Globalisation and Inflation in OECD Economies

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Globalisation and the Macroeconomy
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Over the past 25 years consumer price inflation has moderated considerably in OECD economies.
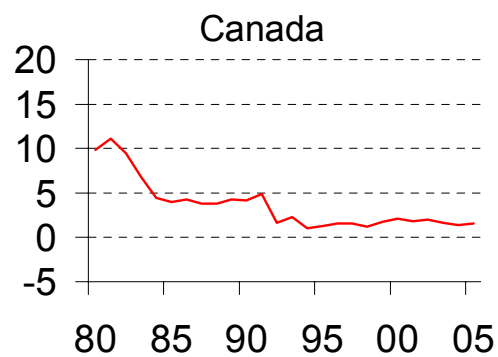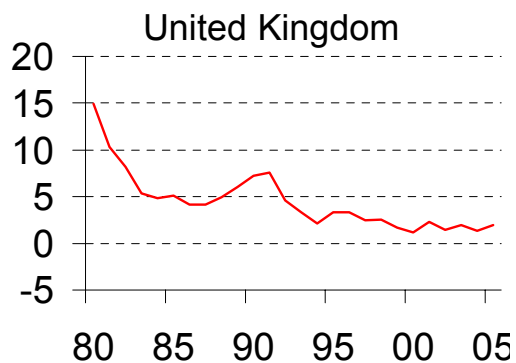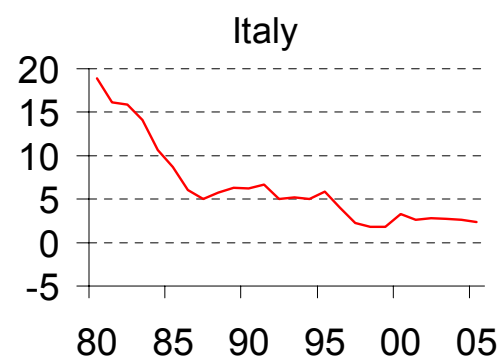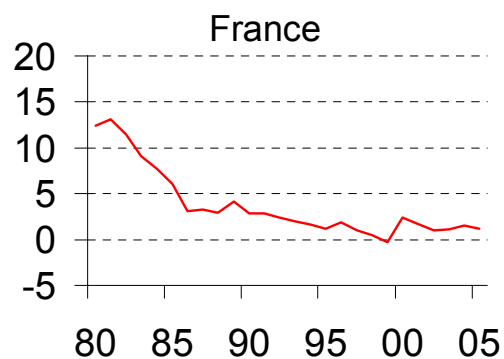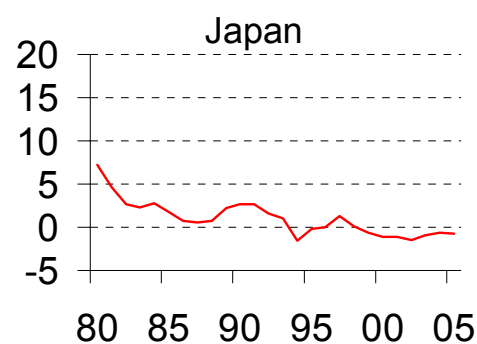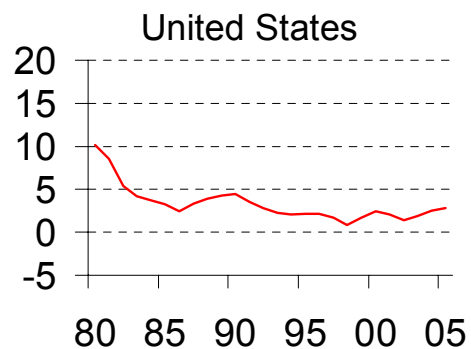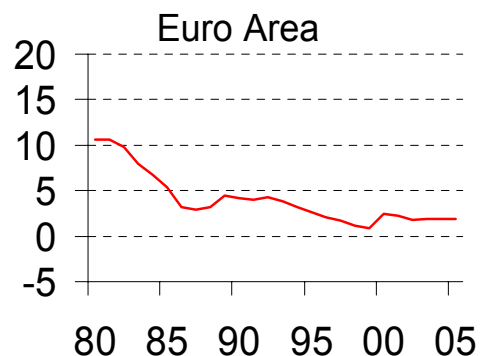
Since 2000 oil and metals prices have risen considerably, but other commodity prices have remained stable.

