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Growth, Commodity Prices, Inflation and the Distribution of Income*

by

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1. Introduction

Prebisch (1950) and Singer (1950) argue that the structure of the world economy leads to long-run deterioration in the net barter terms of trade for primary commodity producers in developing countries in their trade with manufacturers in industrialized countries. The 'Prebisch-Singer hypothesis' is based on the differential trading position of primary producers and manufacturers, especially the greater market power of manufacturers and unions representing industrial workers as compared to primary producers and their workers. This differential trading position gives rise to an increasing disparity in relative incomes favouring workers and firms engaged in manufacturing in the industrialized countries at the expense of workers and firms in primary production in developing countries.

Historically, trend movements in the terms of trade and relative incomes as predicted by Prebisch and Singer have been obscured by the high volatility in primary commodity prices. This has led various authors to disagree about the validity of the Prebisch-Singer hypothesis, with their conclusions depending on time periods analysed, the econometric methods applied and the use of adjustments for structural breaks in the times series (see Sapsford and Morgan 1994 for a review of the issues and survey of empirical studies).

Bloch and Sapsford (2000) and Bloch, et al (2004) utilize a model based on the pricing analysis of Kalecki (1971) to empirically separate trend in the terms of trade from movements due to short-run fluctuations in economic activity. The results not only provide evidence of the continued validity of the Prebisch-Singer hypothesis throughout the 20th Century, but also indicate a link between growth in world industrial production and movements in prices of both primary commodity and finished goods for the US economy and for the economies of industrial countries as a

group. In particular, a positive relation is found between the growth rate of industrial production and the rate of change of commodity prices, which is supplemented by a positive relationship between the rates of change in commodity prices and finished goods prices.

In the present paper we further investigate the short-run dynamics of the movement in commodity prices and finished goods prices, specifically examining the implications for treating inflation as a global phenomenon related to the world business cycle. We estimate a system of equations in which the key dependent variables are world commodity prices, the domestic inflation rate for finished goods and the rate of domestic industrial wage inflation. We apply this model to data for each of three major industrialized countries: Japan, UK and US. These estimates allow us to identify common elements in the inflation dynamics of a diverse group of leading industrialized countries.

We find that world commodity prices follow the world business cycle, increasing with upswings and falling with downturns. Further, in each country, there is some evidence that world commodity price changes expressed in domestic currency and domestic wage changes each have a positive, but less than proportional, relation to finished goods inflation. There is also a positive, but less than proportional, impact of finished goods inflation on the rate of wage growth. Thus, we have evidence of a feedback mechanism associated with the wage-price spiral in each country, with a common impetus to upward and downward movements in the spiral coming from worldwide commodity price movements.

We proceed by first presenting in Section 2 an overview of the path of commodity prices and inflation in our three sample countries, the US, Japan and UK. In Section 3, we develop our model of the pricing of primary commodities and

finished goods as well as industrial wage rates. Section 4 presents the empirical results from estimating a worldwide commodity price equation and separate price and wage equations for each of the sample countries. We conclude by summarizing our results and discussing the implications, particularly the link between anti-inflation policies in the industrialized countries and falling commodity prices and incomes in the developing countries. We also speculate that the emergence of China and India as major industrial producers might alter the dynamics of commodity price movements in the short to medium term.

2. Commodity Prices and Inflation: Comparisons across Countries

The volatility of primary commodity prices over the period 1957 through 2001 is shown by the graph of IMF world primary commodity price series (us_pcp) in Figure 1. This series is measured in US dollars, as this is the dominant currency for trading primary commodities in world markets. Also shown is the US domestic price level for finished goods measured by the US producer price index (us_ppi). Comparison of the two series shows the steadier path of finished goods prices, together with the generally deteriorating terms of trade for primary commodities in exchange for finished goods (reflected in the tendency for the US PPI index to rise more rapidly than the US PCP index). This continues the trend cited by Prebisch (1950) and Singer (1950) as characterizing the period from the 19th Century through the mid 20th Century.

Focussing on the possible role of commodity prices in the inflationary dynamics, we particularly note the sharp spike in commodity prices around 1972, along with a steadier and longer-lasting rise in producer prices. Commodity prices have continued to fluctuate since, but without obvious trend, while producer prices

have continued to rise, albeit at gradually slowing rate. Each rise in primary commodity prices after 1972 is accompanied by acceleration in inflation, while each downturn seems to eventually lead to slower inflation.

