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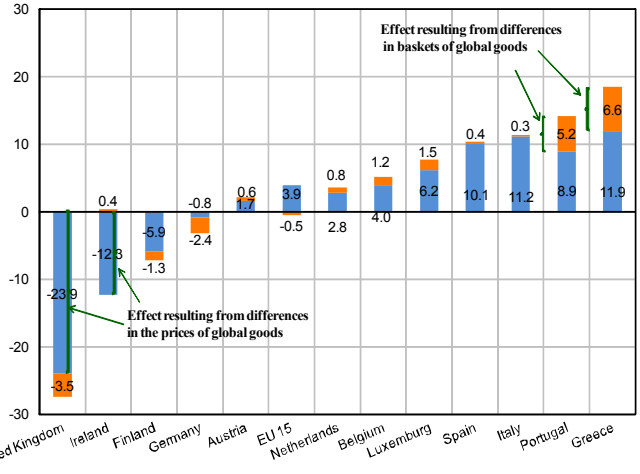
International trade integration and consumer prices in Europe, 1998-2008

This study was prepared under the authority of the Directorate General of the Treasury (DG Trésor) and does not necessarily reflect the position of the Ministry for the Economy, Finance and Industry.

- By encouraging economies to specialize in sectors where they enjoy a comparative advantage, globalization has helped restrain price rises for many goods. In most of the OECD countries this effect has been relatively modest on the overall consumer price index (some 0 to ¼ of a percentage point annually since 2000) but it has proved to be far greater for goods widely traded in the international markets (the so-called "global goods" or "tradable goods"), fossil energy excluded.
- Among European countries, there are wide disparities between inflation differentials for global goods. This is partly because households in these countries consume different quantities of global goods, whose price has risen less (due to the structural effect). Second, this lower rate of inflation for global goods can also be accounted for by pure price effects, which themselves depend on country-specific features: the degree of penetration of imports from the emerging countries, initial price level, or again changes in distribution sector regulation.
- For example, consumers in the United Kingdom largely benefited from this downward impact on prices resulting from international trade integration, global goods inflation being distinctly lower in the United Kingdom than in the eurozone, over the period 1998-2008. This cannot be explained by moves in exchange rates. Greater liberalisation of distribution sector regulation, a higher initial price level relative to the eurozone, and to a lesser extent a higher proportion of global goods in UK consumers' shopping baskets, explain this gap.
- France is closer to the European average. French consumers have benefited less than British or German consumers from the impact of international trade integration, but more so than Spanish or Italian consumers.
- A study of price index trends by income group in France shows that the relatively well-off households are those that have benefited most from this lower inflation, the least well-off households spending a greater proportion of their income on "non-global goods" such as housing and agrifood products.

Difference between France and its partners in trends in the price index of global goods between 1998 and 2008



Source: National Accounts, Insee, OECD, DG Trésor calculations.

Interpretation: Over the period 1998-2008, prices of global goods in the United Kingdom fell relative to those of global goods in France. The inflation differential between global goods in France and the United Kingdom was 27.4 percentage points, of which 23.9 stem from trends in the prices of these goods in an identical basket of goods, and 3.5 percentage points from differences between national baskets of goods.

MINISTÈRE DE L'ÉCONOMIE
DES FINANCES ET DE L'INDUSTRIE

The process of globalisation has gathered pace in recent years with the integration into the global economy of major emerging countries such as China and India, which have considerably boosted the world's production capacity. Most empirical studies underline the low impact of the emerging countries' trade integration on inflation in the industrialised countries: estimates show that, for most OECD countries, international trade integration has gone hand in hand with a drop in consumer price inflation of some 0-¼ percentage point annually since 2000[1]. On the other hand, international trade integration has had a perceptible impact on the relative prices of different goods, by pushing down the relative price of the most-traded goods in world trade. This study looks at changes in the prices of these goods, which are manufactured goods exclusively.