Real commodity prices
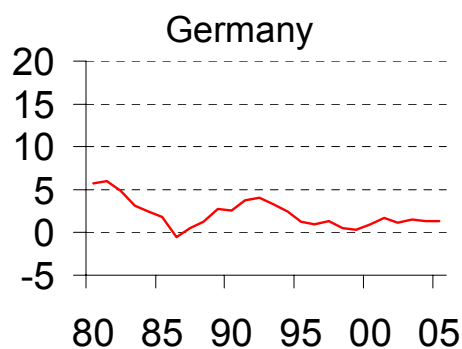### 2000=1; deflated by world export prices in US dollar terms

Left chart legend:
- Oil
- Metals and Minerals

Right chart legend:
- Agricultural raw materials
- Food
- Tropical beverages (right axis)

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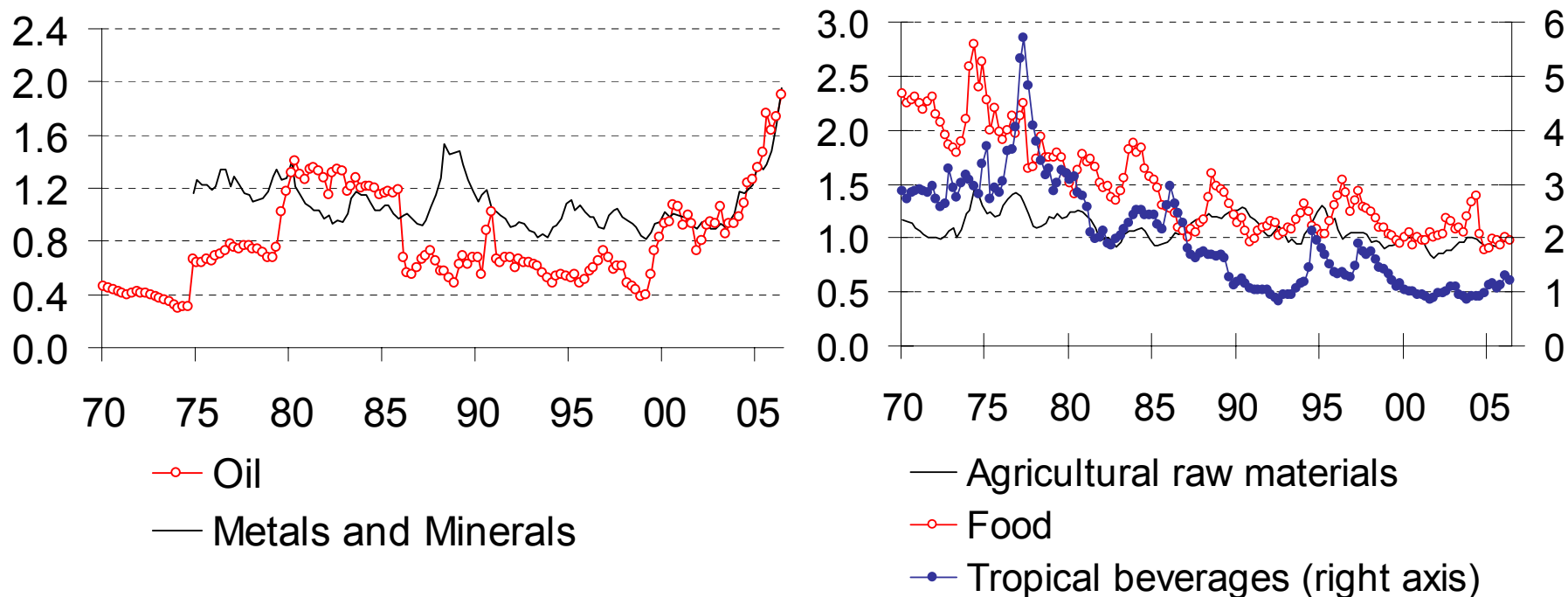
These developments have coincided with a marked rise in the extent of globalisation.