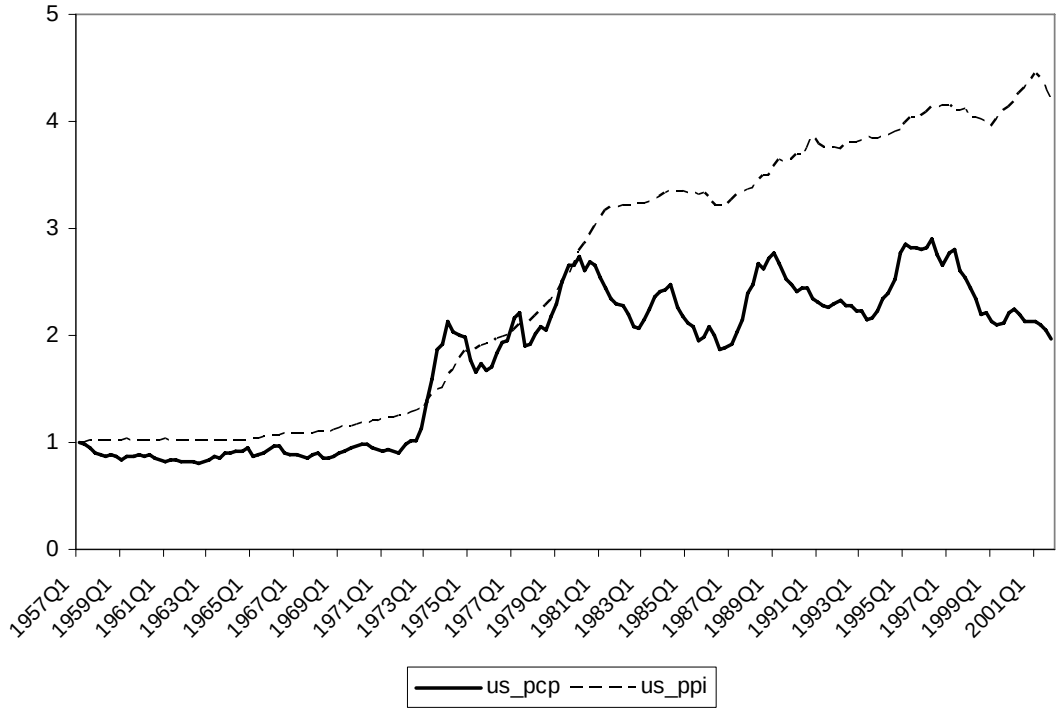

Figure 1: Primary commodity and producer prices for the US, 1957-2001.
(1957Q1=1 for all series)

For countries other than the US, primary commodity prices can be expected to vary with the country's foreign exchange rate as well as with world prices of primary commodities expressed in US dollars. We construct primary price indices for Japan and the UK by multiplying the IMF index by the quarterly average US Dollar value of the Japanese Yen and Pound Sterling, respectively. These indexes are used in place of corresponding indexes of the price of imported raw materials so that we capture the influence of the common movement in world commodity prices on domestic users of primary commodities in each country.[1]

[1] The movement of the price of imported primary commodities is only imperfectly captured by the IMF primary commodity price index, even in the case of the US. Each country imports a different basket of commodities based on its own domestic supplies and the composition of its industrial production. Thus,

Figure 2 and Figure 3 show the movement of the primary commodity price series for Japan, j_pcp, and the UK, uk_pcp, respectively, along with a corresponding series for domestic prices of finished goods, j_cpi and uk_cpi.[2] Given the manner of construction of the primary prices index for Japan and the UK, a comparison of the movements of the commodity price series in Figures 2 or 3, respectively, to the corresponding series in Figure 1 shows the influence of exchange rate changes. The relative downward movement in the commodity price series for Japan reflects the appreciation of the Japanese Yen against the US Dollar, while the relative upward movement in the series for the UK reflects the depreciation of the British Pound.