1. Financial and trade globalisation have prices in check

1.1 Globalisation has had a variety of impacts on inflation

Globalisation may have affected inflation via a number of channels[2]. By imposing greater market discipline on all, financial globalisation has spurred governments to pursue less inflationary policies, in emerging economies especially. Greater competition has also driven companies to innovate more and boost their non-cost competitiveness, helping to bring down prices. Finally, by enabling prices of goods to become less dependent on domestic factors, globalisation has probably reduced the sensitivity of inflation to domestic cycles[3].

1.2 International trade integration intensifies competition and fosters productivity, which exerts downward pressure on prices

The rapid integration into the global economy of the leading emerging countries, with their wealth of manpower, tends to exert downward pressure on tradable goods. On the one hand, globalisation intensifies international price competition, by fostering the fragmentation of the productive process, facilitating access to new markets and driving countries to specialise in the production of those tradable goods for which they enjoy a comparative advantage. Thus globalisation reduces the cost of the factors of production, which in turn puts downward pressure on the price of traded goods. Further, international trade integration can lower the price of traded goods by stimulating innovation and improving the allocation of resources.

1.3 Many empirical studies highlight the restraining impact of the leading emerging economies on the price of imports

The European Central Bank[4] points out that the growing integration of the emerging countries into international trade and into the production process is having a restraining impact on the price of imports[5]. For example, it is reckoned that opening up to the emerging countries has restrained the rise in eurozone import prices by around two percentage points per year on average, between 1996 and 2005. Similarly, the OECD has estimated that the growth in imports from the emerging countries contributed to a reduction in import price inflation of around 1-2 percentage points per year in most OECD countries over the past decade. Kamin et al (2006)[6] have highlighted the key role played by China in this process.

2. International trade integration has slowed the rise in-or even lowered-the price of global goods

To analyse the impact of globalisation on prices of traded goods, we define global goods as goods in sectors with the highest degree of openness[7] (precisely those products whose degree of openness is greater than 100%, see below). The drawback with this criterion is that it assigns a high weighting to sectors for which the countries of the North have lost their comparative advantage and have therefore experienced large-scale deindustrialisation; consequently it does not reflect those goods that are necessarily the most "global" in the sense of being the most heavily traded internationally. However, it does capture the most imported goods and hence those most likely to benefit from the emerging countries' integration into world trade, in terms of diminished inflation.

(1) Nigel Pain, Isabell Koske and Marte Sollie (2006), "Globalisation and Inflation in the OECD economies", Economic Department *Working Paper*, No. 524, November 2006.

(2) For a comprehensive review of globalisation's effects on inflation see (2006), "How globalization has affected inflation" WEO, IMF, April.

(3) The IMF has estimated the slope of the Phillips curve, i.e. the elasticity of inflation to domestic production over different periods, and finds that this has declined since the 1990s.

(4) European Central Bank (2006), "Exchange rate and balance of payments developments", ECB, Monthly Bulletin, August 2006 ; (2008), "Globalisation, trade and the euro area macroeconomy", ECB, *Monthly Bulletin*, January 2008.

(5) In 2007, 49% of imports of goods manufactured outside the eurozone came from countries with low production costs, versus 31% in 1997.

(6) Kamin S., M. Marazzi and J.W. Schindler (2006), "The impact of Chinese exports on global import prices", *Review of International Economics*, Vol. 14.

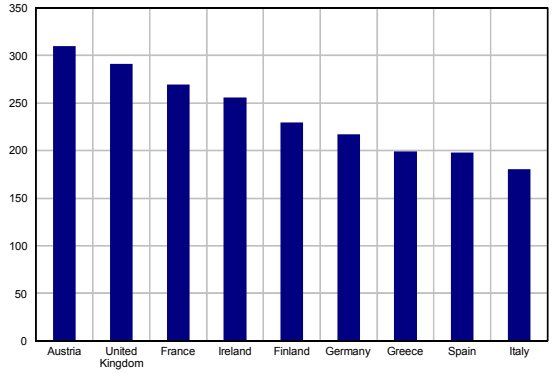
(7) We calculate the degree of openness using the following formula: Degree of openness = (industrial sector exports +industrial sector imports)/(2 x industrial sector added value).

