



**Discussion Paper No.22**

**Has trade with China affected UK Inflation?**

**by Tracy Wheeler**

# External MPC Unit Discussion Paper No 22\*

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## **Abstract**

This paper investigates empirically whether the level or growth of cheap imports from China has had an impact on UK inflation. We use two methods; the first calculates UK weighted world export price inflation as the sum of the effect of the inflation level in the UK's trading partners and the effect of substituting imports from more expensive countries with imports from countries with lower price levels. The second estimates these two effects on UK inflation using panel regressions. The results from the first method suggest that the substitution of imports from more expensive countries with imports from China reduced UK weighted world export price inflation by an average of -0.75 percentage points per annum from 2000 to 2004. Similarly, the panel regressions suggest that over the 1997-2005 period this substitution had a small but significant downward impact on UK CPI inflation. However, the same regressions also suggest that higher inflation in imports from China than in imports from other countries has put upward pressure on some components of UK CPI inflation. As this upward 'inflation effect' is likely to have outweighed the downward 'substitution effect' the regressions suggest that the overall effect of Chinese imports on UK CPI inflation from 1997-2005 was positive.

## Summary

The emergence of a new large low cost producer with the potential for further strong growth in supply on to the world trade scene has raised questions as to the economic impact this has on its trade partners. This paper empirically examines the impact of the level and growth in UK imports from China on UK inflation. We identify two main channels through which trade with China can affect UK inflation, the ‘switching effect’ which occurs as imports from other countries are substituted with cheaper imports from China, and the ‘inflation effect’ through which export price inflation in China can pass along the production chain to UK inflation. We use two methodologies to estimate the size of these potential effects, the first calculates UK weighted world export price inflation (which should track UK import price inflation fairly closely) as the cross-country sum of weighted export price inflation in countries exporting to the UK and the effect of substituting imports from more expensive countries with those from countries with lower price levels. The second method estimates the impact of the level and growth in imports from China (indicating the inflation and switching effects respectively) on UK inflation by category using panel regressions.

The results of the first method suggest that the growth in imports from China reduced UK weighted world export price inflation by an average of 0.75 percentage points (pp) per annum from 2000 to 2004, and this was driven by the switching of imports to China rather than the level of inflation in China. The results of the second method suggest that during the 1997 to 2005 period a 1pp increase in the UK’s import share from China in a certain goods category was associated with 0.2pp lower consumer price index (CPI) inflation in that category, and from 1999 to 2005 0.3pp lower manufacturers’ import price index (MIPI) inflation in that category. However, the regressions also suggest that categories with a higher import share from China tend to have higher CPI inflation due to higher inflation in imports from China than in other UK trade partners, and this upward inflation effect is likely to have dominated the downward switching effect.

Regardless of whether the combined switching and inflation effects are positive or negative it is important to note that in the medium term any effects will not affect aggregate CPI inflation as this is determined by domestic monetary policy. Hence if one effect was to dominate and push CPI in some categories with a high/growing import share from China

above/below the target level this would drag up/down aggregate CPI inflation in the short-run, but in the medium term aggregate CPI inflation would return to target provided the appropriate monetary policy response had been adopted. There may though be some distributional effects as domestic industries competing in sectors where imports from China have been very competitive would face lower profits, whilst those competing in non-tradable sectors would be affected by any change in consumers' real incomes (caused by a change in the relative price of traded goods and any monetary policy response) that led them to adapt their demand for domestic goods and services.

## 1 Introduction

Over the past few years many commentators have suggested that the strong growth in exports from China is putting downward pressure on inflation in its industrialised trading partners, in particular the US.<sup>1</sup> This observation is prompted by several factors including the strong growth in Chinese exports, the low price – and low increase in price – of these exports, China’s large and growing current account surplus<sup>2</sup> and its exchange rate regime which is often criticised for allowing the currency to be undervalued.<sup>3</sup> These factors all suggest that China’s contribution to global supply is much greater than its contribution to global demand.

However, this view is not universally shared. Its critics argue that despite strong growth China’s exports still account for only 8% of world exports, and China’s strong export growth has been accompanied by strong import growth. Strong demand from China contributed to the sharp rise in oil prices from 2003 to 2007, and commodity prices more generally from 2005 to 2007.<sup>4</sup> Some commentators have also suggested that spare capacity in China is falling following a prolonged period of strong output growth, and point to rising wage pressures that may put upward pressure on the price of future exports.<sup>5</sup>

One particular criticism is that the idea that one country can ‘export deflation’ to another through exporting cheap goods is inconsistent with the monetarist theory that ‘aggregate inflation is always and everywhere a monetary phenomenon’ and ultimately determined by domestic monetary policy. Whilst price shocks (such as a terms of trade shock that reduces the price of imports) may affect relative price movements they will not affect aggregate CPI inflation in the medium term. This should be brought back to target through both

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<sup>1</sup> For example, O’Neill, Kim and Buchanan (2006) argue that the ascent of China has contributed to lower global inflation in three ways: lower import prices, reduced wage growth and higher productivity.

<sup>2</sup> China’s exports increased by nearly 300% from 2000 to 2006 (in nominal US dollar terms) and now account for 8% of world trade. Data from the Penn World Tables suggest that in 2004 China’s price level was 26% that of the US and 21% that of the UK. China’s current account surplus reached 9% of GDP in 2006, from 2% in 2000.

<sup>3</sup> Morrison and Labonte (2005) and Wolf (2006) argue that the real depreciation of the undervalued renminbi is the reason why the emergence of China has been disinflationary for the world. Most estimates of renminbi undervaluation range from 0-30% (see Funke and Rahn (2004)).

<sup>4</sup> China’s oil consumption rose 40% from 2002 to 2006 to account for 9% of world consumption, the September 2006 IMF WEO notes that ‘buoyant demand for fuel and raw materials has contributed to record high prices for fuel and other commodities’.

<sup>5</sup> For example, the Economist (2007) argues that the costs of producing in China are growing strongly due to rising wages, rents and utility costs.

domestic monetary policy, and an automatic stabiliser as consumers find their real wealth has changed generating an offsetting effect on domestic demand. Thus, in the medium term the growth in cheap imports from China may reduce domestic inflation in certain categories of tradable goods, but its effect on aggregate CPI inflation will be offset by higher than target inflation in other types of goods.<sup>6</sup> This process is discussed in IMF (2006), Hanke (2003), and Rogoff (2007) and will be referred to throughout this paper as the ‘relative price hypothesis’.

So far the debate on whether imports from China have had an impact on inflation in its industrialised country trading partners has tended to be dominated by the media with limited academic interference. Most of the academic studies have focused on the effect on US inflation as this is where most of the policy debate has arisen, and suggest that the growth in Chinese exports over recent years has had a small but significant downward impact on price inflation in the US, and also in some other industrialised countries.

This paper examines whether imports from China, and the growth in these imports, has had an impact on UK inflation over recent years, concentrating on CPI inflation. It begins by examining data on UK and Chinese prices and trade links in section 2, before setting out the direct and indirect channels through which imports from China could affect UK inflation and looking at the previous literature in section 3. Two different methods are used to assess the size of these channels. The first is an additive measure which calculates the relative contributions of trade partners to UK weighted world export price inflation (section 4).<sup>7</sup> The second uses panel data regressions to estimate the extent to which exports from China have contributed to various measures of UK inflation (section 5). This part draws on the method used by Kamin, Marazzi and Schindler (2004) who use US import data disaggregated by category (for example iron and steel manufactures and textiles) to investigate whether US inflation has been lower in categories where imports from China account for a larger share of the market, or are growing more rapidly. To the best of our knowledge no existing studies carry out this style of regression based analysis using UK

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<sup>6</sup> Rogoff (2007) notes that ‘over the medium term, it would be more accurate to say that China is exporting *inflation* to prices of *other* goods in the economy’.

<sup>7</sup> This should track UK import price inflation fairly closely, although import prices will also be affected by changes in margins and transport costs.



data. Section 6 then discusses whether any of the findings are likely to continue in the future, and section 7 concludes.

The results for the additive measure suggest that imports from China had a downward impact on UK weighted world export price inflation, and this has increased gradually from zero in 1996 to -1 percentage point (pp) per annum in 2004. This effect was driven by the substitution of imports from more expensive trade partners with imports from China (the ‘switching effect’). The results from the regression analysis suggest that from 1997-2005 a 1 pp increase in the share of UK imports from China in a certain goods category had an instantaneous effect on CPI inflation in that category of -0.2 pp. However, the effect of high inflation in imports from China passing through to UK prices (the ‘inflation effect’) is found to be larger, hence the regression results suggest that overall China had a positive impact on UK CPI inflation.

This study does not consider the impact of factors associated with strong output growth in China on UK inflation other than through the import channel. These ‘other factors’ could include the impact of the growth in China’s demand for globally traded commodities on their prices, the impact of high saving rates in China on global real interest rates, the impact of China’s exchange rate policy on exchange rate alignment elsewhere, and China’s influence on the global output gap.<sup>8</sup>

## **2. Preliminary data analysis**

In the absence of direct data on UK import price inflation from China Charts 1-6 show some basic evidence on UK and Chinese prices and UK trade with China in order to shed some light on the issue and motivate the study. Chart 1 shows that from mid-1996 to early-2004 the UK import price deflator for goods (which 90% of China’s exports are) was generally much lower than the overall UK GDP deflator suggesting that imports in general exerted downward pressure on UK inflation.<sup>9</sup> However, the import price deflator is volatile and shows little relationship with the growth in imports from China which

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<sup>8</sup> See Borio and Filardo (2007) for discussion of the growing impact of the global output gap on inflation in industrialised economies.

<sup>9</sup> The relatively high level of the import price deflator for goods in 2005 was mainly due to the rise in the price of oil and other commodities.

accelerated in 1999 (Chart 3). Charts 2 and 3 show that China's import penetration into the UK is low relative to both the import penetration of some other trade partners, and China's import penetration into other G7 countries. Whilst Chart 2 suggests that Chinese imports may have been too small to have had a significant impact on UK inflation, it also shows that China's import penetration has grown, perhaps at the expense of imports from more expensive countries and this substitution could have put downward pressure on UK inflation. Chart 3 suggests any direct effects on UK inflation are likely to be smaller than in some other G7 countries.

Chart 4 shows the relative price levels of selected countries that export to the UK. China's domestic price level is much lower than that of the UK and some of its other trade partners, suggesting that the growth of Chinese imports to the UK may have put downward pressure on UK inflation.

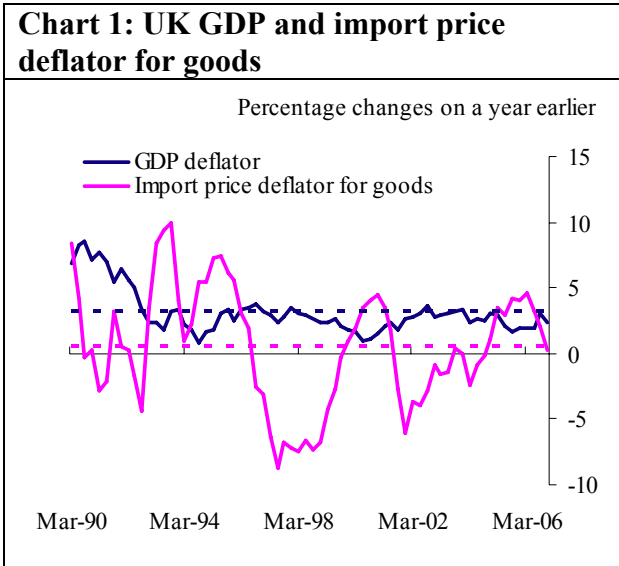
Charts 5 and 6 show some proxies for Chinese export price inflation, if this is high then it may be passed through to UK inflation. Chart 5 shows the series which have a longer history, whilst Chart 6 gives a clearer picture of the data for the recent past, when there are more series available. The long-run series are inflation in Hong Kong imports from China, Hong Kong re-exports to the UK (both from the Government of Hong Kong Census and Statistics Department),<sup>10</sup> and Chinese producer price index (PPI) inflation (from the National Bureau of Statistics of China). The two series from Hong Kong suggest that Chinese export price inflation was negative from 1997/8-2003/4, but has been positive more recently. Chinese PPI inflation has been very volatile, but high over the past three years. Data on Chinese export unit values in US\$ terms (from CEIC data), and inflation in US imports from China (from the US Bureau of Labour Statistics) are only available for the more recent period. The series from the US is the only one which is quality adjusted, and the large difference between this and some of the other series suggests that the importance of accounting for China moving up the value chain when examining inflation in its exports may be high. It should also be noted that as these series are in foreign currency they do not capture the effects of movements in the sterling exchange rate.<sup>11</sup>

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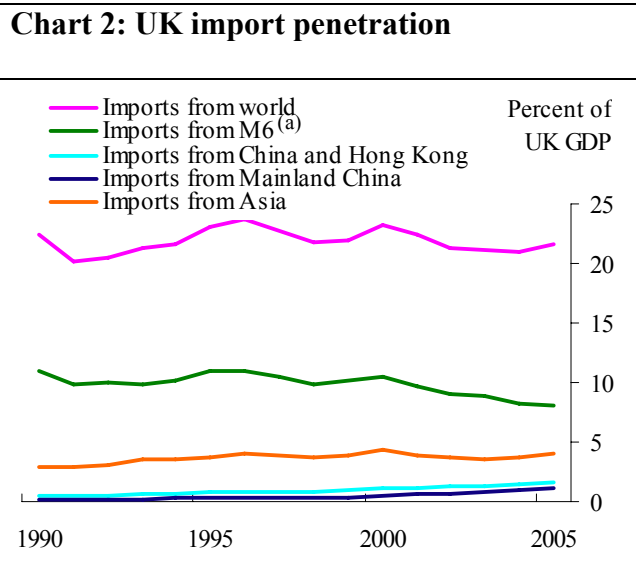
<sup>10</sup> These two series are suitable proxies because Hong Kong is an important entrepot for exports from China.

<sup>11</sup> Given both the Chinese renminbi and Hong Kong dollar were kept roughly at parity to the US dollar throughout most of this period, the only nominal exchange rate that really needs to be considered is the sterling/US dollar rate.

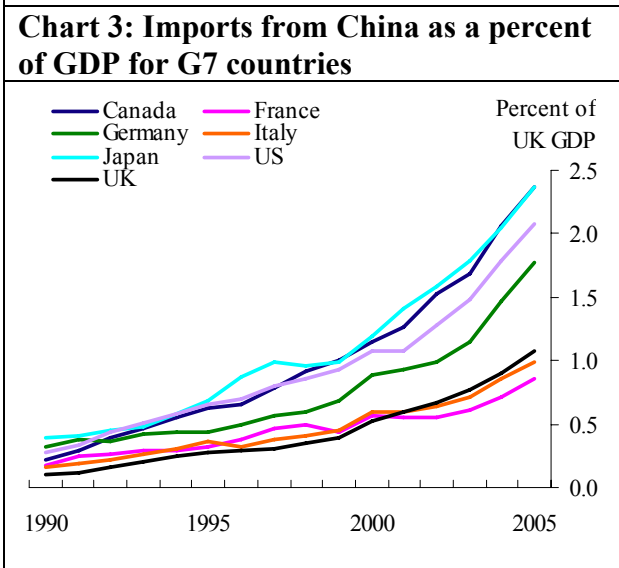
On aggregate, this data shows that although imports from China are low they are growing fairly quickly. As their price level is low compared to both that of the UK and countries that export to the UK this growth indicates that there may be a downward switching effect. Although there is no direct measure of inflation in UK imports from China, some proxy measures suggest it may be higher than UK inflation, and this indicates a possible upwards inflation effect. However, as UK imports from China are fairly low, and growing more slowly than other G7 countries imports from China, any effect may be relatively small.