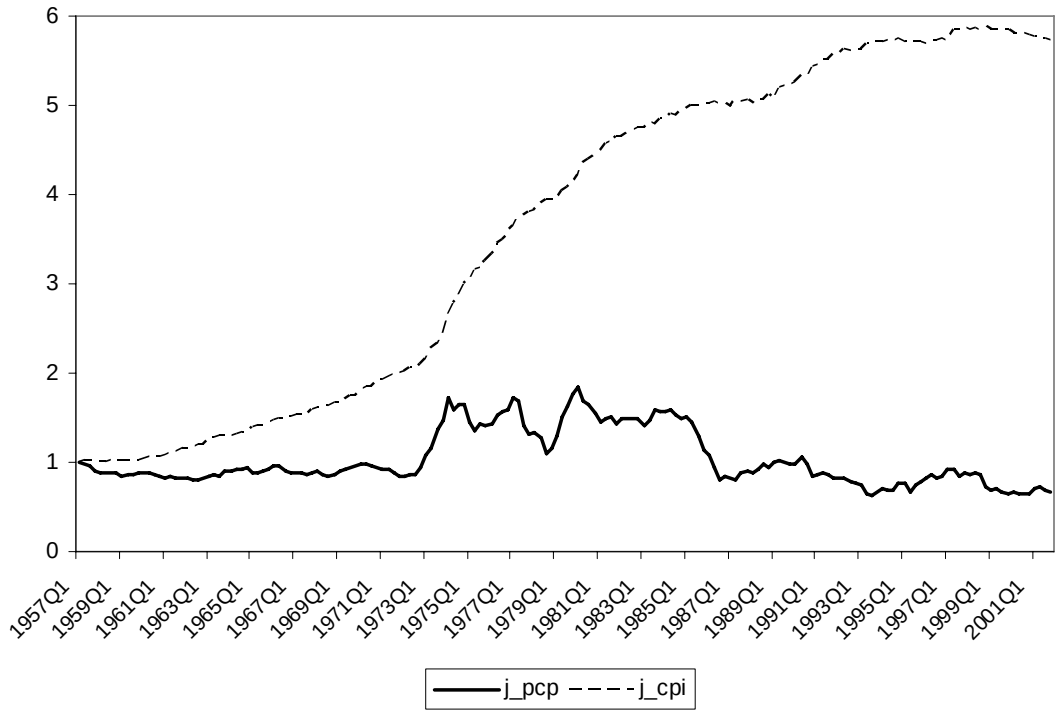

Figure 2: Primary commodity and consumer prices for Japan, 1957-2001.
(1957Q1=1 for all series)

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the weighting of individual commodities in the country's imports may differ substantially from the weights applied in construction of the IMF index. Further, the level of transport costs included in the cost of imported commodities can vary with the location of the importing country relative to the source country. Finally, the IMF index captures movement in prices on commodity exchanges, which may differ from the prices paid by individual buyers, especially when commodities are purchased under long-term contracts.

[2] In the case of Japan and the UK, we use the consumer price index as the price of finished goods. The consumer price index is partially based on the price of services, so it need not be as closely related to the price of primary commodities that are used as raw materials in goods production. However, data were not available for a price index similar to the US producer price index for the full sample period.

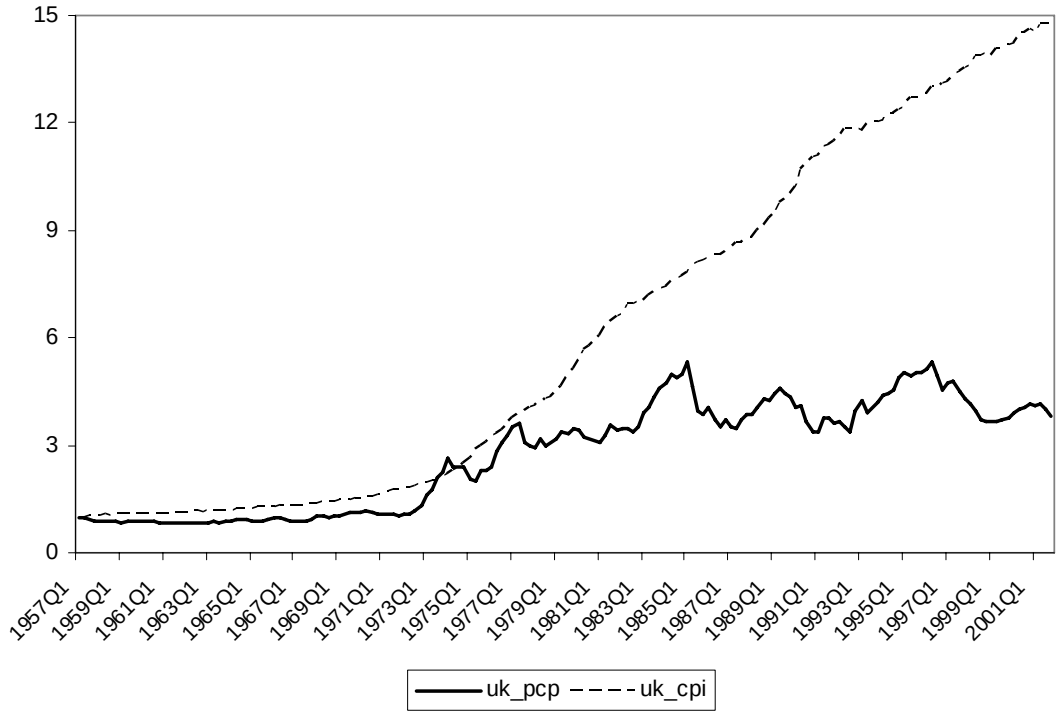

Figure 3: Primary commodity and consumer prices for the UK, 1957-2001.
(1957Q1=1 for all series)

The spike in the commodity price series around 1972 observed in Figure 1 is repeated in both Figures 2 and 3. Again, in all figures this is accompanied by the beginning of a sharp rise in inflation, a rise that continues well after commodity price increases cease. This cessation of commodity price increases occurs earlier for Japan than for the UK, which reflects the divergent movement in respective foreign exchange rates against the US Dollar. The US experience in terms of the slowing of commodity price increases lies in between that of Japan and the UK, although perhaps closer to Japan. Notably, the earlier and sharper stabilization of commodity prices for Japan than the UK is associated with an earlier and sharper slowing in the rate of inflation, with the US experience again intermediate.

The general pattern shown in the figures above is that the acceleration of inflation in the early 1970s is associated with an even sharper and perhaps earlier acceleration in the rate of increase in primary commodity prices. Further, the

deceleration of inflation in the 1980s and 1990s is accompanied by or perhaps preceded by a stabilization, or even downward movement, in commodity prices. This suggests a commonality in inflationary dynamics across the three countries, which is further examined by specifying and then estimating a structural econometric model of prices and wages in the sections below.