2.1 The goods that can be considered to be "global" are industrial goods

European industry is heavily exposed to international competition. In France, industry's degree of openness reached 180% in 2008 (see Chart 2, Insee data). The degree of openness is higher still in manufacturing industry, rising to 270% in France, nearly 300% in the United Kingdom, and 200% in Spain (see Chart 1, OECD data).

In finer detail, we can show that in France, the industrial sectors most exposed to international competition are car manufacturing (439%), capital goods (202%), and certain consumer goods industries (see Chart 2).

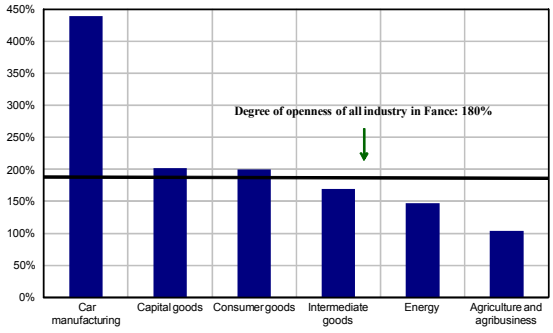
Chart 1: Degree of openness of industrial goods manufactured in selected European countries (in %)



Source: Céreq, Enquêtes "génération" 1994-1996-1999-2001-2004.

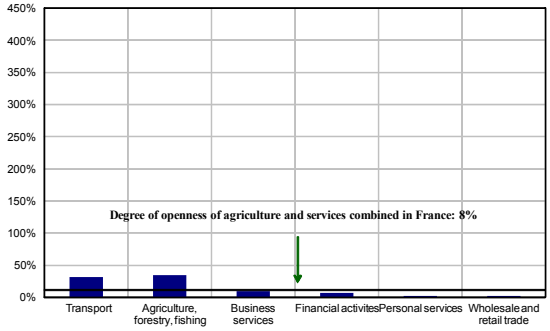
Chart 2: Degree of openness of different sectors in France in 2008 (in %)

Industry



Sources: National Accounts, Insee, and DG Trésor calculations.

Agriculture and services



Sources: National Accounts, Insee, and DG Trésor calculations.

Interpretation: In 2008, the degree of openness of France's car manufacturing industry was 440%, versus 35% in the agricultural sector.

A good is regarded as "global"[8] when the sector's degree of openness[9] is greater than 100%. According to this criterion, global goods are industrial goods exclusively. The proposed analysis focuses on trends in the prices of global goods, excluding fossil energy[10], insofar as the determinants of oil prices differ from those of other goods.

2.2 The Northern part of the eurozone and the United Kingdom have benefited more from lower import prices resulting from globalisation

In France, the price of a basket of global goods[11] for the average household rose very slightly between 1998 and 2008 (by around 0.6%, see Chart 3), while the total consumer price index went up by 21%. **Consequently, the price of global goods fell relative to that of other goods**.

Crosscountry analysis within the eurozone shows a series of distinct dynamics, since the price index for global goods has fallen in the eurozone's northern countries, but has remained especially vigorous in the southern countries. **From this perspective, the northern eurozone countries appear to have benefited more from globalisation than the southern ones**.

The United Kingdom also appears to have enjoyed hefty gains from globalisation as reflected in a subs-

(8) According to the INSEE Summary Economic Classification (NES), goods identified as global, excluding fossil energy (i.e. vehicle fuel and lubricants, liquid and solid heating fuel) are: clothing textiles, apparel, other articles of clothing and accessories, footwear, household cleaning products, furniture and furnishings, rugs and other surface coverings, textile household articles, white goods, brown goods, tools and other household and garden appliances, non-durable household products, cars, bicycles and motorcycles, spare parts, telephone and facsimile equipment, reception sound recording and reproduction equipment, durable leisure goods including musical instruments, photographic and cinematographic equipment, computer hardware, image and sound recording media, games and toys, sports and camping equipment, body care apparatus and other articles, jewellery and timepieces.

