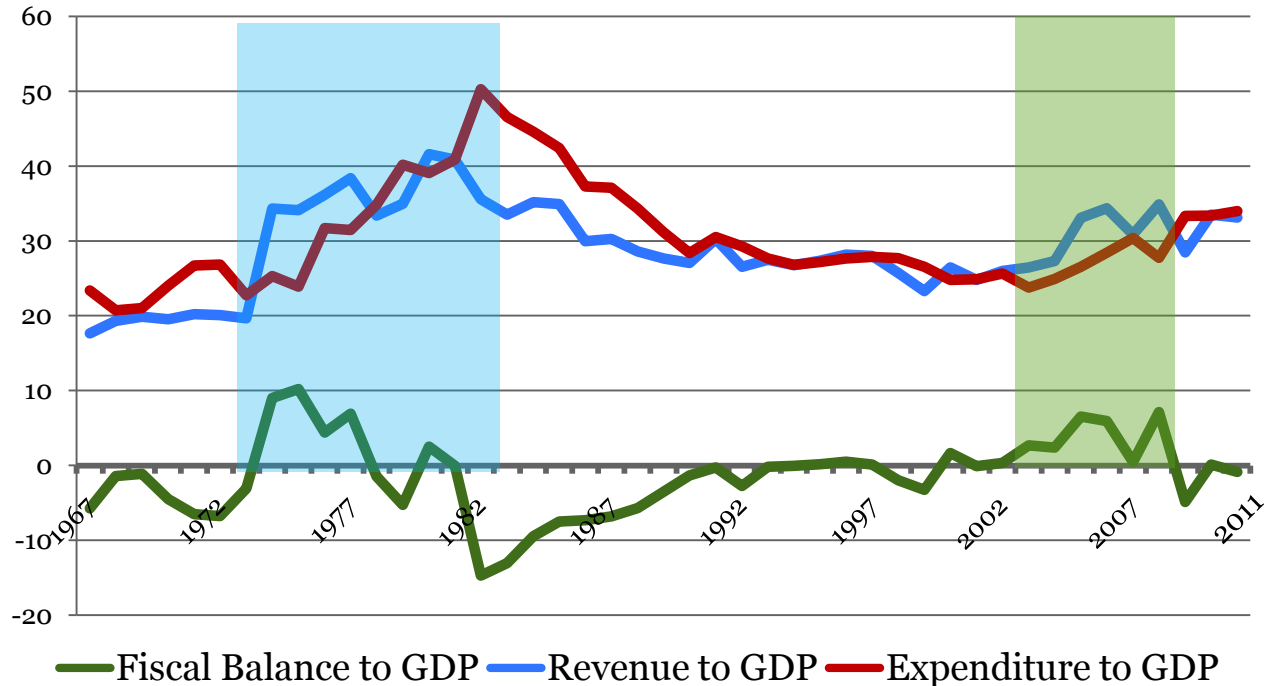
Coefficient of Variation of value of oil and gas production	
Periods	CV value
1970-1972	14.9
1973-1982	60.4
1983-1985	4.1
2000-2002	3.2
2003-2008	32.2
2009-2011	10.6

The measure of volatility showed that boom II was less volatile than boom I.

Overall, boom I was longer, more intense and volatile than boom II.

2. Fiscal policy remained countercyclical

Fiscal Operations/GDP (%)



- In both cases, revenue jumped immediately
- The increase in expenditure occurred with a lag
- For the most part surpluses were built up during the boom episodes.