3. Modelling commodity prices, wages and inflation

Our analysis of pricing is adapted from the work of Kalecki (1971). Kalecki's analysis introduces a dichotomy between primary commodity prices, determined competitively by supply and demand forces, and finished goods prices, determined by imperfect competition through mark-up pricing.[3] Fluctuations in output lead to volatility in primary commodity prices. This indirectly affects finished goods prices, as primary commodities are used as raw materials in manufacturing.

Prices of manufactured goods vary less than primary commodity prices over the business cycle because the finished goods prices are set by marking up unit prime costs, which include both raw material costs and labour costs. Labour costs are less subject to cyclical variation than are raw material costs. As a result, there is pro-cyclical variation in relative commodity prices, implying pro-cyclical real income variation for primary producers and little or no cyclical change in real incomes of manufacturers or industrial workers.

In the present paper, we add Kalecki's (1971) framework for cyclical movement in prices and incomes to the secular terms-of-trade hypothesis of Prebisch (1950) and Singer (1950). Our particular concern is to explore the resulting dynamics of pricing and income distribution, particularly in light of the possibility that the

[3] Interestingly, Prebisch's (1950) explanation of the influences behind the declining trend in the terms of trade is based on a similar dichotomy between the industrial sector and primary production.

downward pressure on the real wages of industrial workers caused by the pro-cyclical movement in primary commodities relative to wage rates sets off a wage-price spiral.

3.1. Commodity prices

Kalecki (1971) notes that primary commodities are used as raw materials in the manufacturing process, so that demand increases with industrial production. Bloch and Sapsford (2000, 2004) expand this treatment to include other influences on the demand and supply of primary commodities. In particular, demand increases with industrial production, with prices of substitute inputs and with the prices received for manufactured products. The supply of primary commodity production is subject to capacity constraints in the short to medium run, but grows over time with investment in productive capacity and with technical progress. Here, we extend the Bloch and Sapsford model to allow for a possible influence of interest rates on the supply of primary commodities through investment in productive capacity, arbitrage between spot and futures markets or through impacting the rate of exploitation of non-renewable resources in the production of primary commodities, as Hotelling (1931) demonstrates that optimal depletion of a non-renewable resource equalizes the rate of interest with the rate of increase in unrealized resource rents at the margin.

A general pricing equation for primary commodities based on the above points is of the form:[4]

$$PCP = f[X, PX, WX, R, TC] \quad (1)$$

[4] A referee notes that equation (1) can be interpreted as a simultaneous equation subsystem for supply and demand of primary commodities that has no particularly Kaleckian insight. Indeed, Kalecki's insight is to distinguish the behaviour of primary commodity prices, which follow the normal pattern of supply and demand, from the behaviour of finished goods prices, which are based on markup pricing of unit prime costs. Of course, even markup pricing is consistent with profit-maximizing pricing. However, it is necessary to one make appropriate restrictive assumptions about the constancy of the price elasticity of demand and the ratio of marginal to average variable cost to produce the same pattern of price movements relative to input prices and finished goods production levels that are associated with the Kaleckian analysis in Section 3.3 below.

In (1), PCP is the price of the primary commodity expressed in US dollar terms. X and PX are the OECD industrial production index and the US producer price index, respectively.[5] WX and R are the average wage rate of manufacturing workers in the industrialized countries and some general interest rate on world financial markets, respectively. Finally, TC is an index of productive capacity across primary producers, which we proxy by a time trend as we have no direct measure of the world productive capacity for primary commodities.

There is an integrated world market in most primary commodity products. Thus, we estimate a single regression at the world level for primary commodity prices, with all prices and wage rates measured in US dollar equivalents.[6] As there is a clear possibility of delays in the impact on commodity prices from supply and demand factors, various lag structures are trialled in estimating the relationship in (1).

Pro-cyclical movement in primary commodity prices is expected in (1). Demand for primary commodities moves in the same direction as industrial production. By similar argument, prices of industrial products and the industrial wage rate are each expected to have a positive influence on primary product prices. On the supply side investment in expansion of productive capacity that affects the supply of primary commodities from both renewable and non-renewable resources, so rising interest rates can have a negative effect on supply and a positive effect on price

[5] If commodity markets are internationally integrated as argued below, we expect the more inclusive OECD industrial production index to be a better measure of demand than the corresponding US index. This superiority is supported by experiments using US production in place of the OECD measure, which indicate that the OECD aggregate contributes more to the explanation of commodity prices. Nonetheless, we use the US producer price index rather than some international average price, as we expect other country finished goods prices to move closely with US producer prices when adjusted at prevailing foreign exchange rates.