(9) The sector disaggregation used identifies 85 sectors. In INSEE's 2000 database, this disaggregation flowed from the 'NES' (Summary Economic Classification), which has since been replaced by the 'NAF' (French Classification of Activities).

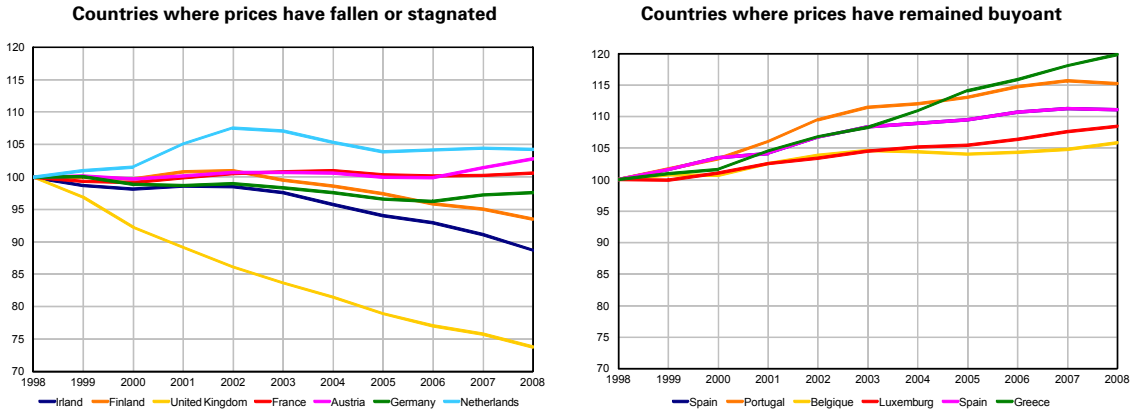
(10) The integration into the global economy of the leading emerging (non-oil producing) economies ought not to modify the terms of supply of fossil energy. Contrary to manufactured goods especially, the economic integration of the emerging countries would be expected rather to boost demand for oil and to influence prices upwards.

(11) Built from indexes of the average prices of "global goods", see box on methodology.

tantial drop (–26%) in the price of global goods over the period 1998-2008.

Since global goods represent between 20% and 30% of a household's shopping basket, depending on the country[12], changes in their price have a significant impact on the overall price level of household consumer goods, which was higher in France than in the main eurozone countries, in 2009[13].

Chart 3: Change in price indexes for global goods



Sources: Eurostat and DG Trésor calculations.

Sources: Eurostat and DG Trésor calculations.

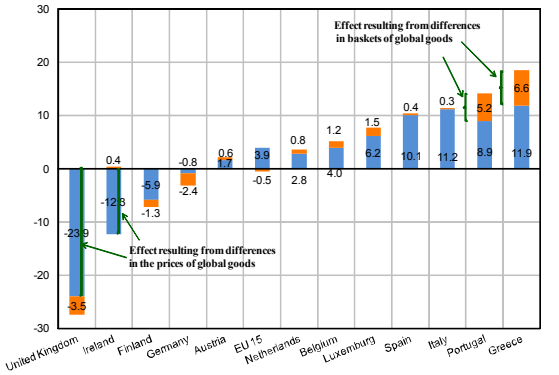
3. The differences in the rate of inflation of global goods between France and the rest of the European Union are only weakly explained by crosscountry differences in consumption patterns: they stem mainly from price trends for different goods, for a given basket of goods

Differences in the rate of inflation in the price of global goods between France and the rest of the eurozone and the United Kingdom can be broken down into two effects (see Box 1): i) ***a structural effect*** that takes account of the differences between countries in the composition of the basket of global goods; ii) ***a price effect*** reflecting distinct price dynamics for global goods from one country to another, for an identical basket of goods.