2. Fiscal policy remained countercyclical

Formal model used to test for countercyclical fiscal policy

$$\Delta \log f_t = \alpha + \beta \Delta \log v_t + u$$

Where: f = the ratio of total expenditures/revenues.

v = value of oil and gas production.

$$\Delta \log \hat{f}_t = 0.03 - 0.31 \Delta \log v_t$$

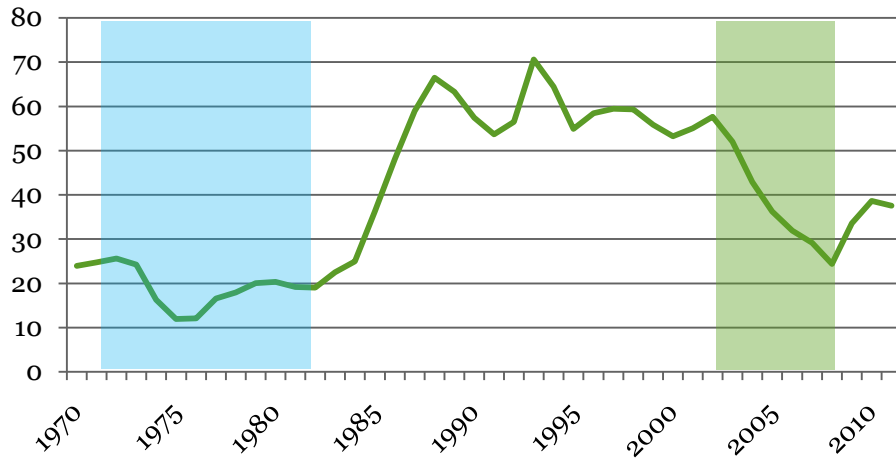
$$(0.02) \quad (0.06)$$

$$(1.3) \quad (-4.8)$$

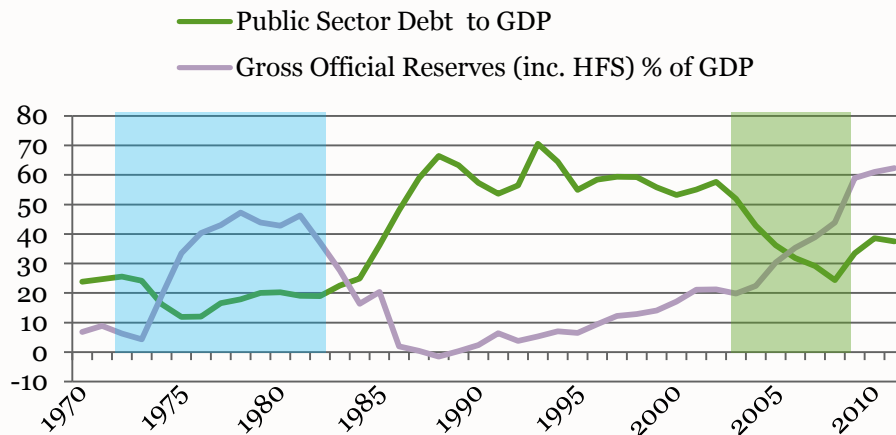
The β coefficient was negative and highly significant suggesting that fiscal policy was countercyclical.

Fiscal policy appeared to adjust more quickly following boom II

Debt to GDP Ratio (%)