[6] Standard indexes of primary commodity prices, such as used in our regressions below are expressed in US dollars. Thus, it is expedient to express the prices of finished goods and wage rates in US dollars as well. Our wage rate variable is based on an average of industrialized countries to allow for differences in wage-setting practices across countries.

through dampening investment. Alternatively, for those primary commodities derived from non-renewable resources, Hotelling's (1931) analysis of optimal extraction suggests a positive influence of interest rates on the rate of extraction, as the return to holding resources *in situ* falls below the return on financial assets.[7] Thus, rising interest rates can be associated with enhanced supply and a falling price for the primary commodity product, introducing ambiguity into the overall relation between interest rates and commodity prices.[8] Finally, a negative impact of the time trend is expected due to increases in capacity with investment and technical progress that increase short-run commodity supply.

3.2. Finished goods prices

The prices of finished goods are determined by marking up unit prime cost in Kalecki (1971), where unit prime cost consists of unit labour cost and unit materials cost. In spite of the fact that the capital stock is treated as fixed in the short run, Kalecki argues the prevalence of excess capacity means that the supply of finished goods is elastic, such that unit prime cost is stable over the relevant range of output. Further, the size of the markup is stable in the short run, as it reflects the degree of monopoly in an industry, which in turn depends primarily on long-term factors such as industry concentration, sales promotion and the strength of trade unions. However, the degree

[7] Alternatively, as suggested by a referee, the higher interest rate can lead to higher spot prices of primary commodities from non-renewable resources along the lines of own rate of interest by Keynes and Sraffa.

[8] This is the short-run impact of changes in the interest rate. In contrast a higher level of the interest rate would be associated with a higher rate of increase in primary commodity prices under Hotelling's rule. We experiment with both the change in interest rates and the level of interest rates in our estimating equation with the rate of change in primary commodity price as the dependent variable. The change in interest rate is found to have superior explanatory power, consistent with a short-run impact rather than a long-run impact. Interest rates also affect the cost of capital for manufacturers, so a rise in interest rates is an increase in the cost of a substitute for primary commodities in the production of industrial output. In this role, a rise in interest rates may lead to an increased demand for primary commodities and an increase in their price. While this effect is likely to be small in the short to medium term, but it does introduce further ambiguity into the expected sign for the interest rate variable in (1).

of monopoly may move in a counter-cyclical manner as firms seek to protect their profits against counter-cyclical movements in the ratio of overheads to prime costs.[9]

Kalecki (1971) finds that the markup rose in the US during the Great Depression. For the post-WWII period from 1948 to 1979, Domowitz, et al (1988) and Bloch and Olive (2001) find further evidence of counter-cyclical movements in the markup in individual US manufacturing industries, but Atesoglu (1997) finds evidence of pro-cyclical markups for the aggregate US economy. The evidence is also mixed for other industrialized countries. Evidence of pro-cyclical markups is found by Haskel et al (1995) for the UK and Beccarello (1997) for G7 countries, while Oliviera Martins et al (1996) find evidence of counter-cyclical margins in 14 OECD countries. The studies cover different time periods, use a variety of measures of price inflation and aggregate demand and also differ in econometric method, leaving the exact nature of the cyclical pattern of the markup in the US and other industrialized countries subject to doubt. However, the point emphasized by Kalecki (1971) remains, namely that whatever is the cyclical pattern of movements in the markup it is much less prominent than the pro-cyclical pattern in the price of primary commodities.

Kalecki acknowledges that the there may be insufficient capacity at certain times, especially during wars, to maintain an elastic supply of finished goods. More generally, there may be pro-cyclical movements in labour productivity. If unit prime costs vary with the business cycle, the relationship between price and output is further complicated. Counter-cyclical movement in unit prime cost due to pro-cyclical labour productivity can lead to counter-cyclical movement in finished goods prices even with a pro-cyclical profit margin. Correspondingly, pro-cyclical movement in unit prime cost due to limited productive capacity can lead to pro-cyclical price movement, even

[9] See Bloch and Sapsford (2000) for a more detailed derivation.

with a counter-cyclical profit margin. Thus, interpretation of the relationship between output growth and price inflation needs to be qualified by the multiplicity of possible underlying factors.

Our model extends Kalecki's framework to the context of an open economy, allowing the price of competing foreign products to affect prices of domestic finished goods through treating the degree of monopoly for domestic product as influenced by the relative price of domestic and foreign product. Bloch (1996) finds evidence that the degree of monopoly in Australian manufacturing industries rises with the price charged by foreign producers of competing products. Thus, we expect that foreign prices may positively impact on the markup across our current sample of industrialized countries.

We estimate a pricing equation for finished goods that combines factors affecting the degree of monopoly with factors affecting unit prime cost. Output is treated as possibly affecting price either through the degree of monopoly, with either pro-cyclical or counter-cyclical movement possible, or through unit prime cost, with either pro-cyclical or counter-cyclical movement possible. The variables that affect unit prime cost directly are the wage rate, the price of primary commodities and time as a proxy for technology. Finally, we allow for the possibility that the degree of monopoly increases with the cost of capital by including an interest variable. Our estimating equation for finished goods prices (PX) in each country is of general form:

$$PX = f[X, PCP, WX, PFOR, R, T], \qquad (2)$$

Finished goods prices are measured by an index of domestic producer prices. X is real domestic GDP, WX is the domestic industrial wage rate, PFOR is an average

producer price of finished goods from other countries, R is the domestic interest rate, PCP is the index of primary product prices in domestic currency and T is time.