The structural effect flows from differences in the composition of households' shopping baskets in different countries. Consumers chose their baskets according to preferences and income. This structural effect hence partly represents differences in consumer preferences in each country studied.

However, our estimates (see Chart 4) suggest that differences in the rate of change in the price of global goods between France and the rest of the EU are explained less by differences in baskets of goods (i.e. the structural effect) than by different movements in the prices of global goods for an identical basket of goods (i.e. the price effect). This is remarkable for southern European countries, where the prices of some goods have risen much more than in France[14] and relative to the United Kingdom, where the prices of certain goods have risen a good deal less than in France[15].

Chart 4: Contribution of the price effect and the structural effect to the difference in prices of global goods between France and the rest of Europe (1998-2008)



Source: National Accounts, Insee, OECD, DG Trésor calculations.

Interpretation: Over the period 1998-2008, prices of global goods in the United Kingdom fell relative to those of global goods in France. The inflation differential between global goods in France and the United Kingdom was 27.4 percentage points, of which 23.9 stem from the change in prices of these goods for an identical basket of goods, and 3.5 from differences between national baskets of goods.

(12) Global goods represent 23% of the household shopping basket in the eurozone.

(13) In 2009, the price level for all goods consumed by households in France was 14.2% above the price level for the EU27, versus +5.8% in Germany, +5.5% in Italy, –2.2% in Spain, and –4.8% in the United Kingdom. Source: "Consommation: la France dans le haut du tableau européen" (Consumption: France tops the charts), Mai 2011, INSEE *Première* no. 1347.

(14) This mainly concerns apparel, footwear, information processing equipment, and cars.

(15) This concerns apparel (+1.2% for France versus -48% for the United Kingdom), cars (+8% / –16%), bodycare apparatus and other articles (+23% / –5%), footwear (+7.6% / –29%), textile household articles (+7.4% / –24%).

Box 1: **Global goods price indexes**

1. Constructing global goods price indexes

To estimate the average global goods price index (IPM^i), we have:

- for each global product k and for each country *i*, the consumer price index IPC_k^i ;
- for France and for each country considered *i*, the share p_k of the global product *k* in the average household's consumption of global goods.

The price index of global goods k for a country i is built as follows[a] :

$$IPM^i = \sum_{global\ k} (p_k^i \times IPC_k^i)$$

2. Price effect/ structural effect

The observed inflation differential for global goods (IPM) between France and the rest of the eurozone countries, and with the United Kingdom, results from two effects: i) *a structural effect* corresponding to the composition of households' baskets of global goods, and ii) *a price effect*, exclusively reflecting the distinct dynamics governing price trends for these goods. The equation (1) presents the inflation differential, distinguishing these two effects: the first term corresponds to the structural effect and the second to the price effect.

$$IPM_i - IPM_{France} \approx \sum_k (p_i^k - p_{France}^k)\left(\frac{IPC_i^k + IPC_{France}^k}{2}\right) + \sum_k (IPC_i^k - IPC_{France}^k)\left(\frac{p_i^k + p_{France}^k}{2}\right) \quad (1)$$

3. Construction of global goods price indexes according to household income

Taking into account differences in households' consumption patterns according to their income, we estimate the price indexes of global goods by decile $IMP_{k,s}$. To make this estimate, we have:

- for each global good *k*, the consumer price index IPC_k ;
- for each income decile *s*, the share p_k^s of the good in the consumption of global goods by households in this decile.

The price index of global goods k by income decile is built as follows:

$$IPM_{k,s} = \sum_{global\ k} (p_k^s \times IPC_k)$$

a. Because Eurostat's price index series are chained, they need to be "un-chained" before being weighted in order to be able to aggregate them. After being aggregated, the indexes are finally chained.

4. 4. Within the European Union, differences in the dynamics of global goods prices stem primarily from national differences in the initial price level (due to the phenomenon of convergence), and to disparities in regulations, and openness to the emerging markets

To explain inflation differentials between global goods in an identical basket of goods in different countries, we need to identify national characteristics liable to exacerbate or curb this inflation[16].