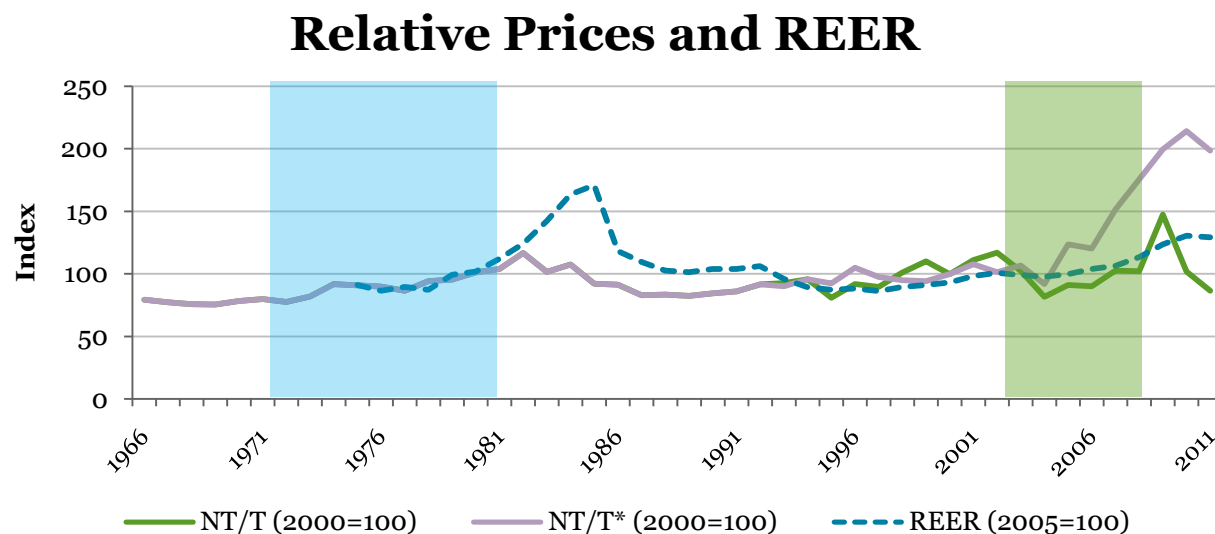


- There was a sharper decline in debt during the second boom episode.
- This suggests measures were taken to avoid some of the volatility experienced in the wake of boom I.



- The approach to building up of buffers was reflected in the path of public debt, international reserves and the setting up of a Heritage and Stabilization Fund.

3. Relative price changes once again favored nontradeables



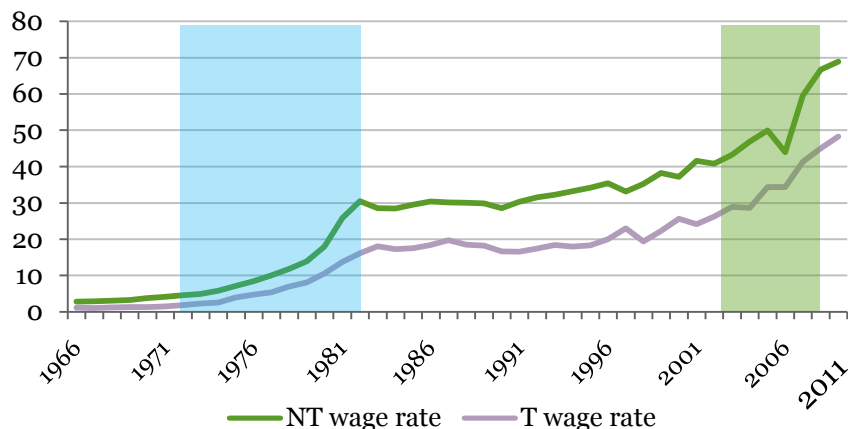
T*- excludes petrochemicals

- Relative prices of non tradables versus non booming tradables rose more sharply in boom 1.
- Without petrochemicals, prices of nontradeables versus non-energy tradeables rose more sharply in boom II than in boom I: 24% compared to 21%.
- Real effective exchange rate appreciation was also less in boom II partly because of the flexible exchange rate regime.

4. Wage differentials encouraged more workers into nontradeable activities

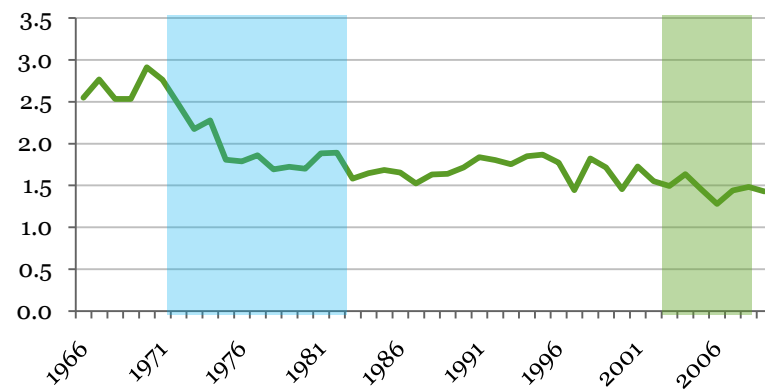
Wage Differentials

Wages - Tradeable and Non-tradeable Sectors
/ \$TT '000 per year /



Relative Wages

Relative Wages (WN/WT)