Trade in Goods and Services
Exports plus imports to GDP (current US$)
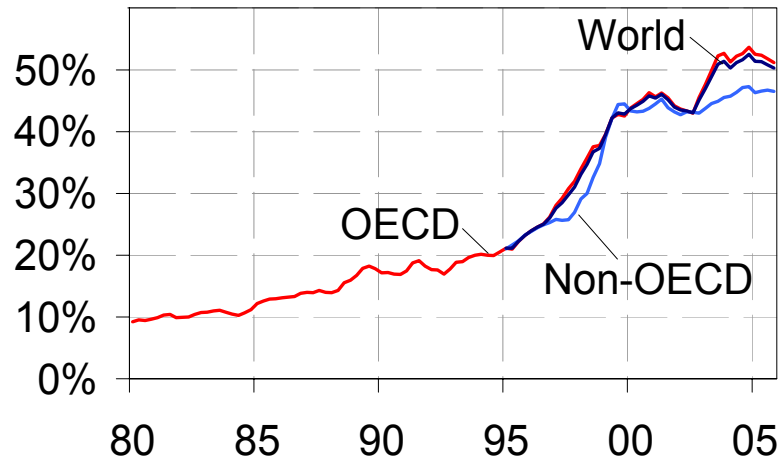
Share of non-OECD countries in total world trade
(percentage points)
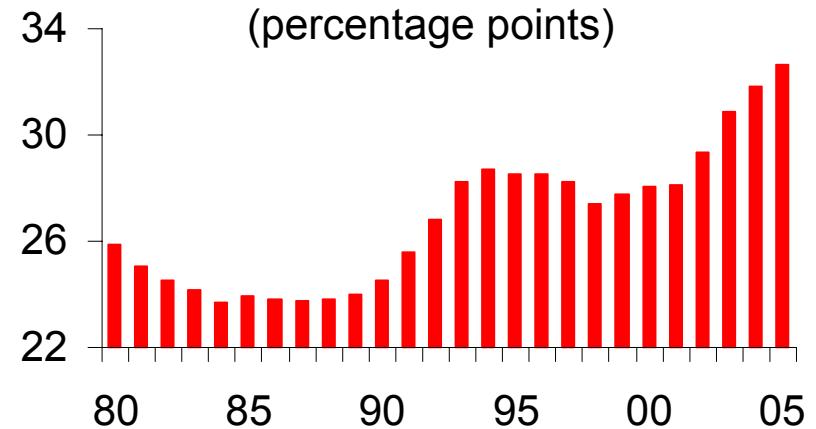
Foreign Direct Investment
Assets plus liabilities to GDP (current US$)
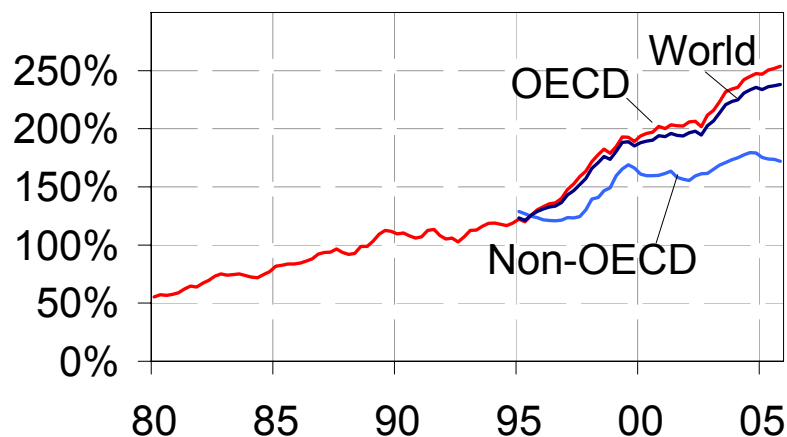
China's commodity demand
(in percent of global total)