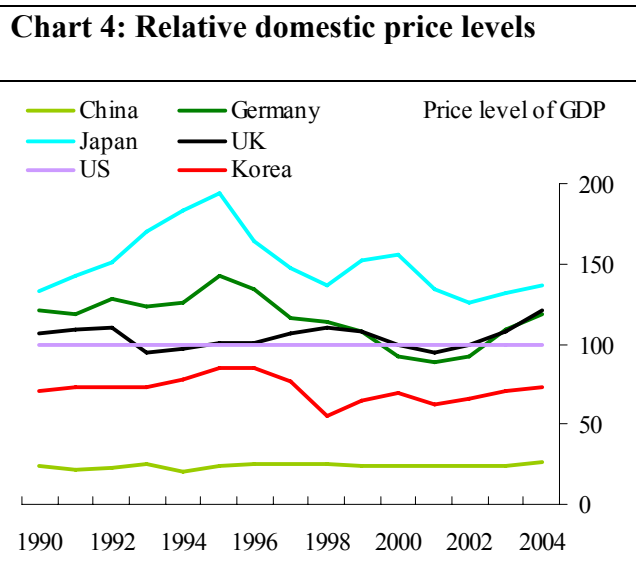
Source: ONS



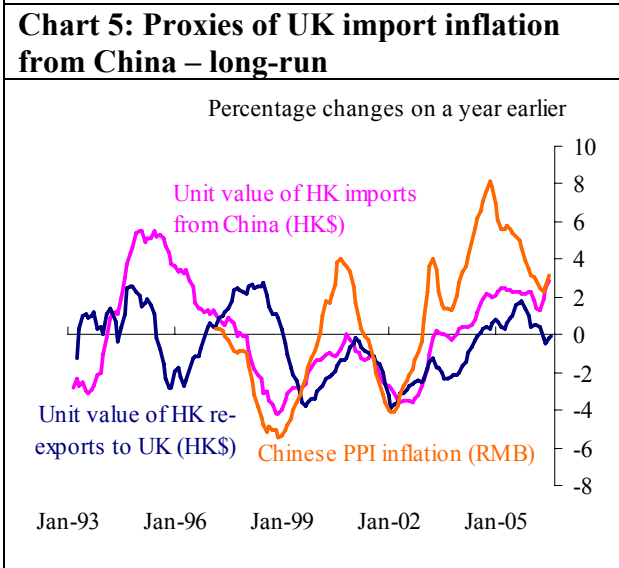
(a) M6 represents the G7 countries less the UK  
Source: IMF



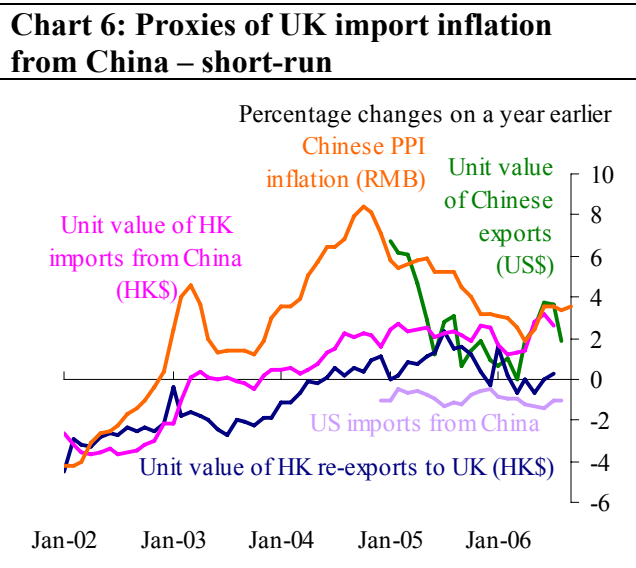
Source: IMF



Source: Penn World Tables



Sources: The Government of Hong Kong Census and Statistics Department and National Bureau of Statistics of China



Sources: The Government of Hong Kong Census and Statistics Department, National Bureau of Statistics of China, CEIC and US Bureau of Labour Statistics

### 3 Theoretical context and literature

#### 3.1 Theoretical context

There are various channels through which the growth in exports from China may have had an impact on prices in its industrialised country trading partners. The channels through which the first round effects of the emergence of a new large low cost exporter on the world trade scene could affect industrialised country inflation are set out below.

- a) The '**switching effect**' as domestically produced goods and imports from other countries are substituted for cheaper Chinese imports.
- b) The '**inflation effect**' stemming from lower or higher inflation in Chinese export prices than in export prices from other countries and/or UK domestic prices.
- c) **Lower production costs** for both domestically produced goods and imported finished goods produced using Chinese inputs.

Given only 6% of UK imports come from China and imports are equivalent to roughly 20% of UK GDP the direct effect of Chinese imports on UK inflation may be small, but the actual effect may be larger depending on the size of the indirect channels which are set out below:

- d) Increased **competition** (and the threat of substitution) that will reduce inflation in domestically produced and imported goods that compete against Chinese imports.
- e) The **domestic income effect** from the improved terms of trade offered by cheaper imports (and domestic goods) may stimulate domestic demand and prices.
- f) The **global income effect** from China's rapidly growing import demand may stimulate global aggregate demand and prices. This may be particularly true for commodity exporting countries.

Whilst some of these direct and indirect channels will exert downward pressure on UK inflation, others may exert upward pressure, hence the aggregate effect is unclear. It may also be the case that cheap Chinese imports could be **substituting for imports from other low-cost countries** leaving UK total imports from low-cost countries unchanged, in which case we would expect the effects on inflation to be limited. This could result from an

increase in ‘production-sharing’ across Asia (which we will refer to as the ‘**Asian production chain**’).<sup>12</sup>

Though the different measures of inflation along the production chain are related, different measures could be affected through different channels. This is captured in Diagram 1 below. World export price inflation is affected by the inflation and switching effects from China, and through the impact of lower production costs and increased competition on exports from countries other than China. These effects will then pass through to UK import price inflation. Lower import prices can filter through to CPI directly, and indirectly by reducing the cost of producing domestic goods (ie lowering manufacturers’ input price inflation) and increasing the competition these goods face in the domestic market (ie lowering manufacturers’ output price inflation). The extent to which the pass through occurs will depend on the competitiveness of the respective markets as this determines the pressure on agents to respond by lowering their prices, rather than increasing margins.

Finally, as the discussion of the ‘relative price hypothesis’ in section 1 explained, it is important to remember that the effect of a shock to import prices is similar to that of more ‘traditional’ price shocks that result from fluctuations in food or energy prices. If in response to such a price shock the central bank maintains its inflation target and adjusts policy in order to meet this target the impact of the shock on aggregate CPI inflation should be temporary. Hence, if the effect of the growth in cheap Chinese imports was to lower aggregate CPI inflation in the short-run, in the long-run the inflation target could be achieved with lower domestic interest rates. In this case we would expect to see lower CPI inflation in goods in which China has a competitive advantage, and higher CPI inflation in categories in which it does not compete, in particular services. We would also expect to see import price inflation providing a drag on aggregate inflation, and domestically generated inflation above aggregate CPI inflation.<sup>13</sup>

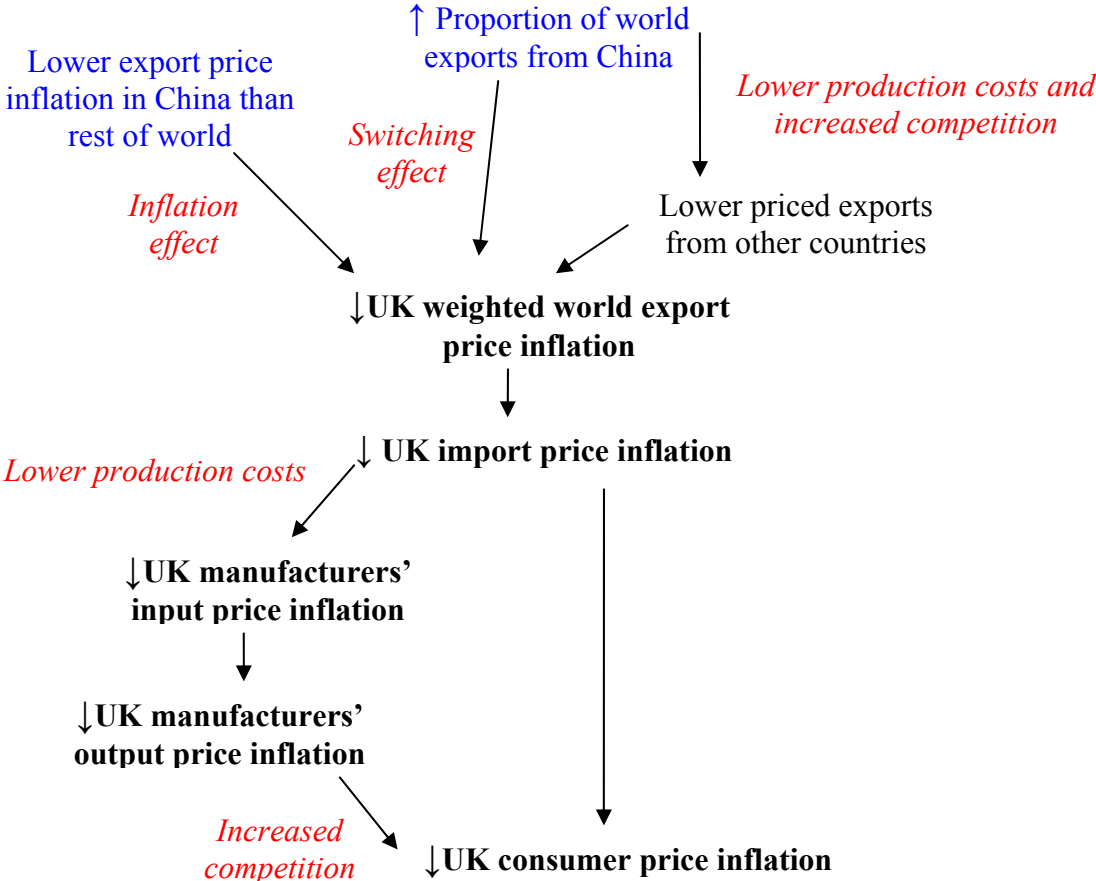
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<sup>12</sup> The US Department of the Treasury Office of Public Affairs (2003) explains that ‘other Asian economies that used to export directly to the US increasingly ship components to China for assembly’, and Sasaki (2004) reports that an expansion in global IT-related demand tends to increase Japanese exports to processing and assembly bases in East Asia [such as China] rather than towards the final markets for the finished products.

<sup>13</sup> For a discussion of the wider implications of globalisation on global inflation, interest rates and monetary policy see Rogoff (2007).

**Diagram 1: Potential impact of increased imports from China and low relative price increases in imports from China on different measures of UK inflation**

The ‘trigger factors’ at the start of the chain are shown in blue and measures of UK inflation are shown in black bold. The labels to the arrows (shown in red) refer to the channels through which the emergence of China on the world trade scene may have had a downward effect on UK inflation as set out above. The unlabelled arrows show the pass through of price changes along the production chain.



**3.2 Literature**

There are few academic papers that empirically examine the impact of China’s increase in productivity and export growth on developed country inflation, and most focus on the US. They can be divided into those that use regression based techniques to estimate the effects of increased trade with China and inflation in Chinese exports on different measures of industrialised countries inflation, and those that use additive methods to compute the contribution. This section will review studies using both methods before discussing their relative merits.

### 3.2.1 Regression based estimates

**Kamin, Marazzi and Schindler (2004)** examine whether the growth in Chinese exports has had a deflationary impact on US import prices and producer output prices. In the absence of US data on import prices by country of origin they estimate equation (1) which shows whether goods categories (such as iron and steel manufactures or textiles) with high or rising shares of imports from China have experienced lower rates of inflation; if the hypothesis holds true the weighted sum of  $\beta_1$  and  $\beta_2$  should be negative.

$$\pi_{t,i}^M = \alpha + \beta_1 \Delta Share_{t,i}^C + \beta_2 Share_{t=1,i}^C + \beta_3 \pi_{t-1,i}^M + \varepsilon_{t,i} \quad (1)$$

$\pi^M$  is US import price inflation,  $Share^C$  is the share of US imports from China,  $\Delta$  represents change and subscripts  $t$  and  $i$  represent time and category respectively. The ' $\Delta Share$ ' variable should pick up the effect of more expensive imports being substituted by cheaper Chinese imports (the 'switching effect'), whilst the ' $Share$ ' variable should pick up the effect of differences in export price inflation in China and other countries exporting to the US (the 'inflation effect'). The lagged dependent variable is included to control for other factors such as globalisation and market structure that may be associated with both lower inflation and an increase in the share of imports, or a higher share of imports, from China in a particular category of goods.

Using sample data from 1997-2002 they find  $\beta_1$  to be significant and negative, indicating that a 1pp increase in the Chinese import share of a given category was associated on impact with 0.8 pp lower annual import price inflation in that category. The estimated long-run impact is -1.3pp,<sup>14</sup> and as the share of imports from China grew at an average annual rate of 0.6pp from 1995-2005 the authors conclude that they might have depressed overall US import price inflation by about 0.8pp annually.  $\beta_2$  is found to be positive but insignificant. The authors do not empirically investigate the pass through from import prices to consumer prices, but note that as imported consumer goods account for only about 10% of US consumption, *the direct effect of imports from China on US consumer price inflation is likely to have been quite small.*

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<sup>14</sup> Calculated as  $\beta_1/(1-\beta_3)$ .



They also examine the effects of Chinese imports on US producer output prices using the same method, but find that Chinese import shares had no significant impact, even if the regression is run on manufacturing sector data only.<sup>15</sup> Hence *they conclude that even though the rising share of Chinese imports has restrained import price inflation, it has had little effect on US producer prices.*

**Feyzioglu and Willard (2006)** investigate whether China is exporting deflation or inflation to Japan and the US using a number of time series models. *They find only limited evidence that aggregate Chinese RPI inflation has had any impact on aggregate CPI inflation in Japan or the US, but find stronger linkages in the disaggregated data.* The simplest model they use is a bivariate Granger causality test which has the advantage of being able to pick up both direct and indirect effects, but this suggests Chinese RPI has no impact on inflation in the US and Japan.<sup>16</sup> They extend the analysis by building a VAR model for US/Japanese CPI and Chinese RPI and include other variables such as a commodity price index, US/Japanese output and Chinese industrial production (to capture supply and demand shocks respectively) and bilateral exchange rates. The models suggest that movements in Chinese inflation explain 4% and 6% of the variability of US import and consumer prices respectively, but these results are not significant. The results for Japan are similar.

### 3.2.2 Additive methods

**IMF WEO (2006)** considers the impact of the increase in international trade in goods and services more generally on developed country inflation. They test the impact of the fall in world real import prices since 1997 on advanced economy headline inflation by comparing data on actual inflation to inflation from a simulation where real import prices during 1997-2005 evolved in line with historical trend. They find that the actual decline in import price inflation contributed -0.5pp to advanced economy inflation in 1998-9, -0.25pp in 2002, but had no impact during 2003-5 (perhaps due to the rise in oil prices). Though the results suggest that the initial effects of a fall in import prices can be substantial, they suggest that inflation tended to return to its average level within two years. The IMF

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<sup>15</sup> To test whether this result was due to producer prices only being sensitive to import prices in categories where total import penetration is high they augment their equation with an interactive variable to account for total import penetration (defined as imports/(domestic shipments + imports - exports)) in that category, thus weighting Chinese import shares by the prominence of imports in the domestic market. However, they still find no effect.