The first mechanism that might explain part of the divergences in global goods price trends in Europe is the evolving degree of competition in the distribution sector. This is because in an efficient distribution system goods are transmitted from producer to consumer with only a small margin. However, efficiency varies widely within Europe, depending on the degree of competition and regulatory differences[17], which affect access to the market (e.g. regulations governing company formation and store opening[18]) and to retail trade activities (opening hours and freedom to set prices). A country's regulations may, for example, slow the spread of super and hypermarkets that could push down prices through economies of scale.

The degree of openness to the emerging countries is the second mechanism capable of affecting the dynamics of global goods prices. The global economy has seen rapid integration of the emerging countries over the past decade: in 1998, 17% of the eurozone's imports of manufactured goods[19] came from countries with low manufacturing costs (5% from China), versus 44% in 2008 (21% from China). Greater trade with the emerging countries could lead to lower global goods price inflation, since these countries are low-cost producers of unskilled-labour-intensive goods.

Moreover, global goods inflation differentials observed within the European Union may also stem from a catch-up process for prices in countries where the initial level was lower. This process itself may encompass two types of phenomenon, though it is hard to say which predominates.

(16) Contrary to the previous section, where we looked at the accounting contribution of changes in the price of global goods to changes in the global price index built from baskets of goods in each country, here we consider the variables affecting trends in these prices. Thus in this section the global goods price variable becomes endogenous.

(17) Some empirical studies have pointed out the fall in consumer prices following a relaxation of regulations in the distribution sector designed to facilitate market entry by new players, and relaxation of legislation governing store opening hours (Haffner and Van Bergeijk (1997), Pilat (1997)).

(18) In particular, administrative formalities, and constraints on store siting and floor area.

(19) Excluding intra-zone trade.

- It may encompass a faster rise in some countries in the price of the service entailed in distributing global goods, i.e. the difference between the cost to the distributor of purchasing goods from the producer and the sale price to the consumer. That is because this distribution service represents a non-tradable good, whose price is liable to rise rapidly in economies in a catch-up phase, according to the Balassa-Samuelson effect[20].
- The rapid rise in the price of global goods in certain countries may also reflect a failure to allow fully for quality improvements to goods when calculating price indexes. This is because rising living standards in the initially less well-off countries in the eurozone may lead to improvements in the quality of the global goods consumed by households, whether imported or produced nationally. Failure to take this quality improvement fully into account in price indexes leads to apparent rises in the price of global goods consumed.

Finally, changes in the nominal exchange rate could potentially explain part of inflation differentials between the eurozone and the United Kingdom for global goods in an identical basket of goods. That is because a sterling appreciation could lower the price of imported goods expressed in GBP, and hence mechanically to a fall in inflation in the price of global goods in an identical basket of goods. Yet the pound did not appreciate over the period 1998-2008, and hence cannot explain the inflation differential between the eurozone member countries and the United Kingdom (see Box 3).

A simple econometric equation (see Box 2) shows that for an identical basket of goods, the gaps in the rate of inflation for global goods between France and the rest of the European Union can effectively be explained by (i) differences in the evolution of the degree of distribution sector regulation, (ii) a price catch-up process and, to a lesser extent, (iii) the degree of openness to the emerging economies.

Box 2: **Analysis of inflation differentials for global goods between France and the rest of the European Union**

To analyse differences in global goods price trends in the European Union, we regress the differences in global goods price inflation for a given basket of goods between France and the rest of the European Union between 1998 and 2008 on three variables: the change in the index of distribution sector regulation in each European country relative to that of France for the period 1998-2008, the gap between the rate of emerging countries' penetration of each European country and that of France in 1998, and the gap between the price level in each European country with that of France also in 1998. However, distribution sector regulation and initial price level do not necessarily account for the direct benefits of globalisation, insofar as these variables may influence the rate of inflation of all goods consumed, global goods among them.