3.3. Wages

The struggle of workers to maintain their real incomes with rising finished goods prices can lead to a wage-price spiral. A simple specification that captures this possibility is an equation with wages as a function of current and lagged prices and a trend term, as in Reynolds (1987, p. 116). We also allow labour market conditions to influence the nature of the struggle between workers and employers. In particular, we follow Rowthorn (1977), Sarantis (1991) and Sarantis and Stewart (2000) by including the unemployment rate as an indicator of weakness in labour's bargaining position.

Our estimating equation for domestic wage determination is of the general form:

$$WX = f[PX, PCP, Z] \tag{3}$$

In (3), WX is the domestic industrial wage rate, PX is the average domestic price of finished goods, PCP is the average price of primary commodities expressed in domestic currency and Z represents other domestic variables, such as the unemployment rate, that are expected to affect the bargaining position of workers.

4. Results

We estimate a single commodity price equation relating to all countries to take account of the high degree of global integration of primary commodity markets. The price and wage data used in this regression are measured in US dollars, with

conversion at current exchange rates where the original amounts are in other currencies.[10] In contrast, we estimate separate finished goods price and industrial wage rate regressions for each of the individual countries in our study, namely Japan, UK and US. The price and wage data in these regressions are all measured in the domestic currency of the country, with primary commodity prices converted from US dollars into the local currency at current exchange rates where relevant. Full details of the data, including sources are given in the Data Appendix.

All the data used in the study are quarterly, as this is highest frequency at which all the required data are generally available. The length of the time series varies across countries, with our Japanese data set covering 1971 Q3 through 2001 Q4, the British data set covering 1964 Q2 through 2001 Q4 and the American data set covering 1957 Q1 through 2001 Q4.[11] We initially allow for up to four lags of each of the explanatory variables to account for lagged responses of the dependent variable. We also allow include a set of seasonal dummy variables in each regression, where SD1, SD2 and SD3 are for the first, second and third quarter, respectively. The base value is for the fourth quarter, which is included in the intercept term to avoid singularity in the data matrix. Insignificant lags and variables are dropped using the general-to-specific approach.

Testing the data series for unit roots reveal that they are generally non-stationary in levels for either the original data or the natural logarithms of the original data, but that the first differences of both the original data and the natural logarithms are stationary.[12] In Sections 4.1 through 4.3, we show regressions based on data in

[10] The wage rate variable is an average of US dollar equivalent values over industrialized countries to account for separate wage setting practices. However, experimentation suggests that the US producer price index is a reasonable proxy for the average price of finished goods over industrialized countries.
[11] Our choice of time periods is based on a combination of data availability and, in the case of Japan and the UK, avoiding early periods in which exchange rates were heavily controlled.
[12] Details of the unit root tests are available from the authors on request.

first differences to minimize the possibility of spurious results. These estimates should be interpreted as providing information only on the short-run dynamics of commodity prices, wage rates and inflation. In Section 4.4, we provide further estimates based on vector auto-regressive models with error correction to assess long-run relationships in the data. Throughout, most variables are used in natural logarithms, as this allows us to interpret the coefficients as giving the elasticity of the dependent variable with respect to the particular explanatory variable.[13]

4.1. Primary commodity prices

The primary commodity price regressions are estimated using quarterly data from 1957 Q1 onwards. Once first differences are taken and up to 4 lags included, this means the estimation is for the period 1958 Q2 to 2001 Q4 for each regression.

The results from initially estimating the equation using ordinary least squares are reported in Table 1 as Model 1.1. The variables for world output (X) and the price at which that output (PX) is sold (proxied by the US producer price index) have the anticipated positive signs. The negative sign on the cost of capital (R) is consistent with the prediction based on Hotelling's rule for non-renewable resource products or the corresponding arbitrage condition for spot and futures prices of these products. There is no evidence of a significant effect of industrial wages (WX) on commodity prices. However, OLS is clearly not a reliable model, with the diagnostic tests revealing strong evidence of serial correlation, functional form misspecification, heteroscedasticity, and non-normality of the residuals.

As our model suggests that primary commodity prices and finished goods prices are jointly determined, the results in Model 1.1 are potentially biased by the presence of the endogenous finished goods price as an explanatory variable. We

[13] Exceptions to the use of natural logarithms are dummy variables and the unemployment rate.

therefore use general instrumental variables estimation (GIVE) to provide alternative estimates in Model 1.2. In estimation by GIVE, we instrument the current value of the producer price variable by its one-quarter lag. The results do not differ much from those obtained through OLS, and the diagnostic problems persist.