<sup>16</sup> The model does suggest that inflation in the US Granger causes inflation in China. This is consistent with theory and empirical work suggesting that during periods of fixed exchange rates inflation is transmitted from the reserve country to the other countries, and the strong growth in Chinese imports from the US.

explain this result using the ‘relative price hypothesis’ and presence of fixed monetary policy objectives.<sup>17</sup>

**Nickell (2005)** calculates an index for ‘UK weighted world export prices’. This is a useful proxy for UK import prices that allows us to decompose changes into the inflation and switching effects. Changes in the two measures tend to track each other closely, but will differ as calculated world export prices do not capture changes in margins and transport costs. The index is calculated by weighting export prices (in sterling terms) of each UK trade partner by the share of UK imports from that country:

$$P_t^X = \prod_{i=1}^I p_{it}^{w_i} \quad (2a)$$

where  $P^X$  is the aggregate UK weighted world export price index,  $p_i$  is the price of exports from country  $i$  relative to the numeraire country,  $w_i$  is the share of imports from country  $i$  in total UK imports, and  $t$  denotes time. Taking logs of equation 2a and differentiating with respect to time gives an expression for UK weighted world export price inflation:

$$\pi_t^x = \sum_{i=1}^I w_{it} \pi_{it} + \sum_{i=1}^I \Delta w_{it} \rho_{it} \quad (2b)$$

where  $\pi_t$  is defined as  $\ln(p_t/p_{t-1})$ ,  $\rho_{it}$  is the log of  $p_{it}$  and superscript  $x$  denotes exports. The first term shows the inflation effect and the second term the switching effect. Using this method Nickell finds that the switching of imports to cheaper countries reduced UK weighted world export price inflation by an average of 0.6pp per annum from 2000 to 2003, partly due to the increase in import share from China and India. This method has the advantage of being simple to calibrate and understand, one issue is that the cross-country distribution of any switching effect can be sensitive to the choice of numeraire country (though the size of the cross-country aggregated switching effect will not be affected).<sup>18</sup>

Other papers use a similar accounting framework. **Pain, Koske and Sollie (2006)** show the change in the domestic demand deflator of the US and euro area as the sum of the switching and inflation effects from imports from China and the rest of Asia combined,

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<sup>17</sup> The relative price hypothesis is explained in Section 2.1.

and the rate of inflation in domestically produced goods. The latter term should capture the response of mark-ups on domestic goods to the emergence of low cost competitors. For the US they find that imports from China deducted 0.1pp per annum from the domestic demand deflator in the period 1996-2005, however for the first half of this period the inflation and switching effects were of equal size, whilst in the latter half the effect was solely due to the negative switching effect. For the euro area they estimate no China effect from 1996-2000, but from 2001-2005 they find an effect of -0.2pp per annum, again mainly due to the switching effect.<sup>19</sup> The **ECB (2006)** calculate the impact of an increase in imports from low-cost countries on euro-area manufacturing import prices using export price data disaggregated across goods category as well as country. They find that from 1996-2004 the average annual effect of Chinese imports on euro-area manufacturing import prices was -1pp, of which -0.8pp was due to the switching effect. **Kamin et al (2004)** use a similar method to investigate the impact of Chinese exports on import price inflation<sup>20</sup> in 26 industrialised countries using data on import shares and unit values from the United Nations ITCS database. Their results suggest that the contribution of China to import price inflation over the period has varied significantly across country, though it is consistently negative and largest for countries with which China has the strongest trade links (Japan, Korea, and the US). The UK is one of the few economies for which Chinese imports are calculated to have had no effect, although the switching effect has a slight negative impact, this was offset by a small positive inflation effect.

### *3.2.3 Regression based methods versus additive measures*

We have discussed two methods of analysing the impact of cheap imports from China on industrialised country inflation, regression analysis which estimates the impact, and additive measures which calculate the impact. Studies using an additive measure outnumber those using regression based methods, and generally show China to have had a downward impact on inflation in the industrialised countries considered due to a negative switching effect. The two regression based studies use different models which pick up

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<sup>18</sup> Using a high price level country as the numeraire will increase the size of the negative switching effect of a low cost country with a rising UK import share, whilst using a low price level country will increase the negative switching effect from high cost countries with a falling UK import share.

<sup>19</sup> The authors also investigate the impact of the strong output growth in non-OECD countries on commodity prices. Using reduced form equations they estimate that if these economies had grown at the same rate as OECD economies from 2000-2005 then real oil prices at the end of 2005 would have been 20-40% lower.

<sup>20</sup> Kamin et al (2004) calculate import price inflation rather than weighted world export price inflation; hence they assume that margins and transport costs are constant.

different effects, one suggests that China had a downward effect on US inflation due to the switching effect, and the other finds a weak inflation effect, the direction of which will depend on the level of inflation in China relative to the US.

Both methods have advantages and disadvantages. Additive measures are used to calculate the impact on weighted world export price inflation and allow changes to be easily separated into the ‘inflation’ and ‘switching’ effects. However, they cannot account for the role of monetary policy or inflation expectations, and assume that the prices of goods and services not specifically modelled remain constant. Regression based techniques can be used to estimate the impact on domestic import prices, and also the pass through to consumer and manufacturers’ prices.<sup>21</sup> They can pick up the effects from a wider range of channels than additive measures, including indirect ones. Which effects are picked up will be determined by the specification of the regression and the choice of inflation measure as a dependent variable.

The results from both methods may be adversely affected by issues of data quality. Regression based measures may be affected by the quality of industrialised country inflation data. One issue is that a statistician may class goods from China as different goods to those from which the importer has switched from, hence any switching effects may be underestimated.<sup>22</sup> There is also the question of whether data is sufficiently quality adjusted. If changes in quality are not captured effectively then changes in prices that should be attributed purely to changes in quality will be picked up in the regressions as actual price changes and bias the coefficients. Additive measures can face similar problems as they rely on export price and inflation data from a wide range of trading partners which may be of poor quality or unavailable. Producer price data is often used as a proxy for export price data if it is not available, but as this includes prices of non-tradable goods its use may distort the results.

Given both methods have their respective advantages and disadvantages we calculate/estimate both for the UK, and this provides a useful robustness test for our

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<sup>21</sup> In principle, additive methods could also be used to show the effects on inflation further up the production chain through the use of input and output tables, though this is beyond the remit of this study.

<sup>22</sup> This is more likely to occur if the price of the Chinese good is much lower than the price of the good which it has replaced.

results. The additive measure we use is akin to that of Nickell (2005), and the regression based estimates draw on the method used by Kamin *et al* (2004).

## 4 Additive calculation

### 4.1 Methodology

We use the index used by Nickell (see equation 2b) which shows UK weighted world export price inflation (henceforth referred to as world  $\pi^x$ ) as the sum of the average of the inflation effects and switching effects across its  $I$  trading partners. The size of the inflation effect from country  $i$  is determined by the level of inflation in its exports (in sterling terms) and its share in UK imports. The size of the switching effect of country  $i$  is determined by the difference between the price level of its exports and the numeraire country and any change in its share of UK imports.

A caveat to this method is that the cross country distribution of any switching effects depends upon the choice of the numeraire (see explanation in section 2.2.2). Technically the numeraire price level should be the weighted average price level of UK imports in the previous period, as the price level of the US is fairly close to this throughout the sample period we use the US as our numeraire.

### 4.2 Data

The dataset uses annual data from 1980 to 2004 for the 30 countries with the largest UK import share in 2004, along with Vietnam and the Philippines.<sup>23</sup> These countries accounted for 92% of UK imports in 1980 and 87% in 2004. The **trade weights** ( $w$ ) are measured as the share of nominal UK imports obtained from the IMF's Direction of Trade Statistics (DoTS), scaled up so that the sum of the weights is equal to one. A caveat to the DoTS trade data is that there is a lack of uniformity in the recording of the origin country, in some cases it may be correctly recorded as the original source of the product, whilst in other cases it may be incorrectly recorded as an entrepot. This may artificially boost the UK trade weight of Hong Kong whilst lowering that of the China.

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<sup>23</sup> These two countries are included to allow the effects of the 'Asian production chain' to be analysed.

Data on **relative price levels** ( $p$ ) is from the Penn World Tables.<sup>24</sup> These provide country level data on the price level of aggregate GDP, consumption, and investment relative to the price level of aggregate GDP in the US (which is equal to 100 at every data point), but do not include data on export prices. This is proxied by taking the weighted price level of consumption and investment, where the weights are determined by the proportion of UK imports that were consumption and investment goods in that year. However, a caveat to this data is that it will also include data on the relative prices of domestically consumed goods and services, and this may bias the data such that the difference in the price level of exports from the highest and lowest cost countries appears greater than it actually is.<sup>25</sup> This may increase the apparent size of the negative switching effect from low cost countries that have seen their share of UK imports increase.<sup>26</sup>

**Export price inflation** ( $\pi$ ) is calculated using the IMF's International Financial Statistics (IFS) series for export unit values in US dollar terms adjusted for the exchange rate. For countries where this data is not available (China, Austria, Vietnam, Russia and Malaysia post-1999) we calculate export price inflation using the price level data from the Penn World Tables. This is inferior to using the IFS data as it includes inflation of domestically consumed goods. For China, the calculated series fits reasonably well with the Hong Kong re-exports to UK data which is available from 1993 onwards.

### **4.3 General results**

The calculated world  $\pi^x$  series matches the UK import price deflator and UK import price inflation series from the Office of National Statistics (ONS) fairly well, but shows greater volatility (Chart A1). In particular, our calculated measure suggests much stronger deflation in 1997 than the ONS data. This is most likely due to the strong appreciation of the sterling ERI from August 1996 which had a strong downward impact on world  $\pi^x$  UK,

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<sup>24</sup> See Heston, Summers and Aten (2006).

<sup>25</sup> As the price of exports is set in global markets the price level of exports from low cost countries is likely to be higher than that of domestically consumed goods, whilst the price level of exports from high cost countries is likely to be lower than that of domestically consumed goods. Hence the proxy we use is likely to underestimate the export price level from low cost countries, and overestimate the export price level from high cost countries.

<sup>26</sup> ECB (2006) calculations suggest that EU manufacturing imports from China are approximately 20% the cost of imports from 'high-cost' countries (including the US, UK and Japan), and 25% the cost of average imports. This is similar to the Penn World Table results which suggest that China's domestic price level is 25% that of the US and 20% that of Japan, indicating that using domestic price level data may not significantly bias the results.

but does not appear to have been fully passed through to import prices. This suggests that importers temporarily chose to increase their margins rather than pass on the fall in cost. Interestingly, when sterling depreciated sharply in the latter half of 1992 this divergence between world  $\pi^x$  and UK import price inflation did not occur suggesting that importers' responses to changes in world export prices have not been symmetric. Mismatches between the calculated measure and the ONS series could also be due to (a) the ONS data covering imports from a wider range of countries (since they technically cover all imports into the UK), (b) changes in the wedge between UK import and world export prices created by changes in margins, transport and transaction costs, (c) the goods composition of UK imports being different to the aggregate composition of world exports, (d) identical exports from the same country being sold at different prices in different countries as exporters price-to-market, and (e) other related problems with the data mentioned in section 3.2.

The majority of volatility in world  $\pi^x$  has been due to imports from industrial countries (Chart A2), which accounted for an average of 83% of the sample throughout the period, with a relatively small contribution from EMEs – all but two (Turkey and Brazil) of which are from Asia – and oil exporters. However, EMEs have generally had a negative effect on UK import price inflation, and this effect has increased since 2000. On aggregate the inflation effect has dominated the switching effect (Chart A3), though the importance of the switching effect has increased since 2000. Much of the inflation effect will be due to fluctuations in sterling against the currencies of other industrialised countries.

#### **4.4 Results for China and Asia**

The China effect has been negative or negligible throughout the period (Chart A4), but has become stronger over recent years. In 1990-2004 imports from China reduced world  $\pi^x$  by -0.35pp per annum on average, but in 2000-2004 the impact was larger at -0.75pp. Combining the effects of China and Hong Kong to account for Hong Kong's role as an entrepot for Chinese exports gives a similar result but shows a larger negative impact in the latter period (-0.8pp per annum on average). The increase in China's impact from 2000 onwards coincides with acceleration in its UK import share (which rose from 2% in 1999 to 5% in 2004), whilst its price level remained at around 24% of that of the numeraire country (the US). These results are comparable with the ECB (2006) result which suggests that imports from China reduced euro area annual manufacturing import price inflation by 1pp on average between 1996 and 2004 but contrasts to the result from the additive

measure used in Kamin *et al* (2004). That study suggests that from 1993 to 2001 China's average annual impact on UK import price inflation was zero,<sup>27</sup> where our method suggests an average impact of -0.9pp per annum over the same period. The contribution from non-China/Hong Kong Asia<sup>28</sup> has also tended to be negative (averaging -0.35pp per year from 1990-2004) but shows more volatility (Chart A4).

Charts A5 to A7 decompose the contributions of China, China and Hong Kong and non-China/Hong Kong Asia into switching and inflation effects. Nearly all China's contribution to world  $\pi^x$  has been due to the switching effect (Chart A5), which grew fairly consistently over the period from -0.1pp in 1990 to -1pp in 2004 as China's share of UK imports grew from 0.5% in 1990 to 5% in 2004 whilst its price level remained low. However, this should be considered a 'maximum' switching effect due to the use of price level data which includes the prices of domestic goods (see discussion in section 3.2). Chart A6 shows that combining the Hong Kong and China sample increases the size of the inflation effect, which was small and positive in 2000 and 2001, and small and negative from 2002 to 2004 as Hong Kong experienced deflation. Chart A7 shows that the effect of Asia excluding China and Hong Kong has been mainly due to inflation and exchange rate volatility. Asia had a fairly large negative effect during the years surrounding the Asian crisis. In 1996 this negative effect was driven by strong downward inflation and switching effects from Japan following the depreciation of the yen against sterling which began in mid-1995, whilst the negative effect in 1996 and 1997 was mainly due to strong downward inflation effects from Japan, Korea and Malaysia as their currencies depreciated in the Asian crisis. China's large switching effect since 2000 compared to that of the rest of Asia may be partly due to the emergence of the 'Asian production chain', in which China tends to be the final stage of assembly and thus the country to which UK imports from the rest of the world have been switched to.

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<sup>27</sup> Kamin *et al* (2004) find that over this period the average switching effect was -0.03pp per annum, and this was offset by an inflation effect of 0.03pp per annum.

<sup>28</sup> The non-China and Hong Kong Asia sample is comprised of India, Japan, Korea, Malaysia, Singapore, Thailand, the Philippines and Vietnam.



## 5 Regression based estimates

### 5.1 Methodology

We empirically investigate the impact of the level and growth of imports from China on UK inflation using panel regressions with some similarities to those used by Kamin *et al* (2004) on US data (see section 2.1). Our model is a fixed effects panel regression of UK inflation on the share of UK imports from China and the change in this share by goods category (for example garments or pharmaceuticals). This is shown below in equation (3) where  $\pi$  represents inflation,  $t$  and  $i$  time and category respectively,  $Share$  the proportion of UK imports from China and  $\Delta$  change.  $T$  is a vector of years,  $\lambda$  a vector of coefficients and  $\varepsilon$  an error term.

$$\pi_{t,i} = \alpha_i + \beta_1 \Delta Share_{t,i} + \beta_2 Share_{t,i} + \lambda' T + \varepsilon_{t,i} \quad (3)$$

If the switching effect is significant we would expect  $\beta_1$  to be negative, and if the inflation effect is significant we would expect  $\beta_2$  to be significant, although the sign of its coefficient will depend on the level of export price inflation in China relative to that in other countries exporting to the UK. However, if the direction of the inflation differential between Chinese exports and other countries exports is not constant across the different categories, or switches over the time period, any inflation effects are unlikely to be captured by the model. Given the results from the ‘Nickell method’ suggest that the inflation effect from China was negative in 2002 and 2003, but positive the two years prior to that this indeed may be the case. The coefficients may also pick up the indirect effects of competition from China on prices of goods from other countries as this competition is likely to be highest in categories where China’s import share is high or rising.

This model differs to that of Kamin *et al* (2004) in three ways. First, we control for third factors that may be associated with both lower inflation and an increase in the share of imports from China in a particular goods category (such as a reduction in trade barriers that both increases the share from China and increases competitiveness hence pushing down on inflation) using category fixed effects rather than a lagged dependent variable. As the time sample of our model is short we assume that these ‘third factors’ remain constant

throughout the period.<sup>29</sup> Second, we include year dummy variables to capture any exogenous factors affecting inflation in all categories that may vary over time, such as changes in the output gap. Third, rather than using a static ‘share’ variable we allow it to vary over time. This is because a static variable would be strongly correlated with the fixed effects, it allows us to extract more information,<sup>30</sup> and we do not find it to be correlated with the change in share.

Though CPI inflation is our main variable of interest,<sup>31</sup> we experiment with other measures of inflation as dependent variables as the results from this may help explain how the effects of an increase in imports from China move along the production chain. The other measures we consider are inflation in the import price index (IPI), the manufacturing input price index (MIPI) and the manufacturing output price index (MOPI).

## 5.2 Data

Data on inflation in the CPI, IPI, MIPI and MOPI disaggregated by goods category are available from the Office of National Statistics (ONS). Data are used on an annual basis, for CPI and IPI the sample is from 1997-2005, and for the MIPI and MOPI data are from 1999-2005. Categories that are non-tradable are omitted, as are all categories where prices have been strongly influenced by external factors<sup>32</sup> and those for which matching trade data are not available. This left 33 categories for CPI, 40 for IPI, 15 for MIPI and 23 for MOPI.<sup>33</sup> The CPI data are quality adjusted, but the degree of quality adjustment in other series is less clear.<sup>34</sup>

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<sup>29</sup> The use of a fixed effects model (as opposed to a random effects model used by Kamin *et al* (2004)) means we are testing for ‘within’ variation ie the effect of the change in import share on inflation in that category. The use of a random effects model would capture both the within and between category effects.