Legend: 2002, 2005

Oil*, Aluminium, Copper, Nickel
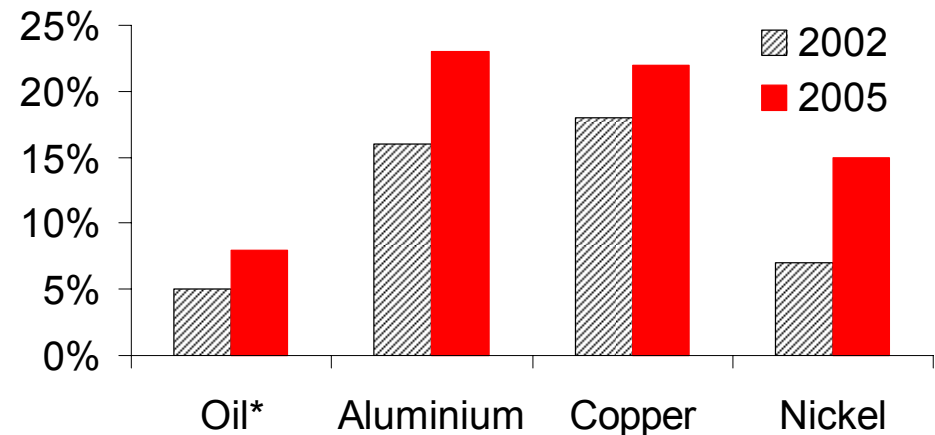
* The figures refer to 1995 and 2005, respectively.

The existing literature points to a number of changes in the inflation process. Some are related to globalisation.

- Enhanced trade integration with low-cost countries has helped to hold down the import prices of finished goods.

- Lower-cost imports pressure competitors to lower their prices.

- Strong globalisation-related growth in non-OECD economies is placing upward pressure on commodity prices (more commodity-intensive production technologies).

- Domestic inflation has become less sensitive to measures of domestic output gaps and more sensitive to measures of foreign output gaps.

- Global competition has reduced the extent to which exchange rate changes are passed through into domestic currency prices.

- Greater policy credibility may have helped to push down inflation persistence in many countries.

The present study contains new empirical work.

- Calculation of the direct impact of rising lower-cost imports from emerging economies on inflation rates in selected OECD economies using a simple accounting framework.

- Analysis of the impact of macroeconomic conditions – including the relatively higher rate of growth in non-OECD economies – on oil and non-oil commodity prices.

  - Quantification of the impact of demand by non-OECD countries through a scenario analysis.

- Empirical analysis of the wider impact of globalisation on consumer price inflation in 21 OECD economies, over 1980-2005.

  - Test whether inflation dynamics changed in the mid-1990s.

  - Quantification of the impact of globalisation on inflation through a scenario analysis that distinguishes the impact of non-commodity and commodity import prices.

Main findings of the accounting analysis.

- The change in the domestic demand deflator can be broken down into an import penetration effect, a relative inflation effect and the change in prices in domestically produced goods:

$$\frac{\Delta P^{DD}}{P_{t-1}^{DD}} = \Delta S\left(\frac{P_t^D - P_t^M}{P_t^M}\right) + S_{t-1}\left(\frac{\Delta P^D}{P_{t-1}^D} - \frac{\Delta P^M}{P_{t-1}^M}\right) + \frac{\Delta P^D}{P_{t-1}^D}$$

  with P^{DD} = domestic demand deflator, P^D = price of domestically produced goods, P^M = price of imported goods, S = share of imported goods in total domestic demand

- The combined impact effect of lower-cost imports from China and other dynamic Asian economies has reduced domestic inflation
  - by 0.1%pt per annum in the United States (1996-2005);
  - by 0.3%pt per annum in the euro area (2000-2005).

The impact of globalisation on commodity prices is analyzed by estimating reduced from price equations.

- Estimation of reduced form price equations for five commodity groups: oil, metals and minerals, agricultural raw materials, food and tropical beverages.

- The equations relate real prices to

  - world GDP,

  - output gaps in OECD economies, non-OECD economies and the world,

  - the US short-term real interest rate,

  - the US dollar real effective exchange rate,

  - non-OECD economies' share in world trade and world GDP,

  - the difference between GDP growth in OECD and non-OECD countries.

The impact of globalisation on commodity prices.

- Strong GDP growth in the non-OECD economies since 2000 has been an important factor behind the recent growth of real oil prices and real metals prices.