Table 1: Regression (on centred-reduced data) of inflation differentials for a given basket of global goods between European countries and France between 1998 and 2008

Variables	Coefficients	Standard error	Threshold of siignificativity	Contribution to variance
Regulation	0.54	0.15	5%	0.31
1998 price level	−0.50	0.15	5%	0.36
Degree of openness to emerging countries	−0.37	0.15	5%	0.18
R^2				0.84

Source: OECD, DG Trésor calculations.

The estimate on centred-reduced data[a] shows that all of the variables contribute to the explanation of inflation differentials. Regulation and initial price level appear to be the chief explanatory variables of differences in the rate of change in the prices of global goods, ahead of the degree of penetration of the emerging countries.

The regression on non centred-reduced data shows that if France had relaxed its distribution sector regulation to the point where its index in 2008 was the same as for the United Kingdom, it would have enjoyed a 14 percentage point fall in the price of global goods. Similarly, if France had had the same degree of penetration of imports from the emerging countries as the United Kingdom[b] it would have seen a 1.6 percentage point drop in prices.

a. The contribution of each of the explanatory variables to the explanation of the variation in the dependent variable can be calculated simply, by expressing all of the variables in standard-deviation units: all that is needed is to multiply each centred-reduced estimate coefficient by the simple coefficient of correlation between the explanatory variable in question and the dependent variable.
b. Penetration of emerging countries' imports to the United Kingdom represents 222% of UK GDP, versus 159% for France.

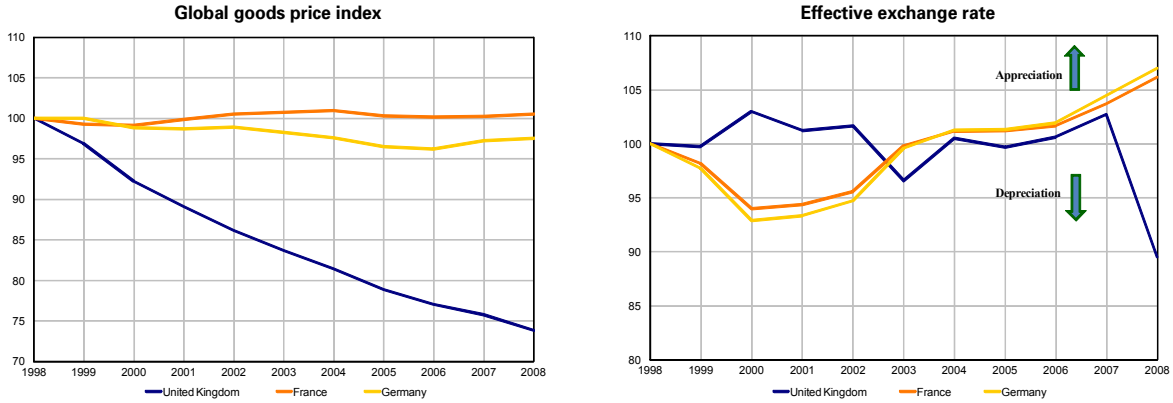
(20) According to the Balassa-Samuelson effect, the process of living standards catch-up is accompanied by a rise in the price level in the economy. This is because rising productivity in the tradable goods sector is accompanied by rising wages, and this increase is transmitted to the rest of the economy. However, since productivity gains are lower in the sheltered sector, pay increases lead to higher prices in this sector.

Box 3: **Movements in effective exchange rates can affect the rate of inflation of global goods but do not explain inflation differences between members of the eurozone and the United Kingdom**

Exchange rate variations are not neutral in their impact on global goods price inflation. If companies exporting to Europe do not fully pass on a euro appreciation in their foreign currency prices, then that appreciation will lead to a drop in the price of imported goods in Europe.

To determine the impact, if any, of variations in the nominal exchange rate on the prices of global goods, we compare changes in the nominal effective exchange rates of France, Germany and the United Kingdom with the change in the global goods price index, excluding fossil energy (see Chart 5).