<sup>30</sup> In some categories the change in the share variable over the sample was quite large (see Tables A1-A4) so treating this as fixed may reduce its information content.

<sup>31</sup> We considered using RPI inflation as it has a longer history, but the CPI categories matched the trade categories better.

<sup>32</sup> For example tobacco is dropped from the CPI as a large part of its price is composed of taxes, and fuels are eliminated from all indices as their prices are largely determined by global factors.

<sup>33</sup> Fifty categories were dropped from the CPI, nine from the IPI and one from MOPI.

<sup>34</sup> If quality increases over the sample, then inadequate quality adjusting of the data would result in a positive bias on the regression coefficients because 1) a price rise purely reflecting an increase in quality would have a positive effect on the coefficients when it should have had no effect and 2) a quality improvement that did not coincide with a price rise would have no effect on the coefficient, when it should have had a negative effect.

These inflation categories are ‘matched’ to end-use categories in the SITC Revision 3 trade data obtained from UN Commodity Trade Statistics Database (Comtrade)<sup>35</sup> (See Annex B, Tables B1-B4 for the matching inflation and trade data categories for each measure of inflation). For IPI this process is simple as ONS inflation categories correspond to SITC trade data categories, however for CPI, MIPI and MOPI categories are matched according to the author’s discretion. Where appropriate multiple SITC categories were used, up to the four digit level. Both imports from mainland China alone, and from China including Hong Kong are analysed to account for Hong Kong being an important entrepot for exports from China.

### ***5.3 Simple statistical analysis***

Tables A1-A4 show the average UK import share from China (and Hong Kong) and the change in this import share over the respective sample period alongside data on average UK inflation in the matching goods category. Lower/higher inflation in categories in which the average level of imports from China accounted for a large portion of total imports is consistent with a negative/positive inflation effect, and lower inflation in categories in which the share of imports from China grew strongly is consistent with a negative switching effect. In all tables the categories in which any of these features occurred are highlighted in blue. The tables also show the spread of the data and the correlation of the share variables with average inflation over the period. Charts A9-A16 summarise this data by showing scatter plots of average annual UK inflation against China and Hong Kong’s average share of UK imports, and the changes in this share by goods category.<sup>36</sup>

Although the categories of imports differ slightly across different measures of inflation, those that stand out as showing both a large average and increase in UK import share over the sample period are clothing, textiles, footwear, furniture, games and toys, sports equipment, leather manufactures, recording media and data processing equipment. Some, though far from all, of these sectors have also shown relatively strong deflation.

The correlation coefficients in Tables A1-A4 show a negative relationship between all measures of inflation and the change in UK import share from China and Hong Kong, and

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<sup>35</sup> See <http://unstats.un.org/unsd/comtrade>

<sup>36</sup> The charts were also plotted using data on imports from China alone and these show very similar patterns.

a negative relationship between CPI, MIPI and MOPI inflation and the average UK import share. The relationships between the share variables and CPI inflation are the strongest (the correlation coefficients with CPI inflation are the only ones that are significant), and for all measures of inflation the relationship with change in UK import share is generally stronger than that with the average UK import share. The correlation coefficient between annual average CPI inflation across category and the change in the share of imports across category is -0.44 for the China sample and -0.42 if Hong Kong is included in the sample (both are significant at the 1% level). The same statistic with the annual average import share is slightly smaller at -0.30 for the China sample and -0.27 if Hong Kong is included (significant at the 5% and 10% levels respectively). This evidence points towards a negative switching and inflation effect and suggests the switching effect has been larger. It also indicates that CPI is the price level index affected most by imports from China.

Categories that appear to be driving the negative relationship between CPI inflation and the import share variables are data processing equipment, equipment for the reproduction of sound, pictures and photographic equipment, garments and footwear. Although the negative relationships between MIPI and MOPI inflation and the share variables are weaker, these appear to be driven by office machinery and computers, and radio, television and communication equipment. As we see the strongest effects on CPI inflation we concentrate on this measure below.

## **5.4 Panel data analysis**

### *5.4.1 Regressions based on consumer price index (CPI) inflation*

Table A5 shows the results of panel regressions on CPI inflation. The results for both the China and China and Hong Kong combined sample are shown but we concentrate on the results from the combined sample as these tend to show a slightly better fit. We run regressions on both the full sample from 1997-2005, and the sample from 2000-2005 only as the results of the Nickell method (Section 4) suggest that the contribution of imports from China to UK weighted world export price inflation increased from 2000 onwards.

We run both a fixed effects model (shown in equation 3) and the random effects model used by Kamin *et al* (2004) (shown in equation 1) to compare the results.<sup>37</sup> For both models we show the results including and excluding the control variables (the year dummies in the fixed effects regression and the lagged dependent variable in the random effects regression). The models explain little of the variation in inflation, though the share variables are jointly significant in most specifications. The control variables are significant in all specifications indicating the need to control for changes in the environment over time; hence we focus our analysis on the results of the fixed effects model with the control variable (regression 1).

The coefficient on the change in share variable ( $\beta_1$  – indicating the switching effect) is negative in the fixed effects models, suggesting that *from 1997-2005 a 1pp increase in import share from China and Hong Kong was associated with 0.2pp lower UK CPI inflation in that category, and the impact was slightly stronger in the latter half of the period*. It is interesting to compare this result with that obtained using the regression run by Kamin *et al* (2004). The results (regressions 3 and 4) suggest a smaller switching effect, but this is not significant when the control variable is included.

The coefficients on the share variable ( $\beta_2$  – indicating the inflation effect) are positive and significant in most specifications of the regression.<sup>38</sup> This suggests that categories with a high import share from China and Hong Kong experienced higher CPI inflation, most likely due to export price inflation in that category in China being higher than export price inflation in other countries that export to the UK.<sup>39</sup> The regressions using the method of Kamin *et al* (2004) (which include the share variable as a static variable) find that this inflation effect is not significant when the control variable is included. The finding of a positive inflation effect is in contrast to the results from the simple statistical analysis (section 6.1) which suggests a negative relationship between the import share from China

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<sup>37</sup> See section 5.1 for further discussion of the difference between the two models.

<sup>38</sup> We test to see if the result from the regressions are affected by one ‘share’ variable acting as a control for another by adding the variable ‘share\* $\Delta$ share’ to equation 1. However, the coefficient on this variable is insignificant in all specifications of the regression indicating that there are no non-linearities in the model that need to be accounted for.

<sup>39</sup> We test whether the results from regressions 1 and 2 are affected by the use of a random effects, rather than fixed effects, model. The coefficients on the share variables are not affected by the choice of model, though the random effects regressions show a slightly poorer fit.

(and Hong Kong) and UK CPI inflation across goods category. However, these simple correlation coefficients do not control for the change in share, time or fixed effects and consider the average of the share and inflation variables over the sample period. As the correlation between the share and change in share is positive, the negative relationship between the share and CPI inflation found in section 6.1 may capture the fact that in some categories where the share of imports from China has been high the change in share has also been high. Hence, it may have been the switching, rather than the inflation effect that was driving this result. Hence, we find that *from 1997-2005 having a 1pp higher share of imports from China and Hong Kong was associated with 0.2pp higher CPI inflation in that goods category.*<sup>40</sup>

We also test the effect of imports from the whole of Asia on UK CPI using the same method (Table A6). We find evidence of a negative switching effect over the whole sample period, suggesting that a 1pp increase in UK import share from Asia was associated with 1pp lower CPI inflation in that category. This is slightly smaller than the effect for just China and Hong Kong, and there is no evidence of any inflation effect. If we exclude China and Hong Kong from the sample the switching effect is slightly smaller and less significant suggesting that although these two entities make a contribution they do not totally drive the result. Interestingly, although the switching effect for China and Hong Kong is stronger in the latter half of the period, for Asia as a whole it is not significant in the latter half of the period, especially in the sample which excludes China and Hong Kong. This could be because the growth of the ‘Asian-production chain’ has meant that China’s UK import share has increased at the expense of the rest of Asia’s, hence the switching effect has increasingly been driven by China and Hong Kong.

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<sup>40</sup> We also test for an inflation effect by running Granger causality tests of Chinese RPI and PPI on UK CPI by category. The results suggest no relationship between inflation in the two countries, but as the cross category inflation data is quite highly aggregated and the sample period short (2002-2005) it is difficult to draw any conclusions from this result.

### *6.2.2 Regressions based on manufacturers' input price index (MIPI) inflation and manufacturers' output price index (MOPI) inflation<sup>41</sup>*

The effects of imports from China (and Hong Kong) on UK MIPI and MOPI inflation are also analysed using the same method (Tables A7 and A8 respectively). We use a slightly shorter sample period (1999-2005) due to data constraints, hence the more recent sample of the data is also shorter (2002-2005). For MIPI inflation we find a negative switching effect for the China sample suggesting that *from 1999-2005 a 1pp increase in UK import share from China was associated with 0.3pp lower MIPI inflation in that category*. This switching effect is just outside the significance threshold when we look at data for the latter part of the sample period alone, and not significant when Hong Kong data is included. There is no evidence of any inflation effect if the control variables are included. The results for MOPI inflation indicate no significant switching or inflation effect. The weaker results from the regressions on MOPI inflation are expected as these will pick up mainly the effects of greater competition in the final goods market, and not much of the impact of cheaper inputs earlier in the production chain as these may belong to a different category.<sup>42</sup>

## **5.5 Discussion of results**

The results suggest a 1pp increase in the UK import share from China and Hong Kong was associated with 0.2pp lower CPI inflation in that category in the 1997-2005 period, whilst the same increase from China alone was associated with 0.3pp lower manufacturers' input price index (MIPI) in the 1999-2005 period. They also show that having a 1pp higher

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<sup>41</sup> The results of the regressions on IPI inflation are not shown as they are inconsistent with both intuition and results from other parts of the study. It is suspected that this may be due to the methods used to collate the data. This was discussed in section 3.2.3.

<sup>42</sup> The regressions on MOPI inflation could capture the effects of increased competition from Chinese imports pushing down on the price UK manufacturers' can charge for their products in the domestic market, but it will not pick up much of the effects of cheaper inputs on production costs as any increase in the share of these inputs from China may not have been in the same goods category as the final output. For example, assume a UK television manufacturer imports electrical apparatus for production. If he substitutes imports of this electrical apparatus from other countries with cheaper imports from China the 'switching' will reduce the manufacturer's input price inflation, and could also reduce the manufacturer's output price inflation. However, as his output (televisions) are in a different goods category to the electrical apparatus (the category in which the UK import share has increased) the fall in the manufacturer's output price index inflation will not be picked up in these regressions. Hence the pass through from MIPI to MOPI, and thus CPI inflation is difficult to detect due to the transformation of goods from one trade category to another as they move along the supply chain.

import share from China has a positive effect on CPI inflation in that category, increasing it by over 0.2pp per annum. Hence whilst the switching of imports to China (and Hong Kong) will lower CPI and MIPI inflation in that year, the higher import share from these countries that results may put upward pressure on future CPI inflation. Applying the results for CPI inflation to 2005 data suggests that the 0.5pp increase in China and Hong Kong's import share could have reduced CPI inflation by up to -0.1pp, but as China and Hong Kong's import share was 7% this would have been more than offset by the upward inflation effect. However, as we do not know the response of inflation in other goods categories to these movements we can not say anything about the impact of imports from China on aggregate UK CPI inflation. It should also be noted that these results do not account for the switching of domestic production for imports from China, and accounting for this could increase the absolute size of both the inflation and switching effects.

For CPI the switching effect is stronger if the regressions are run on data since 2000 only, consistent with the acceleration in China's UK import share since then (see Chart 3). Because we use a shorter sample period for MIPI we would expect to find less of a difference between the size of the switching effect in the longer and shorter sample period. That we find the effects on CPI to be stronger when we look at the combined China and Hong Kong sample, but the effects on MIPI less significant presents a puzzle, but may reflect the type of goods that are exported from the two entities. The regressions suggest that the potential switching effects are of a similar size for both MIPI and CPI inflation. This is slightly surprising as we would expect the effect on CPI to be larger given CPI should be affected directly from changes in IPI inflation, competition in the final goods market *and* changes in MIPI inflation as they pass along the supply chain (see Diagram 1 in section 2.1). However, as the imports driving the negative switching effect in MIPI inflation are likely to be in a different goods category to the manufacturer's output the pass through from the MIPI to consumer prices (via MOPI) may not be picked up by these cross sectional regressions (see footnote 42). This explanation may also explain why we find no effect of the share variables on MOPI inflation. This does not mean there is no pass through from MIPI inflation to MOPI and CPI inflation, just that this panel data method



can not pick up the effects on goods that have changed category after they have been imported.<sup>43</sup>

The finding of a negative switching effect for CPI inflation is consistent with the findings from our calculation of the contributions to UK weighted world export price inflation (Section 4). This shows that the growth in imports from China reduced UK weighted world export price inflation by a maximum of 0.95pp in 2004. Given China and Hong Kong's aggregate UK import share grew 0.6pp in 2004 the regressions results indicate that this could have pushed down UK aggregate CPI by up to 0.14pp. These numbers are fairly consistent if we consider that the share of imports in CPI is approximately 20%.

That we find a positive inflation effect for CPI inflation may seem surprising given that the decomposition of UK weighted world export price inflation (section 4) suggests that the size and sign of any inflation effect varies over the sample period and is dominated by the switching effect. However, the two methods estimate a slightly different inflation effect. The Nickell method indicates a positive inflation effect if inflation in Chinese exports is positive. The regressions indicate a positive inflation effect if inflation in UK imports from China is greater than inflation in UK imports from other countries. Hence the finding of different inflation effects in the two methods can be reconciled if we consider that although export price inflation in China was generally higher than in other countries exporting to the UK over the sample period, it may still have been negative at times. As discussed earlier, the results suggest that the positive inflation effect will have dominated the negative switching effect over the sample. However, looking forward the size and direction of the inflation effect could easily change as the inflation differential between exports from China and the UK's other trading partners varies. Though as long as Chinese export prices remain lower than those of its competitors their inflation rate is likely to remain higher. In contrast, the switching effect will be eroded less easily as the growth in China's export share and low price of Chinese exports are less volatile.

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<sup>43</sup> Differences in the findings across sectors could also have been driven by different levels of data disaggregation and sample sizes. CPI data is disaggregated into 32 categories, whilst MOP and MIP data are disaggregated into 22 and 18 categories respectively. Fewer categories will mean any trends in the data are less obvious as the coverage of UK imports from China will be smaller and the matching trade data is less disaggregated.

In order to compare our results directly to those of Kamin *et al* (2004) for the US we run regressions 1-4 on data from 1997-2002. We use CPI only because our sample period for MOPI and MIPI data does not start until 1999. Kamin *et al* (2004) find a negative switching effect suggesting that a 1pp increase in China's import share in the US of a given sector was associated on impact with 0.8pp lower annual IPI in that category, but no inflation effect. We find no significant switching or inflation effect on UK CPI inflation over the same period. Whilst we would expect any impact on CPI to be weaker than any impact on IPI as CPI is also affected by domestic factors, the finding of no impact on the UK over the same period is likely to be because China's import penetration has been much higher in the US than in the UK (Chart 3).

Hence we find that the growth in UK imports from China has had two opposing effects on UK inflation, and although the positive inflation effect would have dominated over the sample period, it may not always do so. However, it is important to note (as discussed in Sections 1 and 2) that in the medium term any switching or inflation effect will not affect aggregate CPI inflation as this is determined by domestic monetary policy. For example, if the inflation effect was to dominate and push CPI in categories with a high import share from China above the target level this would push up aggregate CPI inflation in the short-run, but in the medium term the inflation target would be achieved with tighter domestic monetary policy. Similarly, if a negative switching effect were to dominate the target for aggregate inflation could be achieved with looser domestic monetary policy.

In both scenarios there would be some distributional effects as domestic industries competing in sectors where imports from China have been very competitive would face lower profits,<sup>44</sup> whilst those competing in non-tradable sectors would be affected by any shift in consumers' consumption patterns and response to any change their real incomes (caused by a change in the relative price of traded goods and interest rates).