- A scenario analysis of setting the growth rate of non-OECD economies equal to the (lower) growth rate of the OECD economies from 2000 onwards and holding their share in world trade constant reveals that

  - oil prices would have been 20-40% lower than the baseline in the fourth quarter of 2005;

  - real metals prices would have been 10% lower than the baseline.

- This removes some, but not all of the strong growth in oil and metals prices over recent years.

A price equation is estimated jointly (SUR) for 21 OECD countries using quarterly data for 1980-2005.

$$\Delta \ln P_{i,t} = \alpha_{0i} + \alpha_{1i}\left(\ln P_{i,t-1} - \alpha_{2i}\ln P^M_{i,t-1} - (1-\alpha_{2i})\ln C_{i,t-1}\right)$$

$$+ \sum_{j=1}^{4}\beta_{ji}\Delta \ln P_{i,t-j} + \sum_{j=0}^{4}\gamma_{ji}\Delta \ln P^M_{i,t-J} + \sum_{j=0}^{4}\delta_{ji}\Delta \ln C_{i,t-j} + \alpha_{3i}GAP_{i,t-1} + \varepsilon_{it}$$

- P, P^M and C denote consumer prices, import prices of goods plus services and domestic unit labour costs.
- GAP is the domestic output gap.
- Cross-equation parameter restrictions are imposed if permitted by the data.
- The long-run coefficient on the import price term will reflect the direct weight of imports in private consumption *and* the wider influence of import competition on the prices set by competitors.
- The unit labour costs term will reflect indirect effects from globalisation via wages and productivity.

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Parameter stability tests reveal evidence of a significant structural break in the parameters in the mid-1990s.

- Two modifications are necessary to account for the break:
  - interacting the long-run import price coefficient with the share of imports in domestic demand (M^{SH}),
  - allowing for separate parameter estimates before and after 1995 by introducing a dummy variable D that is equal to unity from 1995 onwards .

$$\Delta \ln P_{i,t} = (\alpha_{0i} + \varphi_{0i}D) + (\alpha_{1i} + \varphi_{1i}D)\left(\ln P_{i,t-1} - (\alpha_{2i} + \varphi_{2i}D)M^{SH}_{i,t-1}\ln P^{M}_{i,t-1}\right.$$

$$\left. - \left(1 - (\alpha_{2i} + \varphi_{2i}D)M^{SH}_{i,t-1}\right)\ln C_{i,t-1}\right) + \sum_{j=1}^{4}(\beta_{ji} + \phi_{ji}D)\Delta \ln P_{i,t-j}$$

$$+ \sum_{j=0}^{4}(\gamma_{ji} + \lambda_{ji}D)\Delta \ln P^{M}_{i,t-J} + \sum_{j=0}^{4}(\delta_{ji} + \kappa_{ji}D)\Delta \ln C_{i,t-j}$$

$$+ (\alpha_{3i} + \varphi_{3i}D)GAP_{i,t-1} + \varepsilon_{it}$$

The impact of globalisation on price inflation.

- The long-run influence of import prices on domestic consumer prices has risen since the mid-1990s. This reflects two factors:
  - a rise in import penetration in OECD economies;
  - the impact of import competition on competitors' prices.
- The impact of import prices on domestic consumer prices is larger in small open economies.
- The cyclical sensitivity of inflation to domestic economic conditions declined between 1981-1994 and 1995-2005: A 2%pt rise in the domestic output gap for one year raises inflation in the following two years by 0.1%pt per annum less in the second sub-sample.
- No robust significant additional impact from the global output gap (global conditions are already reflected in import prices).
- Analysis takes an ex ante perspective: described impacts can in principal be corrected by monetary policy makers.

The separate commodity and consumer price findings are combined in a set of scenario analyses.