Table 1: World commodity price inflation equation: 1958Q2 to 2001Q4

	Model 1.1 OLS		Model 1.2 GIVE[c]		Model 1.3 AR(1)	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
INTERCEPT	-0.0137	-3.45	-0.0119	-2.56	-0.0138	-1.80
DLX	0.9947	4.16	1.3270	6.37	0.7449	2.96
DLX(-1)	0.6508	2.67			0.8406	3.40
DLPX	1.3773	6.60	1.4596	3.87		
DLR					0.1224	2.52
DLR(-1)	-0.1301	-2.79	-0.1067	-2.09	-0.1059	-2.21
DLWX(-4)					0.8902	1.77
SD3	-0.0187	-2.94	-0.0196	-3.03	-0.0183	-3.29
Observations	175		175		175	
R-Squared[a]	0.3842		0.2464		0.3702	
R-Bar-Squared[a]	0.3660		0.2287		0.3438	
F-statistic [probability]	21.09	[.000]	23.71	[.000]	14.02	[.000]
DW-statistic	1.43		1.48		2.04	
Diagnostics[b]	Chi-Square	F stat	Chi-Square	F stat	Chi-Square	F stat
A: Serial Correlation	0.003	0.003	0.007	na.	na.	na.
B: Functional Form	0.001	0.001	0.144	na.	na.	na.
C: Normality	0.003	na.	0.000	na.	na.	na.
D:Heteroscedasticity	0.003	0.003	0.028	na.	na.	na.
AR Process						
U(t-1)					0.3425	4.82
Likelihood Ratio test (AR v. OLS)					$\chi^2 = 21.51$	Probability = 0.000

Notes: The D prefix on a variable indicates it is measured as a first difference. A following L indicates that the natural logarithm of the variable is being used. a: For the GIVE model, the reported statistics are the corresponding GR-squared and GR-bar-squared. b: Chi-square and F-stat figures given for the diagnostics are the probability values. c: Instruments are INTERCEPT, DLX, DLPX(-1), DLR(-1) and SD3. A: Lagrange multiplier test of residual serial correlation. B: Ramsey's RESET test using the square of the fitted values. C: Test of skewness and kurtosis of residuals. D: Based on the regression of squared residuals on squared fitted values.

In light of the evidence of serial correlation, we re-estimate the model again using auto-regressive (AR) specifications, omitting the current period values of the PPI and wages to avoid potential endogeneity. An AR(1) specification is preferred to AR(2). The results, presented in Model 1.3, now show little net effect from the cost of capital once the coefficients on the current and one-period lags are taken into account.

Also, no coefficient on lagged changes in the producer price index is significant. The signs on the coefficients for world industrial output and for wages are as expected.

There is a negative and statistically significant intercept in each of the regressions in Table 1. As the dependent variable is in first differences of logarithms, the intercept provides an estimate of the time trend. A negative time trend suggests that the cost-reducing impacts of technological progress and other increases in productive capacity are being passed on in lower prices for primary commodity products. The estimates suggest the rate of price reduction is about one and a quarter percent in each quarter, except the third quarter, which sees an extra two percent decrease. Thus, without considering the impact of other variables, the overall annual rate of price decrease is about seven percent, regardless of the estimation model.

The influence of world industrial production on primary commodity prices is positive with strong statistical significance in each regression in Table 1. The results show that primary commodity prices rise by about one and a half percent for each one percent increase in industrial output. At an annual output growth rate of four percent, this contributes about a six percent annual increase in commodity prices, some one percent per annum smaller than the negative trend movement identified above. Ignoring the effect of interest rates and movements in industrial prices or wages, this leaves primary commodity prices falling by at least one percent per annum when growth of OECD industrial production fails to exceed four percent per annum.[14]

While there is a statistically significant negative effect of interest rates on commodity prices for the OLS and GIVE results in Table 1, the current and lagged effects are roughly offsetting in the AR results. Further, in terms of long-run impact, it

[14] In Bloch and Sapsford (1997), the positive impact of industrial output growth on the price of primary commodity prices relative to the price of manufactured goods (the net barter terms of trade) of between 5.7% and 6.6% per annum is more than offset by the estimated impact of other influences on the relative price. The net effect on the relative price is estimated at minus 1.5% a year.

needs to be remembered that interest rates at the end of 2001 were at levels approximating those in 1958, in spite of having reached much higher levels in the interval, especially during the 1980s. Finally, the coefficients of finished goods prices or industrial wages show that commodity prices rise in periods of general inflation. None of these coefficients is statistically different from one at the five percent significance level, suggesting that the rate of commodity price increase roughly rises and falls with the general rate of inflation in the industrial sector. Thus, overall there is not much impact from interest rates and general inflation on the real price of primary commodity prices over the estimation period. This leaves real commodity prices falling over time on average at about the same rate of somewhat more than one percent per annum mentioned above.

4.2. Finished goods prices

Finished goods price regressions are estimated separately for American, British and Japanese data. The regression sample period varies for each country depending on data availability and exchange-rate regime. The commodity price index for world markets is measured in US dollars and does not need to be converted into local currency for the US, so we use the longest time period for which all the quarterly data are available in the US, namely 1958 Q2 to 2001 Q4. For the UK we find reasonable results using data for the period after the sterling crisis of the early 1960s, with the regressions for data from1964 Q2 to 2001 Q4. For Japan we find the results are best when we use the period during which the yen has been floated against the US dollar, namely 1971 Q3 through 2001 Q4. Use of this period also allows us to use the producer price index in place of the consumer price index shown in Figure 2, as the producer price series is available back to 1971 but not to 1957.