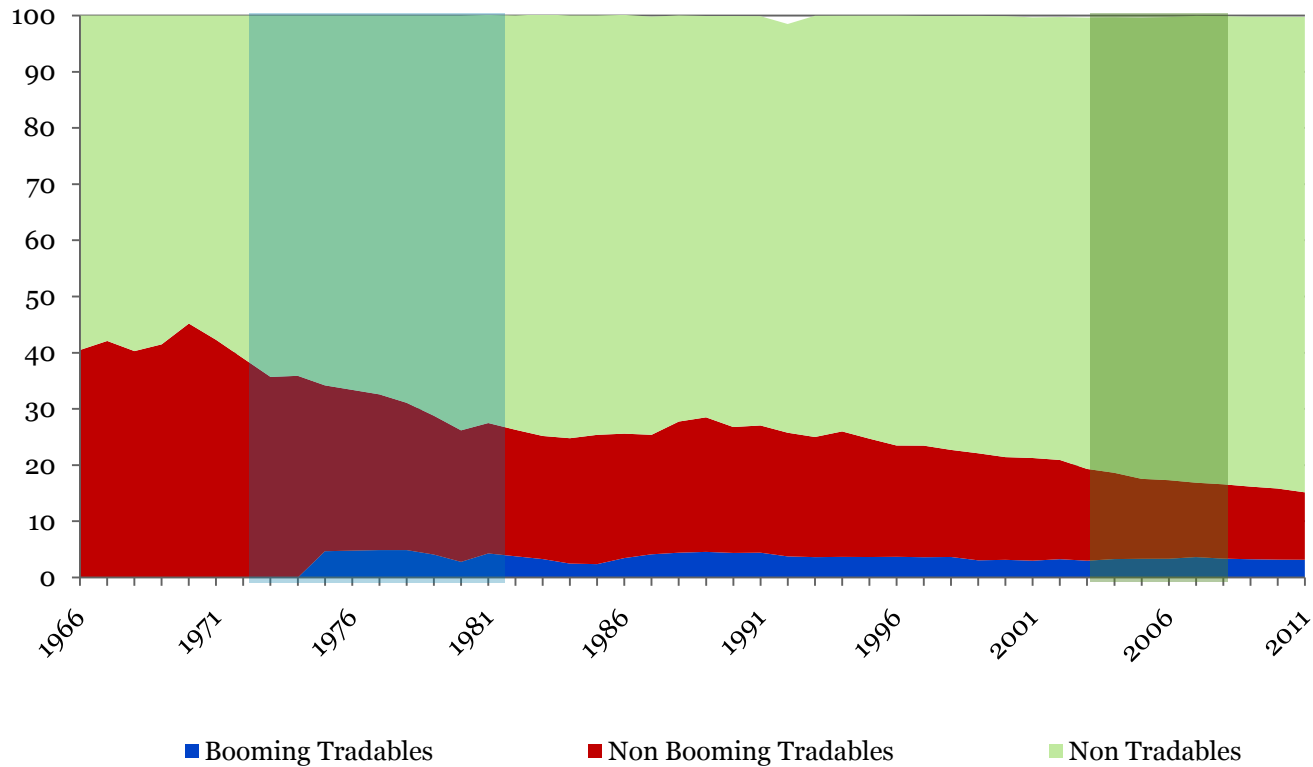


- The wage differential widened and this provided the incentive for a further movement of labour towards non tradeables.