Ex-ante inflationary pressures in most OECD economies would have been moderately higher in the absence of globalisation.
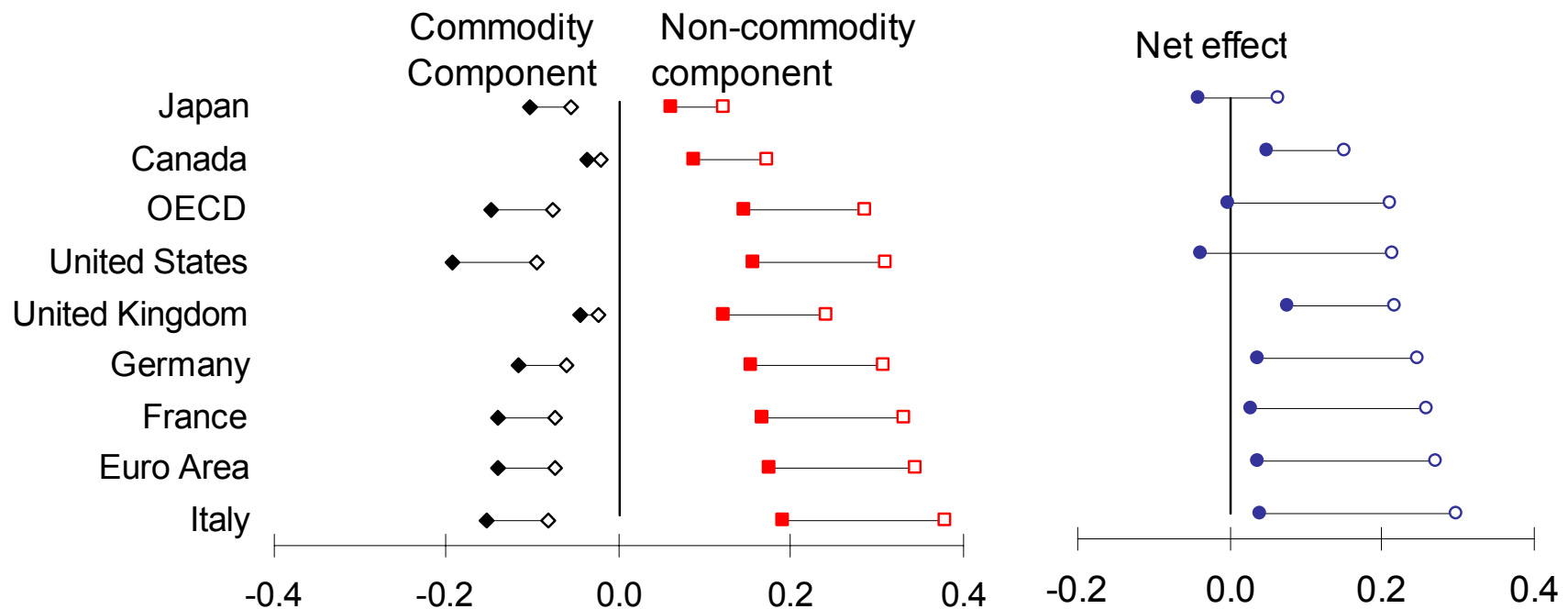

- ◆ Lower bound of commodity import price effect (20% oil, 10% metals)
- ◇ Upper bound of commodity import price effect (40% oil, 10% metals)
- ■ Lower bound of non-commodity import price effect (1%)
- □ Upper bound of non-commodity import price effect (2%)
- ● Lower bound of net effect
- ○ Upper bound of net effect

Possible extensions of the empirical analysis

- Potential feedback effects of changes in price inflation on wages are not taken into account.

- The implicit net disinflationary impact on price inflation is understated to the extent that globalisation is influencing the inflation process through changes in inflation expectations or through changes in the cost of capital or labour.