## **6 What does this say about future inflation?**

The question for policy makers is to what extent might the switching of imports to China, and higher inflation in Chinese exports than in exports from other trade partners, continue

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<sup>44</sup> These sectors would likely include data processing equipment, recording media, clothing and footwear and major appliances and electrical machinery apparatus and goods, and fabricated metal products.

to affect UK inflation. If the growth in UK imports from China remains strong and Chinese export prices remain competitive then one could expect to see a continued negative switching effect until the market of the respective good becomes saturated. Although this could mean an end to the China switching effect in these goods categories, if China were to become more technologically advanced and move up the value chain the categories in which the switching effect is observed could change. Continued growth in China's UK import share would increase the potential size of any inflation effect. Although the sign of any future inflation effect is uncertain because the level of inflation in Chinese exports relative to both the UK and other UK trade partners is likely to vary, continued strong growth in demand for Chinese exports will put upward pressure on their inflation rate. However, the upside potential of any positive inflation effect may be limited because if the rate of inflation in Chinese exports were to increase, or China's currency were to appreciate significantly, then China's competitiveness would be eroded and imports from China could be substituted with those from other lower cost producers generating a new switching effect.

Whether any of these scenarios are likely to occur is very difficult to predict, Chart A8 shows the extent to which imports from China have saturated the UK import market in certain goods categories in comparison to some other countries. That the UK's China import share is much lower than that of the US in most goods categories suggests that the switching effect could continue to grow for some time provided China remains competitive. If China were to see its competitiveness eroded (through higher inflation, currency appreciation or trade barriers) candidate countries from which its exports could be substituted with are (a) those from emerging Asian economies that currently compete with China on price level, but not on capacity,<sup>45</sup> and (b) the new EU member states whose transformation into market-based economies and entry into the EU has increased export potential. Although these countries are geographically much closer to the UK, their price levels are currently twice the level of China's.<sup>46</sup>

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<sup>45</sup> Indeed many foreign firms producing in China are already starting to deploy a 'China plus one strategy' by which they invest in China and one other Asian country as a hedge against rising costs and other risks. See 'The problem with 'Made in China'' in *The Economist* 11/01/2007.

<sup>46</sup> The Penn World Tables show that the price level of GDP in China was half of that in Poland, the Czech Republic and Hungary, but similar to that in other countries in emerging Asia such as Thailand, Malaysia, Indonesia and the Philippines.

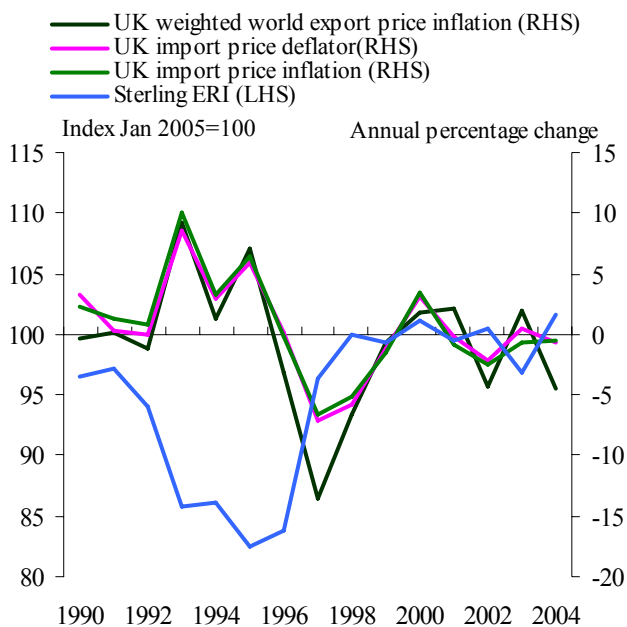
## 7 Conclusion

We have used two methods to estimate whether the level or growth in imports from China has had an impact on UK inflation. The first method calculated UK weighted world export price inflation as the sum of the effect of inflation in the UK's trade partners and the effect of substituting imports from more expensive countries with those from countries with lower price levels. The results suggest that China had a negative impact on UK weighted world export price inflation from 1997 to 2004, mostly due to the switching of the source of UK imports from other countries to China, and this effect grew to a maximum of -1pp per annum 2004. Consistent with this, panel regressions suggest that a 1pp increase in UK imports from China (and Hong Kong) was associated with an instantaneous 0.2pp lower consumer price index inflation in that category from 1997-2005, and 0.3pp lower manufacturers' input price index inflation from 1999-2005. The categories driving this result are data processing equipment, equipment for the reproduction of sound, pictures and photographic equipment, garments and footwear. However, whilst panel regressions suggest that the switching of imports to China will lower CPI in that year, they also suggest that the existing import share from China has put upward pressure on CPI inflation due to higher inflation in exports from China than other UK trading partners. Overall, the results suggest that this upward pressure on inflation dominated the downward pressure; hence China had a positive impact on UK CPI inflation over the 1997 to 2005 period.

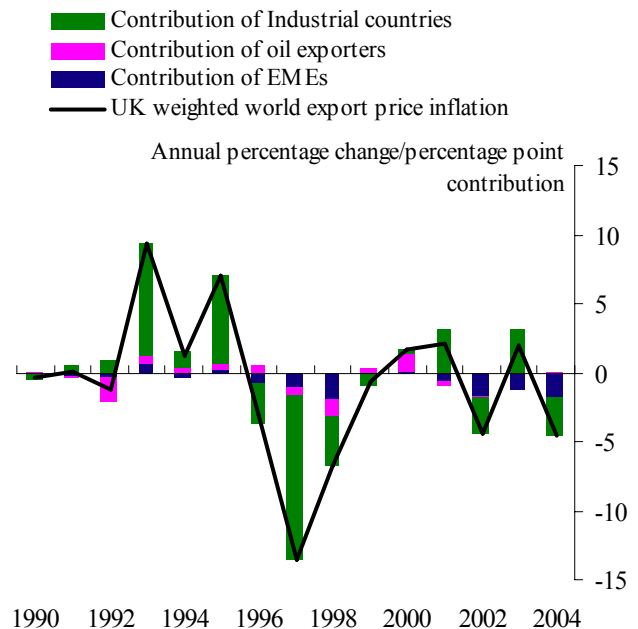
The extent to which the *growth* in China's import share will continue to push down some measures of UK inflation is difficult to predict, the data shows that in most markets the UK's import share from China is much lower than in the US suggesting that it could grow further. The extent to which the *level* of Chinese imports may continue to push up on UK CPI inflation will depend on the path of the differential between export price inflation from China and other countries exporting to the UK. This is likely to remain positive whilst Chinese exports remain cheap and experience strong demand, though there is an upside limit to this differential because if China were to see its competitiveness eroded it is possible that UK imports from China would be substituted with imports from other low cost countries. This could generate a new switching effect which would put downward pressure on UK inflation.

## Appendix A: Charts and tables

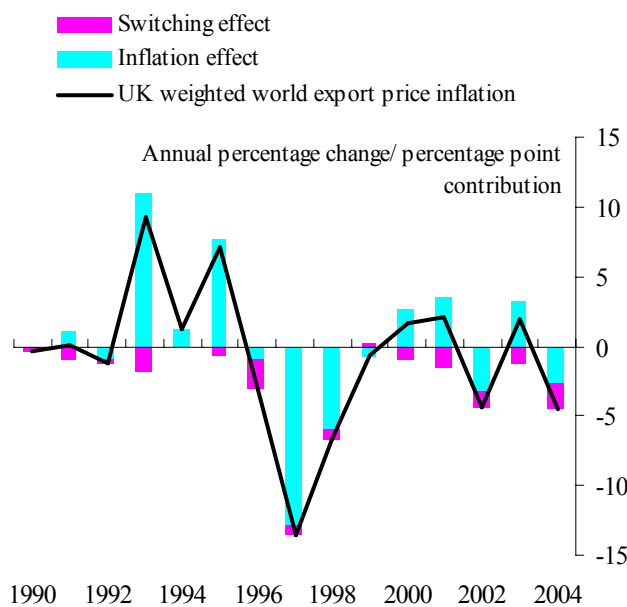
**Chart A1: Calculated UK weighted world export price inflation, ONS UK import price deflator and import price inflation, and Sterling ERI**



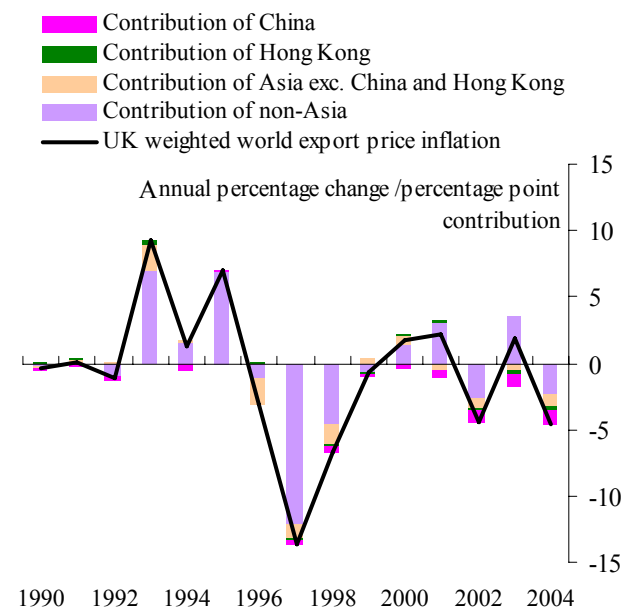
**Chart A2: Contributions to annual UK weighted world export price inflation – industrialised countries, oil exporters, and EMEs**



**Chart A3: Contributions to annual UK weighted world export price inflation – inflation and switching effects**

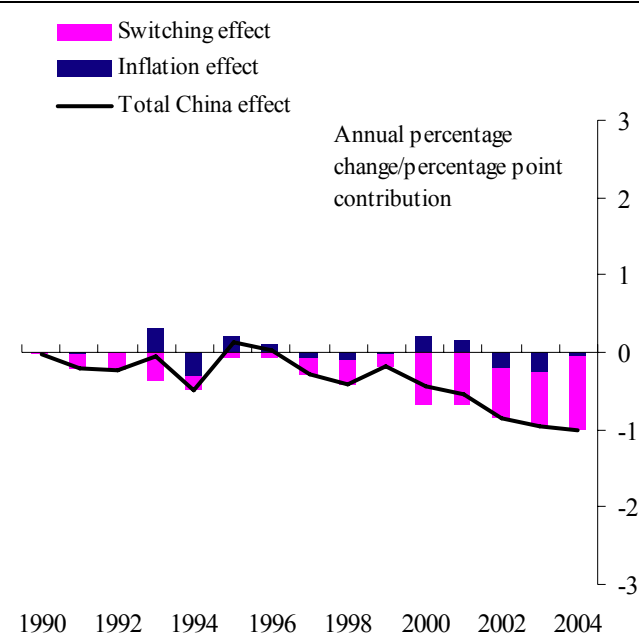


**Chart A4: Contributions to UK weighted world export price inflation – China, non-China Asia and non-Asia**

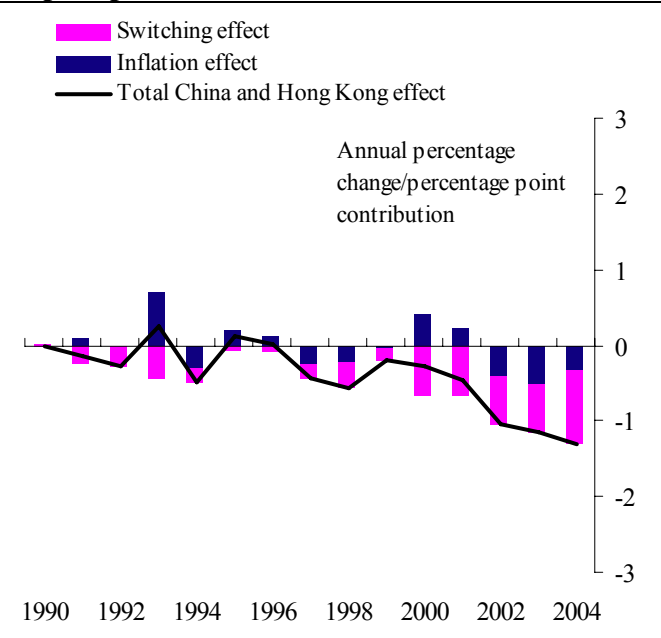


Sources: ONS, Penn World Tables, IMF International Financial Statistics, IMF Directory of Trade Statistics, Bank of England and author's calculations (see Section 3.1)

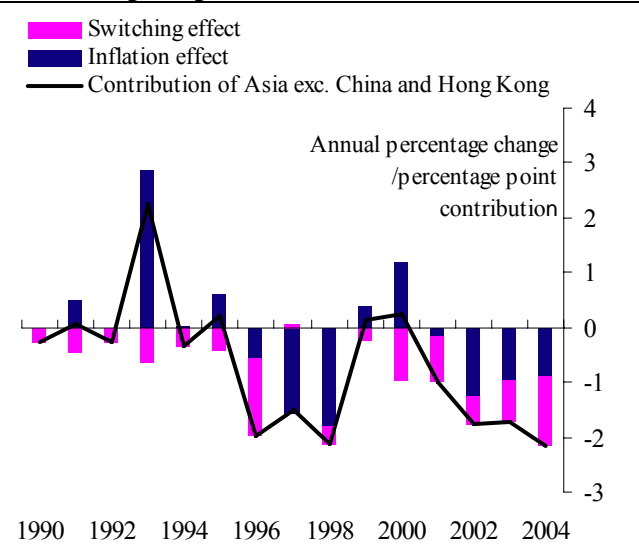
**Chart A5: Decomposing China's contribution to UK weighted world export price inflation**



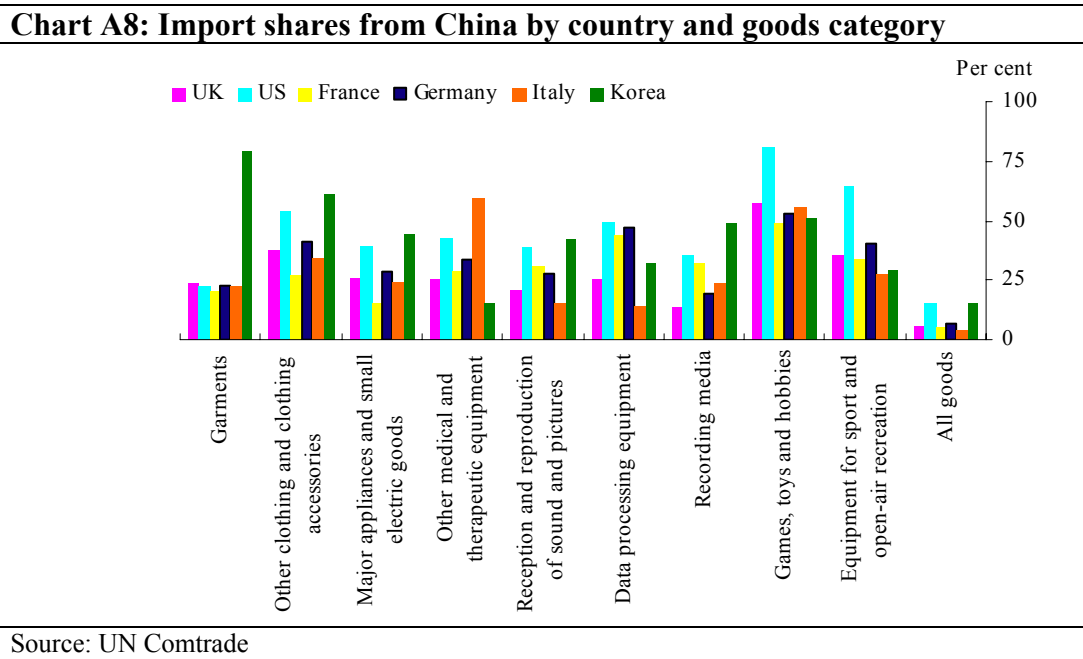
**Chart A6: Decomposing China and Hong Kong's contribution to UK weighted world export price inflation**