Chart 5: Comparative change in nominal effective exchange rates and prices of global goods on the domestic market



Source: IMF and DG Trésor calculations.

Interpretation: Between 1998 and 2008, the United Kingdom's nominal effective exchange rate (righthand scale) depreciated by nearly 10%, while the consumer price index for global goods declined by around 30% (righthand scale).

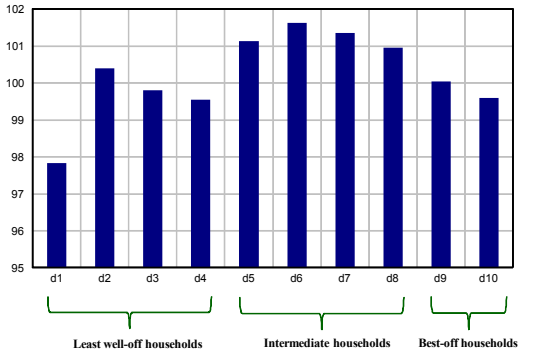
From this it emerges that changes in effective exchange rates do not explain why the price of global goods rose faster in the euro-zone than in the United Kingdom, since the euro appreciated over this period, whereas the pound weakened.

5. The distribution of gains from globalisation in terms of lower inflation differs from one household to another

The earlier analyses focused on the average consumer in each member state. However, given the wide dispersion of consumer behaviours as a function of income, the gains from globalisation may depend on income. To analyse this, we have built global goods price indexes that allow for differences in household consumption patterns depending on their income (see Box 1, Part 3).

These indexes suggest that global goods inflation does not move linearly with income: it is greater for intermediate households than for either the least well-off or the best-off households. This is because the intermediate household's basket of global goods contains a smaller proportion of those global goods whose prices have fallen steeply since 1998[21].

Chart 6: Change in global goods price indexes in France depending on income decile, 1998-2008 (base 100 in 1998)

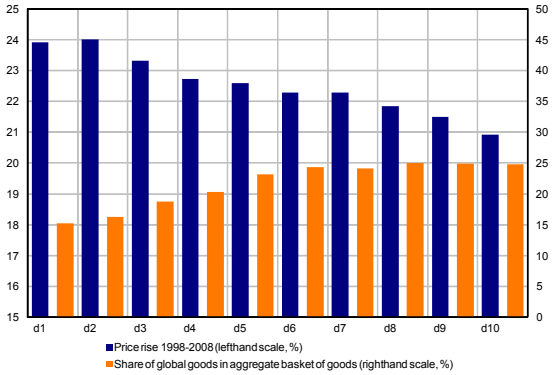


Source: Insee and DG Trésor calculations.

However, the share of consumption that households devote to global goods rises with income. Because prices of global goods have risen more slowly that those of other goods between 1998 and 2008, the price of an aggregate basket of goods has risen less for relatively well-off households. In that sense, better-off households have naturally benefited more from globalisation.

(21) Namely, according to our calculations, audio-visual (–63%), photographic (–70%) and computer (–85%) equipment.

Chart 7: Change in the price of an aggregate basket of goods and in the proportion of global goods in households' aggregate baskets of goods in France, according to income decile, 1998-2008



Source: Insee and DG Trésor calculations.

Interpretation: Over the period 1998-2008, the aggregate basket of goods for the best-off households (d10) contained a greater proportion of global goods, and its price rose less rapidly that that of the least well-off households (d1).

The eurozone's southern countries, which have benefited least from the fall in prices brought about by globalisation are also, to a large extent, those whose competitiveness had deteriorated most before the crisis, as a result of which these economies have had to confront the crisis from a position of weakness, with hefty current account deficits. In fact, the change in the price of global goods consumed by households (both nationally produced goods and imported goods) partly reflects the change in the country's competitiveness. Certain reforms, such as wage restraint and an easing of distribution sector regulations, could restore competitiveness in the eurozone's southern countries and enable their consumers to buy global goods more cheaply.

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