- Although the process of globalisation has coincided with changes in labour markets, the effect is hard to pin down precisely.
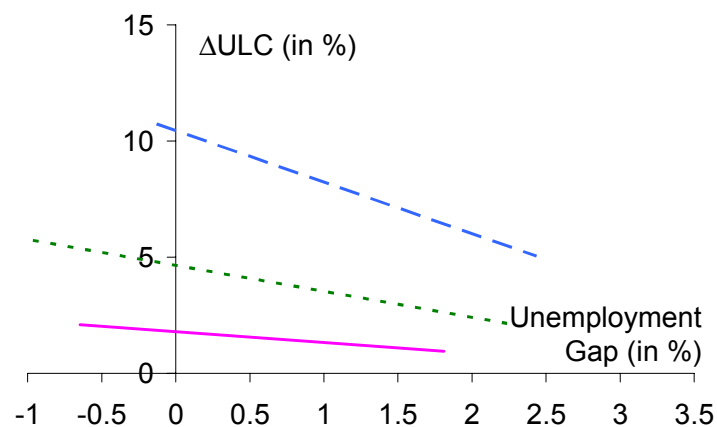
Globalisation has coincided with changes in the short-run association between labour market pressures & unit cost growth.
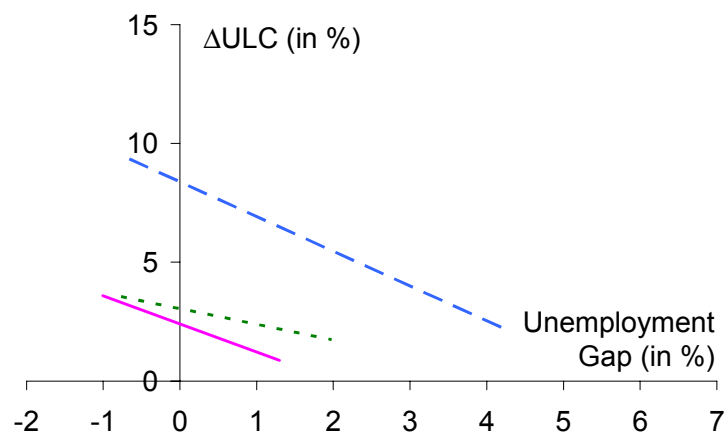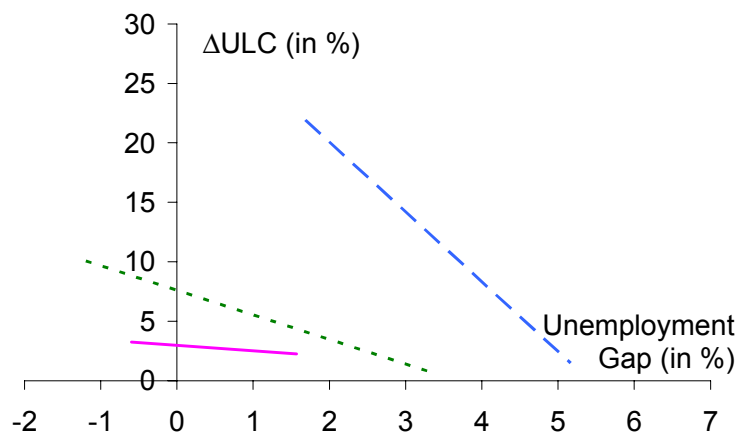