**Chart A7: Decomposing non-China and Hong Kong Asia's contribution to UK weighted world export price inflation**

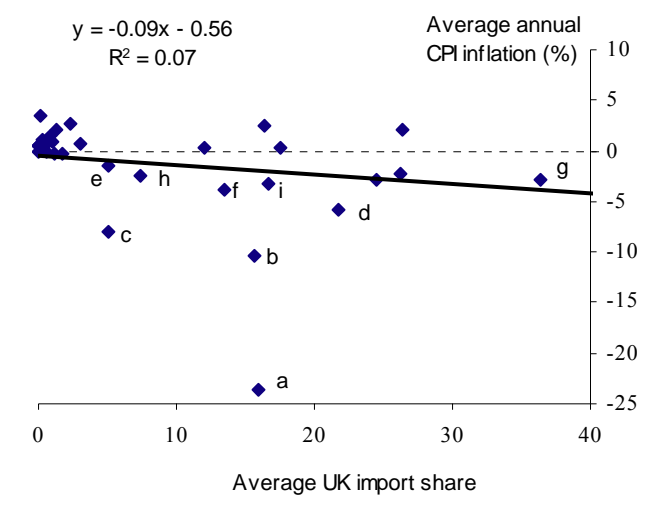


Sources: Penn World Tables, IMF International Financial Statistics, IMF Directory of Trade Statistics and author's calculations (see Section 3.2)

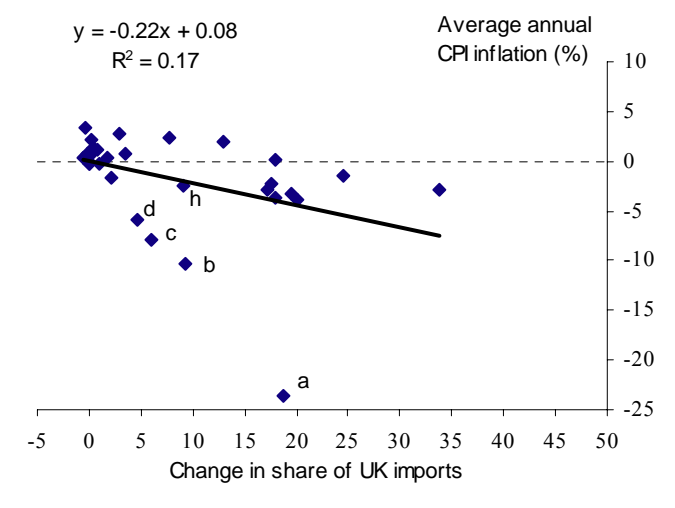


**Charts A9-A10 – Consumer price index (CPI) inflation**

**Chart A9: Average UK import share from China and Hong Kong and average annual CPI inflation by goods category, 1997-2005**

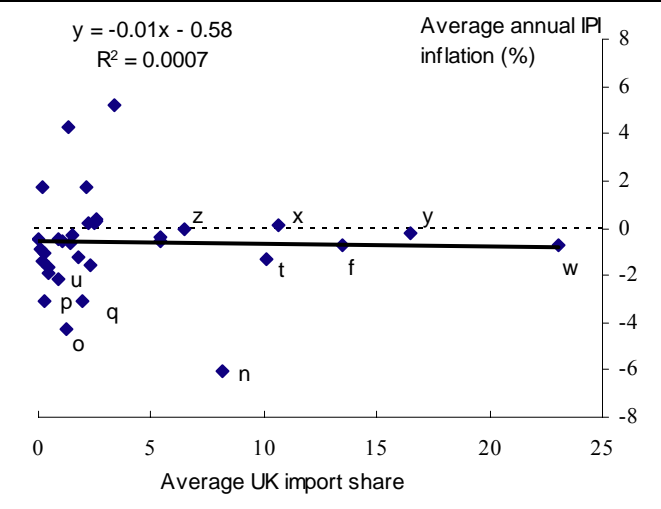


**Chart A10: Change in UK import share from China and Hong Kong and average annual CPI inflation by goods category, 1997-2005**

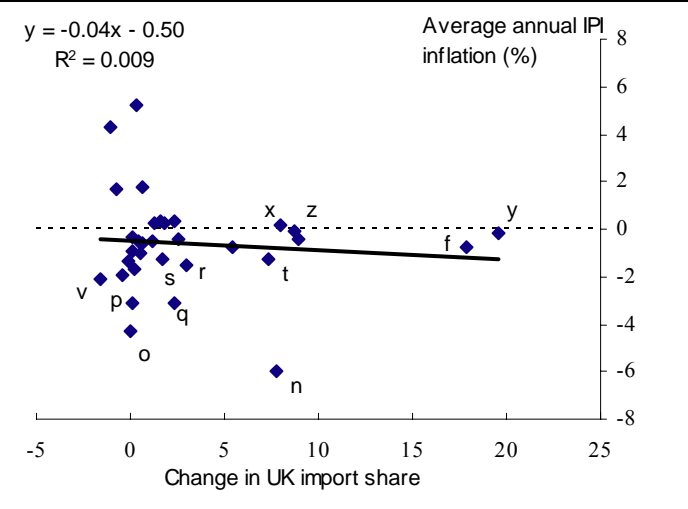


**Charts A11-A12 – Import price index (IPI) inflation**

**Chart A11: Average UK import share from China and Hong Kong and average annual IPI inflation by goods category, 1997-2005**



**Chart A12: Change in UK import share from China and Hong Kong and average annual IPI inflation by goods category, 1997-2005**



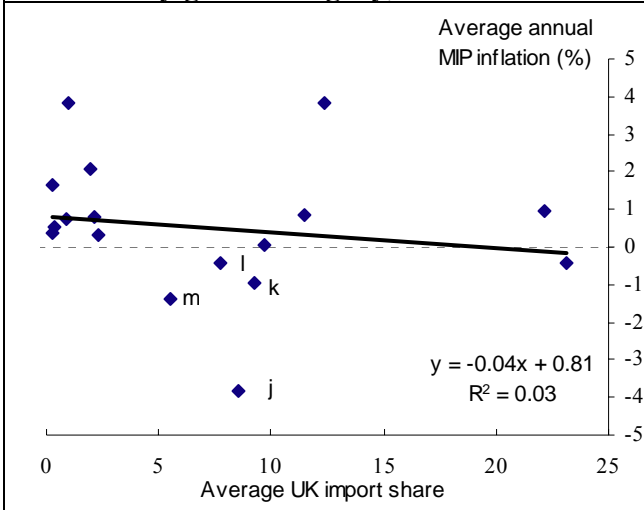
Source: ONS and UN COMTRADE

Key: a=Data processing equipment; b=Reception and reproduction of sound and pictures; c=Photographic, cinematographic and optical equipment; d=Garments; e=Motorcycles and bicycles; f=Footwear including repairs; g=Recording media; h=Telephone and telefax equipment and services; i=Major appliances and small electric goods; j=Office machinery and computers; k=Radio, television and communication equipment; l=Medical precision and optical, watches and clocks; m=Motor vehicles; n=Electrical machinery; o=Cereals; p=Medicinal products; q=Paper and paperboard; r=Fish; s=Toilet preparations; t=Textile fibres; u=Sugar; v=Live animals; w=Clothing; x=Leather; y=Residual miscellaneous manufactures; z=Wood and cork.

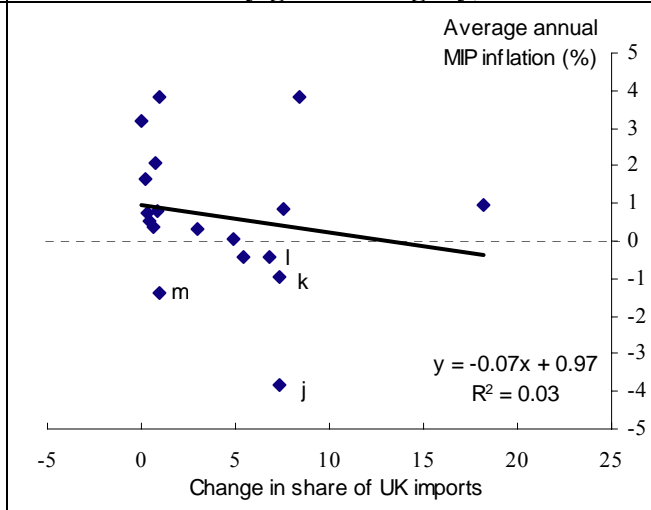


**Charts A13-A14 – Manufacturers’ input price index (MIPI) inflation**

**Chart A13: Average UK import share from China and Hong Kong and MIPI input inflation by goods category, 1999-2005**

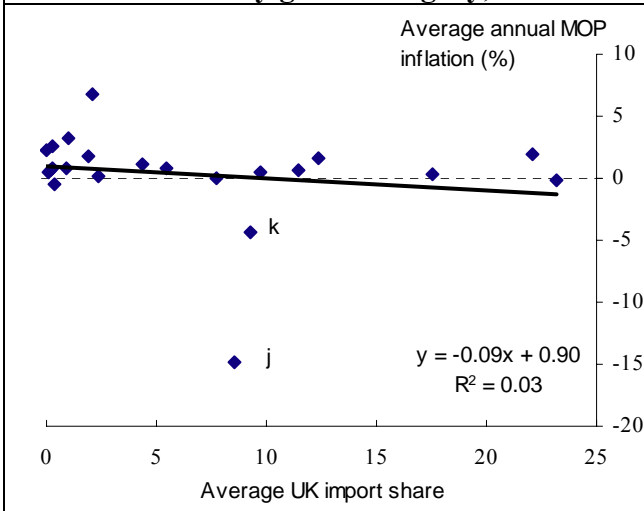


**Chart A14: Change in UK import share from China and Hong Kong and average annual MIPI inflation by goods category, 1999-2005**

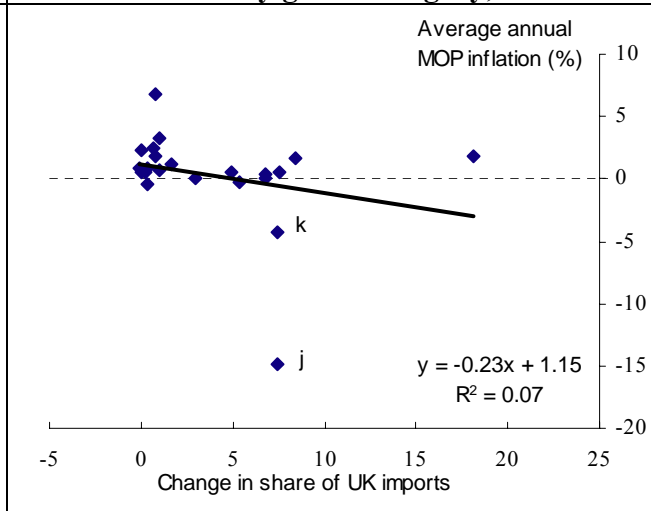


**Charts A15-A16 – Manufacturers’ output price index (MOPI) inflation**

**Chart A15: Average UK import share from China and Hong Kong and average annual MOPI inflation by goods category, 1999-2005**



**Chart A16: Change in UK import share from China and Hong Kong and average annual MOPI inflation by goods category, 1999-2005**



Source: ONS and UN COMTRADE

Key: a=Data processing equipment; b=Reception and reproduction of sound and pictures; c=Photographic, cinematographic and optical equipment; d=Garments; e=Motorcycles and bicycles; f=Footwear including repairs; g=Recording media; h=Telephone and telefax equipment and services; i=Major appliances and small electric goods; j=Office machinery and computers; k=Radio, television and communication equipment; l=Medical precision and optical, watches and clocks; m=Motor vehicles; n=Electrical machinery; o=Cereals; p=Medicinal products; q=Paper and paperboard; r=Fish; s=Toilet preparations; t=Textile fibres; u=Sugar; v=Live animals; w=Clothing; x=Leather; y=Residual miscellaneous manufactures; z=Wood and cork.

**Table A1: Consumer price index (CPI) inflation and average and change in UK import share from China (and Hong Kong)**

ONS CPI categories	Average UK import share 1997-2005 (%)		Change in share of UK imports from 1997-2005 (pp)		Average annual UK CPI inflation 1997-2005 (%)
	China	China and Hong Kong	China	China and Hong Kong	
Bread and cereals	0.4	0.6	0.2	0.0	0.7
Meat	0.0	0.0	0.0	0.0	0.5
Fish	2.2	2.3	3.2	3.0	2.7
Oils and fats	1.0	1.7	1.2	0.0	-0.2
Fruit	0.8	0.8	0.5	0.4	1.4
Vegetables including potatoes and tubers	0.9	1.0	0.7	0.5	0.9
Sugar, jam, syrups, chocolate and confectionery	1.1	1.3	0.2	0.2	2.8
Coffee, tea and cocoa	1.1	1.2	1.0	1.1	-0.3
Mineral waters, soft drinks and juices	0.1	0.3	0.0	-0.2	0.7
Spirits	0.2	0.3	0.0	-0.6	0.2
Wine	0.0	0.0	0.0	0.0	0.5
Beer	0.6	0.6	0.1	0.1	-0.2
Garments	11.3	21.7	18.4	4.6	-5.9
Other clothing and clothing accessories	20.5	26.3	28.7	17.5	-2.2
Footwear including repairs	11.4	13.5	20.5	17.9	-3.8
Furniture and furnishings and household textiles	11.0	12.0	18.9	18.0	0.2
Major appliances and small electric goods	14.7	16.7	22.1	19.5	-3.2
Pharmaceutical products	2.9	3.1	3.6	3.5	0.7
Other medical and therapeutic equipment	17.2	26.3	20.5	12.9	2.0
New cars/used Cars	0.0	0.0	0.0	0.0	0.0
Motorcycles and bicycles	4.3	5.1	7.1	24.5	-1.5
Spare parts and accessories	0.3	0.3	0.8	0.8	1.1
Telephone and telefax equipment and services	4.8	7.3	8.7	9.1	-2.5
Reception and reproduction of sound and pictures	11.1	15.6	17.5	9.2	-10.3
Photographic, cinematographic and optical equipment	3.8	5.1	7.6	6.0	-7.9
Data processing equipment	12.7	15.9	22.3	18.7	-23.7
Recording media	7.3	36.4	9.7	33.7	-2.9
Games, toys and hobbies	38.6	51.1	45.9	20.1	-3.9
Equipment for sport and open-air recreation	19.7	24.5	26.6	17.1	-2.9
Books	5.6	16.4	10.7	7.7	2.4
Newspapers and periodicals	0.0	0.2	0.0	-0.3	3.4
Jewellery, clocks and watches	5.6	17.6	8.4	1.8	0.4
Other personal effects	39.6	57.5	33.2	2.2	-1.7
Correlation with inflation <sup>1</sup>	-0.30**	-0.27*	-0.44***	-0.42***	
Mean	7.6	11.6	10.3	7.5	-1.6
Standard deviation	10.2	14.9	12.0	9.2	5.0
Minimum	0.0	0.0	0.0	-0.6	-23.7
Maximum	39.6	57.5	45.9	33.7	3.4
Median	3.8	5.1	7.1	3.0	0.0

Sources: UN Comtrade and ONS

Notes: In the four columns showing trade data a dark blue cell indicates a value greater than the mean plus one standard deviation, and a light blue cell indicates a value less than this but greater than the mean plus half a standard deviation. In the final column showing inflation a dark blue cell indicates a value below the mean minus one standard deviation, and a light blue cell indicates a value greater than this but less than the mean minus half a standard deviation.

<sup>1</sup> \*\*\* indicates significance at the 1% level, \*\* significance at the 5% level and \* significance at the 10% level.