However, wages in the non tradeables relative to tradeables trended downward.

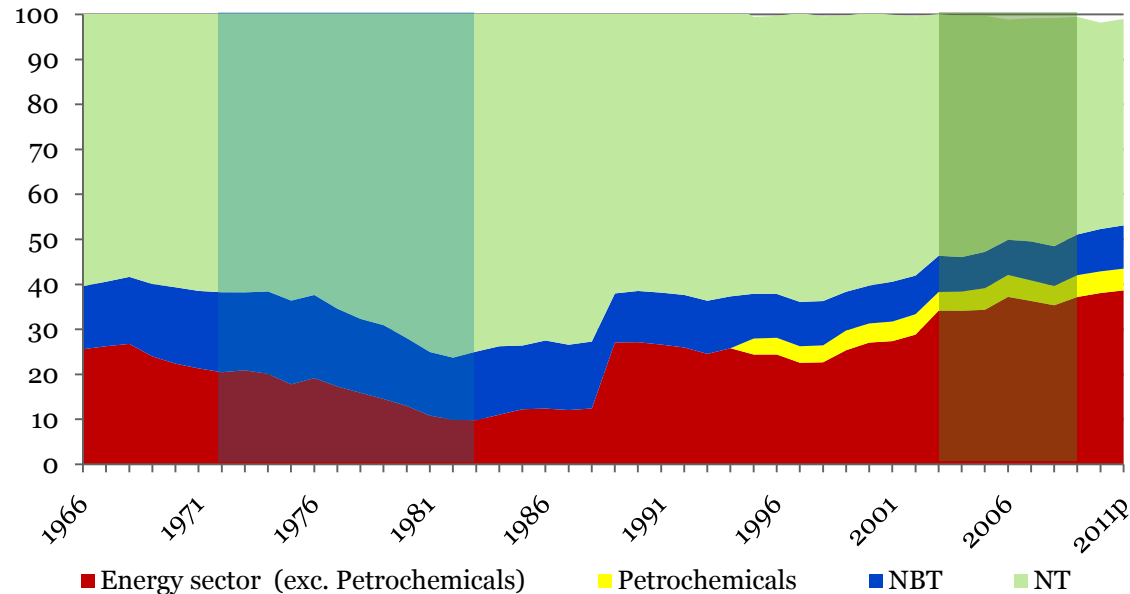
Workers Moved Into Non-Tradeables

Sectoral Share in Total Employment



5. Tradeable productive activities did not cede ground to nontradeables in boom II

Sectoral Contribution to Real GDP (%)



- In boom I, ‘tradeables’ (NBT) comprised mainly agriculture and manufacturing.
- In boom II, not only did this ‘traditional’ tradeables sector not lose much ground but there were new tradeables added—mainly petrochemicals.

Some reasons for this difference:

- The characteristics of manufacturing had changed markedly over the course of the booms, in particular:
 - in boom I manufacturers operated under heavy protective barriers (negative lists, other import restrictions etc.);
 - by boom II they had become open to international competition and the extent of real appreciation was lower.
- By boom II, public investment in natural gas based industries—petrochemicals, iron and steel etc.—had added to the range of tradeables being produced.
- These new industries benefitted from a comparative advantage in natural gas production, but their link to energy output could also potentially represent a longer term vulnerability.

Overall, how do the two booms compare?

1. Boom 2 was shorter, more based on natural gas than oil and less 'intense' and volatile than boom 1.
2. Fiscal policy was countercyclical across episodes, with greater savings helping to build stronger buffers at the end of the second boom.
3. The extent of real exchange appreciation was less in boom II.
4. Wage movements in both booms favored nontradeables and helped to attract laborers to these activities.
5. By boom II, the existence of a tradeables sector that was more open to competition as well as new natural gas based industries helped to limit the potential squeeze to tradeables activities predicted by the core model.



Thank you for your attention.