United States
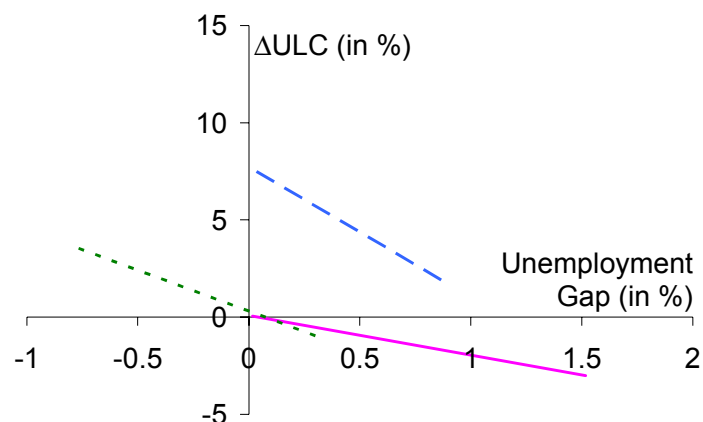
Japan

Euro Area

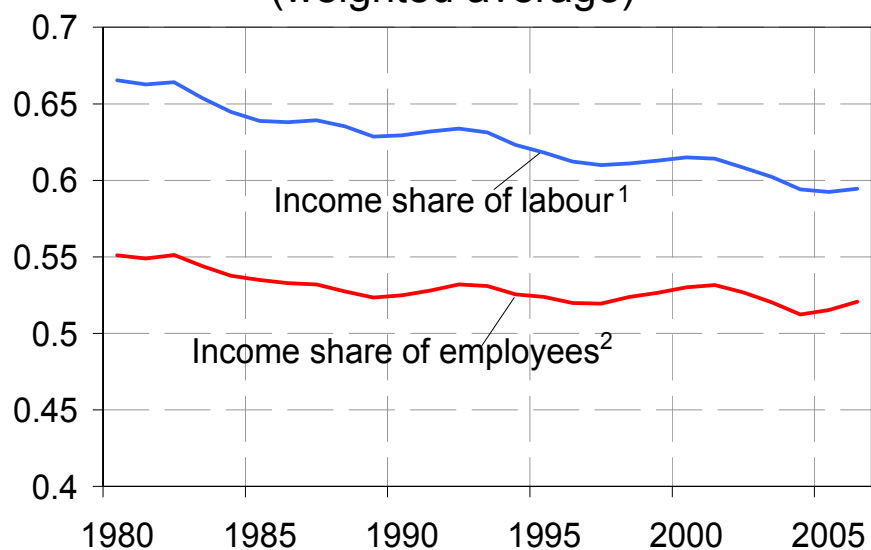United Kingdom

Legend:
- 1975-1984
- 1985-1994
- 1995-2006

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The labour share of GDP has fallen, but real wages have grown robustly in most OECD countries.
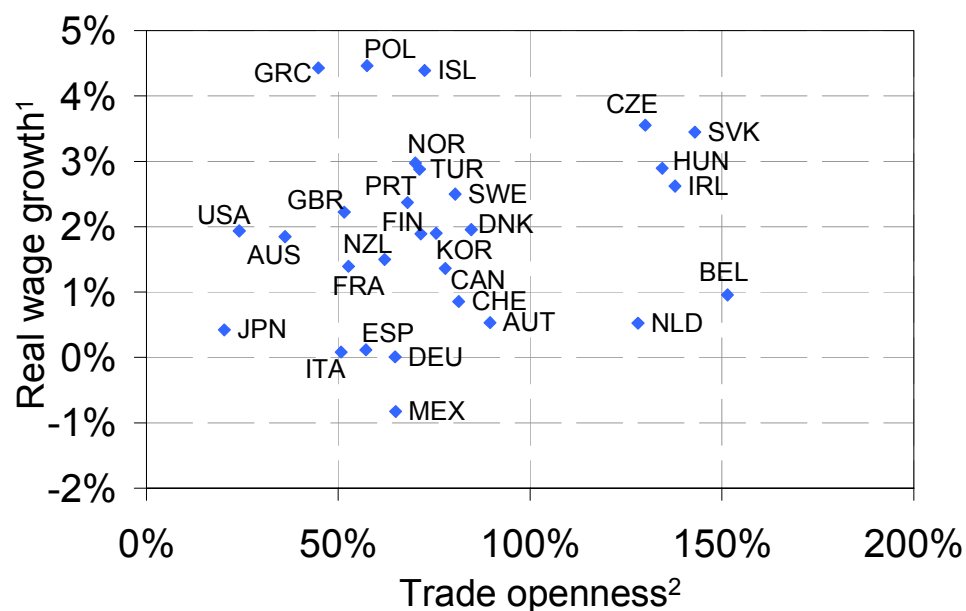
Labour Income Shares

OECD economies (weighted average)

Income share of labour[1]

Income share of employees[2]

[1]Dependent employees and self-employed.
[2] Dependent employees (private and government sectors).

Trade openness and real wage growth

Real wage growth[1]

Trade openness[2]

[1]Annual averages, 1995 to most recent observation.
[2]Exports plus imports to GDP, average 1995 – 2006.

Implications of the empirical analysis.

- Changes in the price level of non-commodity imports ultimately affect the domestic price *level,* not domestic inflation.

- The adjustment process will take time, especially if traded services prices also begin to decline markedly.

- Increased supply of non-oil commodities should eventually lead to a reversal of currently high real metals prices.

- Commodities demand by non-OECD economies will slow as they attain less commodity-intensive stages of development.

- Identifying the extent and persistence of structural change in the economy is difficult and could result in policy mistakes.

- Examining headline inflation (as well as core inflation) allows monitoring both influences from globalisation.

- The favourable external conditions for low inflation may vanish; higher interest rates may then be required to keep inflation low.