**Table A2: Import price index (IPI) inflation and average and change in UK import share from China (and Hong Kong)**

ONS IPI categories	Average UK import share 1997-2005 (%)		Change in share of UK imports from 1997-2005 (pp)		Average annual UK IP inflation 1997-2005 (%)
	China	China and Hong Kong	China	China and Hong Kong	
Live animals	0.1	0.9	0.1	-1.6	-2.1
Fish	2.2	2.3	3.2	3.0	-1.5
Cereals	1.1	1.3	0.2	0.0	-4.3
Sugar	0.4	0.4	0.2	0.2	-1.7
Coffee, tea, cocoa etc	1.0	1.1	0.5	0.4	-0.5
Animal feeding stuffs	0.4	0.4	-0.4	-0.4	-1.9
Misc. foods	1.1	2.2	1.5	1.2	0.2
Beverages	0.1	0.1	0.0	-0.1	-1.4
Tobacco	2.1	2.2	-0.6	-0.7	1.7
Residual crude materials	2.5	2.6	1.7	1.6	0.4
Wood & cork	0.8	0.9	2.6	2.6	-0.5
Pulp & waste paper	0.1	0.1	0.1	0.1	-0.9
Textile fibres	9.6	10.1	8.5	7.3	-1.3
Metal ores	1.0	1.3	-0.5	-1.0	4.3
Fuels other than oil	3.9		-2.0		5.9
Organic chemical	1.4	1.5	0.2	0.1	-0.3
Inorganic chemicals	3.1	3.3	0.8	0.3	5.2
Colouring material	2.4	2.5	2.5	2.3	0.3
Medicinal products	0.3	0.3	0.1	0.1	-3.1
Toilet preparations	1.5	1.8	1.9	1.7	-1.3
Residual chemicals	1.2	1.4	0.7	0.6	-0.6
Plastics	0.4	0.0	0.7		-0.4
Leather manufactures	7.5	10.7	9.2	8.0	0.1
Wood & cork manufactures	5.6	6.5	9.7	8.7	-0.1
Paper & paperboard	1.5	1.9	2.5	2.3	-3.1
Mineral manufactures less precious stones	5.4	5.4	8.9	8.9	-0.4
Mechanical Machinery	1.8	2.4	2.0	1.9	0.2
Electrical Machinery	5.7	8.1	9.7	7.8	-6.0
Road vehicles	0.3	0.3	0.5	0.5	-1.0
Transport equipment other than road vehicles	0.2	0.2	0.7	0.7	1.8
Residual misc. manufactures	16.5	16.5	19.6	19.6	-0.2
Clothing	12.5	23.1	18.2	5.4	-0.7
Footwear	11.4	13.5	20.5	17.9	-0.7
Scientific & photographic equipment	2.8	5.4	3.7	1.1	-0.5
Correlation with inflation <sup>1</sup>	0.02	-0.03	-0.17	-0.10	
Mean	3.7	4.6	4.4	3.8	-0.1
Standard deviation	4.0	5.3	5.9	5.1	2.3
Minimum	0.1	0.0	-2.0	-1.6	-6.0
Maximum	16.5	23.1	20.5	19.6	5.9
Median	1.8	2.2	1.7	1.7	-0.4

Sources: UN Comtrade and ONS

Notes: In the four columns showing trade data a dark blue cell indicates a value greater than the mean plus one standard deviation, and a light blue cell indicates a value less than this but greater than the mean plus half a standard deviation. In the final column showing inflation a dark blue cell indicates a value below the mean minus one standard deviation, and a light blue cell indicates a value greater than this but less than the mean minus half a standard deviation.

<sup>1</sup> \*\*\* indicates significance at the 1% level, \*\* significance at the 5% level and \* significance at the 10% level.

**Table A3: Manufacturers' input price index (MIPI) inflation and average and change in UK import share from China (and Hong Kong)**

ONS MIPI categories	Average UK import share 1999-2005 (%)		Change in share of UK imports from 1999-2005 (pp)		Average annual UK MIPI inflation 1999-2005 (%)
	China	China and Hong Kong	China	China and Hong Kong	
Mineral Water & Soft Drinks	0.1	0.3	0.0	0.0	3.2
Food Products	0.8	0.9	0.5	0.4	0.7
Tobacco Products Ex Duty	2.0	2.1	0.9	0.8	0.8
Textiles	7.1	7.8	7.8	6.8	-0.4
Wearing Apparel & Furs	14.3	23.1	18.3	5.4	-0.4
Leather & Leather Products	8.8	11.5	7.5	7.6	0.8
Pulp, Paper & Paper Products	1.6	2.4	2.1	3.0	0.3
Printed Matter & Recorded Material	10.7	22.1	22.0	18.2	1.0
Chemicals	1.7	1.9	0.9	0.8	2.1
Rubber & Plastic	0.2	0.2	0.2	0.2	1.6
Basic Metals	0.9	1.0	1.2	0.9	3.8
Fabricated Metal Products	10.9	12.4	10.7	8.4	3.8
Office machinery and computers	6.5	8.5	9.1	7.4	-3.8
Medical, precision and optical instruments	3.4	5.5	3.5	1.0	-1.4
Electrical machinery and apparatus	7.4	9.7	8.8	4.9	0.0
Radio, television and communication	7.2	9.3	9.2	7.4	-1.0
Motor vehicles, trailers and semi-trailers	0.3	0.3	0.5	0.4	0.5
Other transport equipment	0.2	0.3	0.7	0.7	0.3
Correlation with inflation <sup>1</sup>	-0.26	-0.14	-0.25	-0.19	
Mean	5.1	8.2	5.8	4.1	0.7
Standard deviation	4.4	8.4	6.5	4.7	1.9
Minimum	0.2	0.3	0.0	0.0	-3.8
Maximum	14.3	23.1	22.0	18.2	3.8
Median	3.6	6.6	2.8	2.0	0.6

Sources: UN Comtrade and ONS

Notes: In the four columns showing trade data a dark blue cell indicates a value greater than the mean plus one standard deviation, and a light blue cell indicates a value less than this but greater than the mean plus half a standard deviation. In the final column showing inflation a dark blue cell indicates a value below the mean minus one standard deviation, and a light blue cell indicates a value greater than this but less than the mean minus half a standard deviation.

<sup>1</sup>\*\*\* indicates significance at the 1% level,\*\* significance at the 5% level and \* significance at the 10% level.

**Table A4: Manufacturers' output price index (MOPI) inflation and average and change in UK import share from China (and Hong Kong)**

ONS MOPI categories	Average UK import share 1999-2005 (%)		Change in share of UK imports from 1999-2005 (pp)		Average annual UK MOPI inflation 1999-2005 (%)
	China	China and Hong Kong	China	China and Hong Kong	
Mineral Water & Soft Drinks	0.1	0.3	0.0	0.0	0.8
Food Products	0.8	0.9	0.5	0.4	0.8
Tobacco Products Ex Duty	2.0	2.1	0.9	0.8	6.8
Textiles	7.1	7.8	7.8	6.8	0.0
Wearing Apparel & Furs	14.3	23.1	18.3	5.4	-0.2
Leather & Leather Products	8.8	11.5	7.5	7.6	0.6
Pulp, Paper & Paper Products	1.6	2.4	2.1	3.0	0.1
Printed Matter & Recorded Material	10.7	22.1	22.0	18.2	1.9
Chemicals	1.7	1.9	0.9	0.8	1.8
Rubber & Plastic	0.2	0.2	0.2	0.2	0.6
Other Non Metallic Minerals	0.7	0.0	0.2	0.0	2.2
Basic Metals	0.9	1.0	1.2	0.9	3.2
Fabricated Metal Products	10.9	12.4	10.7	8.4	1.7
Machinery & Equipment	2.1	4.4	1.6	1.7	1.2
Office Machinery & Computers	6.5	8.5	9.1	7.4	-14.9
Electrical Machinery & Apparatus	7.4	9.7	8.8	4.9	0.5
Radio, Television & Communication Equipment	7.2	9.3	9.2	7.4	-4.3
Medical Precision & Optical, Watches & Clocks	3.4	5.5	3.5	1.0	0.8
Motor Vehicles	0.3	0.3	0.5	0.4	-0.5
Other Transport	0.2	0.3	0.7	0.7	2.5
Furniture: other manufactured goods n.e.c	14.0	17.5	13.0	6.8	0.4
Beverages ex duty	0.1	0.1	0.0	0.0	0.5
Correlation with inflation <sup>1</sup>	-0.21	-0.17	-0.24	-0.26	
Mean	4.6	6.4	5.4	3.8	0.3
Standard deviation	4.7	7.2	6.4	4.5	3.9
Minimum	0.1	0.0	0.0	0.0	-14.9
Maximum	14.3	23.1	22.0	18.2	6.8
Median	2.1	3.4	1.9	1.3	0.7

Sources: UN Comtrade and ONS

Notes: In the four columns showing trade data a dark blue cell indicates a value greater than the mean plus one standard deviation, and a light blue cell indicates a value less than this but greater than the mean plus half a standard deviation. In the final column showing inflation a dark blue cell indicates a value below the mean minus one standard deviation, and a light blue cell indicates a value greater than this but less than the mean minus half a standard deviation.

<sup>1</sup> \*\*\* indicates significance at the 1% level, \*\* significance at the 5% level and \* significance at the 10% level.

**Table A5: Results of panel regressions for CPI inflation – China and Hong Kong**

The regressions 1 and 2 take the form shown in equation 3, but regression 2 drops the year dummies. Regressions 3 and 4 take the form shown in equation 1, but regression 4 drops the lagged dependent variable. For each exogenous variable the value of the coefficient is shown in the top row with the t-probability in italics underneath. The coefficients should be divided by 100 to show the impact on inflation of a 1pp change in the exogenous variable. The joint significance of all variables shows the p-value from either an F-test or a Wald test.

Sample	China				China and Hong Kong			
	Fixed effects		Random effects		Fixed effects		Random effects	
Model	1	2	3	4	1	2	3	4
<b>Dependent variable: CPI inflation</b>								
<b>Period: 1997-2005</b>								
Share	9.6 <i>0.01</i>	4.2 <i>0.13</i>			23.0 <i>0.00</i>	16.2 <i>0.00</i>		
Share(T=1)			-2.9 <i>0.64</i>	38.7 <i>0.04</i>			-3.1 <i>0.87</i>	22.8 <i>0.00</i>
Change in share	-5.3 <i>0.23</i>	-5.3 <i>0.17</i>	-2.1 <i>0.64</i>	-3.9 <i>0.26</i>	-17.2 <i>0.06</i>	-21.0 <i>0.02</i>	-3.7 <i>0.72</i>	-8.0 <i>0.34</i>
Lagged dependent variable			0.8 <i>0.00</i>				0.8 <i>0.00</i>	
Constant	-3.5 <i>0.00</i>	-2.0 <i>0.00</i>	-0.5 <i>0.07</i>	2.6 <i>0.01</i>	-6.0 <i>0.00</i>	-3.6 <i>0.00</i>	-5.1 <i>0.08</i>	-3.6 <i>0.00</i>
Joint significance of all variables	<i>0.05</i>	<i>0.22</i>	<i>0.00</i>	<i>0.07</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>
Joint significance of year dummies	<i>0.05</i>				<i>0.00</i>			
Joint significance of share variables	<i>0.02</i>	<i>0.23</i>	<i>0.73</i>	<i>0.07</i>	<i>0.00</i>	<i>0.00</i>	<i>0.64</i>	<i>0.00</i>
Within R <sup>2</sup>	0.07	0.01			0.16	0.08		
Overall R <sup>2</sup>	0.03	0.04	0.61	0.04	0.04	0.04	0.61	0.03
Cross sections	32	32	32	32	31	31	31	31
Total panel	288	288	263	288	276	276	276	276
<b>Dependent variable: CPI inflation</b>								
<b>Period: 2000-2005</b>								
Share	24.9 <i>0.11</i>	17.0 <i>0.00</i>			25.3 <i>0.00</i>	21.1 <i>0.00</i>		
Share(T=1)			-1.6 <i>0.83</i>	16.1 <i>0.37</i>			0.4 <i>0.86</i>	13.6 <i>0.01</i>
Change in share	-10.3 <i>0.01</i>	-8.8 <i>0.01</i>	-3.7 <i>0.46</i>	-3.8 <i>0.23</i>	-23.2 <i>0.01</i>	-26.2 <i>0.01</i>	-13.1 <i>0.25</i>	-16.6 <i>0.07</i>
Lagged dependent variable			0.7 <i>0.00</i>				0.8 <i>0.00</i>	
Constant	-5.4 <i>0.00</i>	-3.4 <i>0.0</i>	-0.2 <i>0.50</i>	-2.1 <i>0.02</i>	-6.3 <i>0.00</i>	-4.6 <i>0.0</i>	-0.2 <i>0.54</i>	-2.8 <i>0.00</i>
Joint significance of all variables	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.37</i>	<i>0</i>	<i>0.00</i>	<i>0.00</i>	<i>0.01</i>
Joint significance of year dummies	<i>0.01</i>				<i>0.03</i>			
Joint significance of share variables	<i>0.00</i>	<i>0.00</i>	<i>0.73</i>	<i>0.36</i>	<i>0.00</i>	<i>0.00</i>	<i>0.51</i>	<i>0.01</i>
Within R <sup>2</sup>	0.19	0.09			0.23	0.16		
Overall R <sup>2</sup>	0.08	0.09	0.06	0.04	0.06	0.07	0.58	0.02
Cross sections	32	32	32	32	31	31	31	31
Total panel	194	194	166	198	182	182	152	182

**Table A6: Results of panel regressions for CPI inflation-Asia**

Regressions 1 and 2 take the form shown in equation 3, but regression 2 drops the control variable. Regressions 3 and 4 take the form shown in equation 1, but regression 4 drops the control variable. For each exogenous variable the value of the coefficient is shown in the top row with the t-probability in italics underneath. The coefficients should be divided by 100 to show the impact on inflation of a 1pp change in the exogenous variable. The joint significance tests show the p-value from either an F-test or a Wald test

Sample	Asia				Asia exc. China and Hong Kong			
	Fixed effects		Random effects		Fixed effects		Random effects	
Model	1	2	3	4	1	2	3	4
<b>Dependent variable: CPI inflation</b>								
<b>Period: 1997-2005</b>								
Share	3.6	1.8			3.3	4.6		
	<i>0.34</i>	<i>0.61</i>			<i>0.42</i>	<i>0.24</i>		
Share(T=1)			-2.6	-9.0			-5.7	-20.1
			<i>0.01</i>	<i>0.0</i>			<i>0.00</i>	<i>0.0</i>
Change in share	-12.6	-14.6	-10.7	-13.8	-11.9	-13.0	-11.2	-10.3
	<i>0.05</i>	<i>0.02</i>	<i>0.11</i>	<i>0.02</i>	<i>0.07</i>	<i>0.05</i>	<i>0.10</i>	<i>0.08</i>
Lagged dependent variable			0.8				0.8	
			<i>0.00</i>				<i>0.00</i>	
Constant	-3.1	-2.1	0.1	-0.1	-2.7	-2.2	0.1	0.1
	<i>0.00</i>	<i>0.01</i>	<i>0.70</i>	<i>0.94</i>	<i>0.00</i>	<i>0.00</i>	<i>0.84</i>	<i>0.95</i>
Joint significance of all variables	<i>0.05</i>	<i>0.06</i>	<i>0.00</i>	<i>0.00</i>	<i>0.06</i>	<i>0.12</i>	<i>0.00</i>	<i>0.01</i>
Joint significance of year dummies	<i>0.11</i>				<i>0.09</i>			
Joint significance of share variables	<i>0.14</i>	<i>0.06</i>	<i>0.02</i>	<i>0.00</i>	<i>0.19</i>	<i>0.12</i>	<i>0.01</i>	<i>0.01</i>
Within R <sup>2</sup>	0.07	0.02			0.07	0.02		
Overall R <sup>2</sup>	0.03	0.03	0.74	0.13	0.01	0.12	0.74	0.15
Cross sections	31	31	31	31	31	31	31	31
Total panel	273	273	243	273	273	273	243	273
<b>Dependent variable: CPI inflation</b>								
<b>Period: 2000-2005</b>								
Share	-0.2	-2.4			1.5	1.6		
	<i>0.97</i>	<i>0.96</i>			<i>0.77</i>	<i>0.75</i>		
Share(T=1)			-2.1	-9.6			-4.5	-18.2
			<i>0.10</i>	<i>0.0</i>			<i>0.06</i>	<i>0.0</i>
Change in share	-8.3	-12.6	-14.5	-12.5	-1.8	-4.1	-6.4	-2.6
	<i>0.24</i>	<i>0.06</i>	<i>0.07</i>	<i>0.04</i>	<i>0.78</i>	<i>0.54</i>	<i>0.44</i>	<i>0.67</i>
Lagged dependent variable			0.8				0.8	
			<i>0.00</i>				<i>0.00</i>	
Constant	-2.2	-1.9	0.3	0.2	-2.5	-2.2	0.2	0.3
	<i>0.00</i>	<i>0.1</i>	<i>0.42</i>	<i>0.87</i>	<i>0.00</i>	<i>0.0</i>	<i>0.51</i>	<i>0.78</i>
Joint significance of all variables	<i>0.14</i>	<i>0.13</i>	<i>0.00</i>	<i>0.01</i>	<i>0.22</i>	<i>0.83</i>	<i>0.00</i>	<i>0.04</i>
Joint significance of year dummies	<i>0.22</i>				<i>0.11</i>			
Joint significance of share variables	<i>0.44</i>	<i>0.13</i>	<i>0.08</i>	<i>0.01</i>	<i>0.94</i>	<i>0.83</i>	<i>0.18</i>	<i>0.04</i>
Within R <sup>2</sup>	0.07	0.03			0.06	0.00		
Overall R <sup>2</sup>	0.02	0.01	0.72	0.15	0.00	0.20	0.72	0.15
Cross sections	30	30	30	30	30	30	30	30
Total panel	178	178	149	178	178	178	149	178

**Table A7: Results of panel regressions for MIPI inflation**

Regressions 1 and 2 take the form shown in equation 3, but regression 2 drops the control variable. Regressions 3 and 4 take the form shown in equation 1, but regression 4 drops the control variable. For each exogenous variable the value of the coefficient is shown in the top row with the t-probability in italics underneath. The coefficients should be divided by 100 to show the impact on inflation of a 1pp change in the exogenous variable. The joint significance tests show the p-value from either an F-test or a Wald test.

Sample	China				China and Hong Kong			
Estimation method	Fixed effects		Random effects		Fixed effects		Random effects	
Model	1	2	3	4	1	2	3	4
<b>Dependent variable: MIP inflation</b>								
<b>Period: 1999-2005</b>								
Share	1.6 <i>0.90</i>	51.0 <i>0.00</i>			-6.4 <i>0.68</i>	64.1 <i>0.00</i>		
Share(T=1)			-3.3 <i>0.87</i>	-0.3 <i>0.99</i>			-4.6 <i>0.45</i>	-8.0 <i>0.30</i>
Change in share	-28.4 <i>0.08</i>	-13.1 <i>0.48</i>	20.2 <i>0.21</i>	13.9 <i>0.40</i>	-31.3 <i>0.28</i>	-70.6 <i>0.08</i>	-8.4 <i>0.77</i>	15.8 <i>0.61</i>
Lagged dependent variable			0.4 <i>0.00</i>				0.4 <i>0.00</i>	
Constant	5.2 <i>0.00</i>	-1.7 <i>0.01</i>	1.2 <i>0.03</i>	0.5 <i>0.88</i>	5.7 <i>0.00</i>	-3.7 <i>0.00</i>	1.6 <i>0.00</i>	0.9 <i>0.14</i>
Joint significance of all variables	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.69</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.59</i>
Joint significance of year dummies	<i>0.00</i>				<i>0.00</i>			
Joint significance of share variables	<i>0.13</i>	<i>0.00</i>	<i>0.45</i>	<i>0.69</i>	<i>0.24</i>	<i>0.02</i>	<i>0.61</i>	<i>0.59</i>
Within R <sup>2</sup>	0.61	0.15			0.622	0.13		
Overall R <sup>2</sup>	0.50	0.01	0.14	0.00	0.49	0.01	0.18	0.01
Cross sections	18	18	18	18	17	17	16	16
Total panel	126	126	108	126	111	111	93	108
<b>Dependent variable: MIP inflation</b>								
<b>Period: 2002-2005</b>								
Share	4.9 <i>0.80</i>	84.2 <i>0.00</i>			8.8 <i>0.72</i>	103.0 <i>0.00</i>		
Share(T=1)			11.0 <i>-38.90</i>	-14.2 <i>0.52</i>			-3.8 <i>0.57</i>	-12.6 <i>0.22</i>
Change in share	-32.5 <i>0.12</i>	-53.7 <i>0.03</i>	-38.9 <i>0.04</i>	6.8 <i>0.73</i>	-40.1 <i>0.30</i>	-92.7 <i>0.06</i>	-7.4 <i>0.80</i>	13.0 <i>0.75</i>
Lagged dependent variable			0.7 <i>0.00</i>				0.7 <i>0.00</i>	
Constant	5.0 <i>0.00</i>	-3.1 <i>0.01</i>	2.8 <i>0.00</i>	1.8 <i>0.05</i>	4.3 <i>0.05</i>	-6.2 <i>0.00</i>	2.7 <i>0.00</i>	2.2 <i>0.01</i>
Joint significance of all variables	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.79</i>	<i>0</i>	<i>0.00</i>	<i>0.00</i>	<i>0.44</i>
Joint significance of year dummies	<i>0.00</i>				<i>0.00</i>			
Joint significance of share variables	<i>0.15</i>	<i>0.00</i>	<i>0.11</i>	<i>0.79</i>	<i>0.00</i>	<i>0.00</i>	<i>0.65</i>	<i>0.43</i>
Within R <sup>2</sup>	0.67	0.24			0.93	0.24		
Overall R <sup>2</sup>	0.46	0.00	0.56	0.01	0.35	0.01	0.54	0.04
Cross sections	18	18	18	18	17	17	17	17
Total panel	72	72	54	72	66	66	51	66



**Table A8: Results of panel regressions for MOPI inflation**

Regressions 1 and 2 take the form shown in equation 3, but regression 2 drops the control variable. Regressions 3 and 4 take the form shown in equation 1, but regression 4 drops the control variable. For each exogenous variable the value of the coefficient is shown in the top row with the t-probability in italics underneath. The coefficients should be divided by 100 to show the impact on inflation of a 1pp change in the exogenous variable. The joint significance tests show the p-value from either an F-test or a Wald test.

Sample	China				China and Hong Kong			
	Fixed effects		Random effects		Fixed effects		Random effects	
Estimation method	1	2	3	4	1	2	3	4
<b>Dependent variable: MOP inflation</b>								
<b>Period: 1999-2005</b>								
Share	3.7	28.8			12.8	46.1		
	<i>0.73</i>	<i>0.00</i>			<i>0.40</i>	<i>0.00</i>		
Share(T=1)			-6.6	-19.3			-2.5	-6.4
			<i>0.59</i>	<i>0.66</i>			<i>0.56</i>	<i>0.67</i>
Change in share	-1.3	-9.4	7.0	9.1	-23.9	-41.5	0.1	0.1
	<i>0.93</i>	<i>0.43</i>	<i>0.50</i>	<i>0.40</i>	<i>0.40</i>	<i>0.15</i>	<i>0.99</i>	<i>0.99</i>
Lagged dependent variable			0.8				0.8	
			<i>0.00</i>				<i>0.00</i>	
Constant	1.9	-1.0	0.6	0.6	1.3	-2.7	0.7	0.6
	<i>0.03</i>	<i>0.02</i>	<i>0.05</i>	<i>0.62</i>	<i>0.3</i>	<i>0.001</i>	<i>0.02</i>	<i>0.59</i>
Joint significance of all variables	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.66</i>	<i>0.00</i>	<i>0.00</i>	<i>0.00</i>	<i>0.71</i>
Joint significance of year dummies	<i>0.01</i>		<i>0.0</i>	<i>0.0</i>	<i>0.01</i>		<i>0.0</i>	<i>0.0</i>
Joint significance of share variables	<i>0.93</i>	<i>0.00</i>	<i>0.76</i>	<i>0.66</i>	<i>0.64</i>	<i>0.00</i>	<i>0.81</i>	<i>0.71</i>
Within R <sup>2</sup>	0.20	0.09	0.0	0.0	0.22	0.11	0.0	0.0
Overall R <sup>2</sup>	0.05	0.01	0.68	0.00	0.02	0.01	0.70	0.00
Cross sections	22	22	22	22	21	21	20	20
Total panel	152	152	132	153	143	143	117	136
<b>Dependent variable: MOP inflation</b>								
<b>Period: 2002-2005</b>								
Share	-4.5	27.3			2.2	42.9		
	<i>0.76</i>	<i>0.03</i>			<i>0.91</i>	<i>0.02</i>		
Share(T=1)			-11.3	-12.4			-4.1	-6.7
			<i>0.46</i>	<i>0.71</i>			<i>0.47</i>	<i>0.59</i>
Change in share	8.7	-6.4	10.3	13.2	6.2	-27.3	11.7	15.5
	<i>0.58</i>	<i>0.65</i>	<i>0.50</i>	<i>0.22</i>	<i>0.84</i>	<i>0.39</i>	<i>0.60</i>	<i>0.55</i>
Lagged dependent variable			0.8				0.8	
			<i>0.00</i>				<i>0.00</i>	
Constant	2.5	-0.5	1.1	1.1	2.02	-2.2	0.8	1.4
	<i>0.02</i>	<i>0.42</i>	<i>0.01</i>	<i>0.29</i>	<i>0.24</i>	<i>0.09</i>	<i>0.00</i>	<i>0.18</i>
Joint significance of all variables	<i>0.00</i>	<i>0.04</i>	<i>0.0.0</i>	<i>0.45</i>	<i>0.002</i>	<i>0.06</i>	<i>0.00</i>	<i>0.77</i>
Joint significance of year dummies	<i>0.01</i>				<i>0.00</i>			
Joint significance of share variables	<i>0.85</i>	<i>0.04</i>	<i>0.70</i>	<i>0.45</i>	<i>0.98</i>	<i>0.06</i>	<i>0.76</i>	<i>0.77</i>
Within R <sup>2</sup>	0.26	0.09			0.28	0.09		
Overall R <sup>2</sup>	0.08	0.06	0.72	0.00	0.00	0.02	0.72	0.01
Cross sections	22	22	22	22	21	21	20	20
Total panel	88	88	66	88	83	83	60	79

## Appendix B: Data category description

**Table B1: ONS consumer price index (CPI) categories, matching SITC Revision 3 trade categories and Chinese RPI inflation categories**

ONS CPI categories	SITC Rev. 3 trade categories	China RPI category
01.1.1 Bread and cereals	04	Food
01.1.2 Meat	01	Food
01.1.3 Fish	03	Food
01.1.5 Oils and fats	41	Food
01.1.6 Fruit	057, 058 059	Food
01.1.7 Vegetables including potatoes and tubers	054, 056	Food
01.1.8 Sugar, jam, syrups, chocolate and confectionery	06	Food
01.2.1 Coffee, tea and cocoa	073, 074	Beverage, Tobacco & Liquors
01.2.2 Mineral waters, soft drinks and juices	111	Beverage, Tobacco & Liquors
02.1.1 Spirits	1124	Beverage, Tobacco & Liquors
02.1.2 Wine	1121	Beverage, Tobacco & Liquors
02.1.3 Beer	1123	Beverage, Tobacco & Liquors
03.1.2 Garments	841, 842, 843, 844	Clothing, Hats and Shoes
03.1.3 Other clothing and clothing accessories	8461, 8469	Clothing, Hats and Shoes
03.2 Footwear including repairs	85	Clothing, Hats and Shoes
05.1.1 Furniture and furnishings and 05.2 Household textiles	82	Furniture
05.3.1/2 Major appliances and small electric goods	7752, 7757	Building, Hardware & Electric Materials
06.1.1 Pharmaceutical products	5411, 5419	Medicine, Medical & Health Care Articles
06.1.2/3 Other medical and therapeutic equipment	8842	Medicine, Medical & Health Care Articles
07.1.1A/B New cars/used Cars	781	Traffic and Communication Appliances
07.1.2/3 Motorcycles and bicycles	785	Traffic and Communication Appliances
07.2.1 Spare parts and accessories	784	Traffic and Communication Appliances
08.2/3 Telephone and telefax equipment and services	7641, 76493, 76491	Traffic and Communication Appliances
09.1.1 Reception and reproduction of sound and pictures	761, 762, 763	Traffic and Communication Appliances
09.1.2 Photographic, cinematographic and optical equipment	881, 882	Household Electric App & Audiovisual Apparatus
09.1.3 Data processing equipment	751	Household Electric App & Audiovisual Apparatus
09.1.4 Recording media	76492, 76499	Household Electric App & Audiovisual Apparatus
09.3.1 Games, toys and hobbies	8492, 8493, 8946	Sports & Recreational Articles
09.3.2 Equipment for sport and open-air recreation	8947	Sports & Recreational Articles
09.5.1 Books	8921	Books, Newspapers, Magazines & Electronic Pub
09.5.2 Newspapers and periodicals	8922	Books, Newspapers, Magazines & Electronic Pub
12.3.1 Jewellery, clocks and watches	885, 897	Gold, Silver & Jewellery
12.3.2 Other personal effects	83	NA

**Table B2: ONS import price index (IPI) categories and matching SITC Revision 3 trade categories**

ONS IPI category	ONS code	SITC Rev. 3 trade category
Live animals	OMFL	00
Fish	OMFM	03
Cereals	OMFN	04
Sugar	OMFO	06
Coffee, tea, cocoa etc	OMFP	07
Animal feeding stuffs	OMFR	08
Misc. foods	OMFS	09
Beverages	EHGF	11
Tobacco	EHGG	12
Residual crude materials	OMFT	21, 22, 23, 27, 29
Wood & cork	EHGI	24
Pulp & waste paper	EHGJ	25
Textile fibres	EHGK	26
Metal ores	EHGL	28
Fuels other than oil	ELAU	32, 34, 35
Oils(animal & vegetable) and fats	EHGM	4
Organic chemical	EHGN	51
Inorganic chemicals	EHGO	52
Colouring material	CSEI	53
Medicinal products	EHGP	54
Toilet preparations	CSEJ	55
Residual chemicals	OMFW	56, 59
Plastics	EHGQ	57,58
Leather manufactures	OMFX	61
Rubber manufactures	OMFY	62
Wood & cork manufactures	EHGS	63
Paper & paperboard	EHGT	64
Textile fabrics	EHGU	65
Mineral manufactures less precious stones	CSEK	66
Iron & steel	EHGV	67
Non ferrous metals	EHGW	68
Misc metal manufactures	EHGX	69
Mechanical Machinery	EHHA	71, 72, 73, 74 exc 716
Electrical Machinery	EHHB	716, 75, 76, 77
Road vehicles	EHHC	78
Transport equipment other than road vehicles:	EHHD	79
Residual misc. manufactures	OMGT	81,82,83
Clothing	CSEL	84
Footwear	CSEM	85
Scientific & photographic equipment	EHHG	87,88
Unspecified goods	BPEF	9

**Table B3:ONS Manufacturer’s input price index (MIPI) categories and matching SITC Revision 3 categories**

<b>ONS MIPI category</b>	<b>ONS code</b>	<b>SITC Rev. 3 trade category</b>
Food Product & Beverages	RABF	0
Tobacco Products	RABG	12
Textiles	RABH	26, 65
Wearing Apparel; Fur	RABI	21, 84
Pulp, Paper & Paper Products	RABL	25, 64
Printed Matter & Recorded material	RABM	761, 8921, 8922
Basic Metals	RABV	28, 67
Fabricated Metal Products	RABW	69
Office Machinery & Computers	RABY	75
Electrical Machinery & apparatus nec	RACB	77
Radio, Television & Communication equipment	RACC	76
Medical, Precision & optical instruments & clocks	RACD	87, 88
Motor Vehicles, Trailers & semi-trailers	RACE	78
Other Transport Equipment	RACF	79
Other Mining & Quarry	RABE	32

**Table B4: ONS Manufacturers’ output price index (MIPI) categories and matching SITC Revision 3 trade categories**

<b>ONS MOPI category</b>	<b>ONS code</b>	<b>SITC Rev. 3 trade category</b>
Mineral Water & Soft Drinks	PPFE	111
Food Products	RBGD	0
Tobacco Products Ex Duty	POKY	12
Textiles	POKZ	26, 65
Wearing Apparel & Furs	POLA	21
Leather & Leather Products	POLB	61
Pulp, Paper & Paper Products	POLD	25, 64
Printed Matter & Recorded Material	POLE	761, 8921, 8922
Chemicals	POLG	51, 52, 53, 55, 56, 59
Rubber & Plastic	POLH	57
Other Non Metallic Minerals	POLI	321 ,322, 34, 35
Basic Metals	POLJ	28
Fabricated Metal Products	POLK	69
Machinery & Equipment	POLL	71, 72, 73, 74
Office Machinery & Computers	POLM	75
Electrical Machinery & Apparatus	POLN	77
Radio, Television & Communication Equipment	POLO	76
Medical Precision & Optical, Watches & Clocks	POLP	87, 88
Motor Vehicles	POLQ	78
Other Transport	POLR	79
Furniture: other manufactured goods n.e.c	POLS	82, 89
Beverages ex duty	SCPE	112
Wood & Wood products	POLC	63

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