Table 2: OLS finished goods price inflation equations

Country Time period	United States 1958Q2 –2001Q4		United Kingdom 1964 Q2–2001Q4		Japan 1971Q3 –2001Q4	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
INTERCEPT	-0.0068	-2.33	-0.0040	-2.29	-0.0022	-1.28
DLX	-0.0891	-2.41	-0.1736	-2.65	-0.0193	-2.56
DLX(-1)					-0.0337	-4.43
DLX(-2)	-0.0936	-2.89	-0.1630	-2.48		
DLX(-4)			0.1107	1.79		
DLPFOR(-1)			0.0243	1.69		
DLPFOR(-2)					-0.0763	-2.86
DLPCP	0.0773	4.88			0.0848	5.58
DLPCP(-1)					0.0452	2.68
DLPCP(-2)	0.0652	4.12	0.0223	2.01	0.1133	5.19
DLPCP(-3)			0.0329	3.00		
DLPCP(-4)	0.0546	3.48				
DLWX	0.5639	4.24	0.2287	4.11		
DLW(X-1)	0.3787	2.85	0.1173	1.97		
DLWX(-2)			0.3249	5.27	0.2691	5.78
DLWX(-3)			0.2038	3.77	0.1548	3.72
DLR	0.0284	2.33			0.0237	1.82
DLR(-3)					0.0245	1.95
DLR(-4)					0.0210	1.67
DLR*	0.0309	3.94				
SD2			0.0127	7.66		
SD3			-0.0042	-2.53	0.0084	3.19
TIME	.2860E-4	2.11			.	
Observations	175		152		122	
R-Squared	0.6367		0.7828		0.7017	
R-Bar-Squared	0.6145		0.7640		0.6675	
F-statistic [probability]	28.74	[.000]	41.74	[.0000]	21.25	[.000]
DW-statistic	1.72		1.61		1.09	
Diagnostics[a]	Chi-Square	F stat	Chi-Square	F stat	Chi-Square	F stat
A:Serial Correlation	0.115	0.136	0.040	0.054	0.000	0.000
B:Functional Form	0.000	0.000	0.017	0.022	0.000	0.000
C:Normality	0.955	na.	0.000	n.a.	0.000	n.a.
D:Heteroscedasticity	0.000	0.000	0.004	0.004	0.000	0.000

Notes: The D prefix on a variable indicates it is measured as a first difference. A following L indicates that the natural logarithm of the variable is being used. a: Chi-square and F-stat figures given for the diagnostics are the probability values..

Estimation results from ordinary least squares (OLS) regressions in the general form of Equation 2 are presented in Table 2. Results in the first, second and third columns are for the US, UK and Japan, respectively. For each country, the time period of estimation is noted in the column heading and summary regression statistics along with the probabilities for diagnostic tests are given towards the bottom of the column. While the regressions are highly significant in terms of explanatory power, the

diagnostic tests suggest problems with serial correlation, functional form misspecification, non-normality and heteroscedasticity. Also, there is evidence in Table 1 that primary commodity prices are endogenous and evidence in Tables 4 and 5 below that wages are endogenous, which suggests possible simultaneous equation bias in the estimated coefficients of commodity prices and wages in Table 2. Thus, we re-estimate the regressions in Table 2 using alternative estimation methods.

Table 3 presents results from estimating the regressions for the US and UK using generalized instrumental variables estimation (GIVE). These results show no evidence of serial correlation or other diagnostic problems for the US regression and only evidence of non-normality and heteroscedasticity of errors for the UK. The GIVE estimates for Japan fail the diagnostic test for serial correlation, leading us to estimate using and for Japan using second-order auto-regressive estimation (AR2).

The intercept is negative and statistically significant in each of the regressions of Table 3. As the regressions are of data in first difference of natural logarithms, the intercept together with any non-zero seasonal dummy coefficient provides an estimate of time trend in prices for the quarter, holding all other variables constant. For the US the time trend is deflation of .8% per quarter or about three percent per year, while for Japan it is deflation of about a quarter of one percent per quarter or one percent per year. For the UK, the estimates indicate deflation in most quarters, with an overall annual deflation rate of about one and a half percent. These deflation rates provide an estimate of the impact of technological change and other omitted variables, such as changes in the degree of monopoly in the pricing model.

Table 3: GIVE and AR finished goods price inflation equations

Country Time period	United States 1958Q2 –2001Q4 GIVE[c]		United Kingdom 1964 Q2–2001Q4 GIVE[c]		Japan[b] 1971Q3 –2001Q4 AR2	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
INTERCEPT	-0.0080	-3.23	-0.0059	-2.72	-0.0026	-1.70
DLX	-0.2226	-3.64	-0.2536	-3.29	-0.0237	-3.74
DLX(-1)					-0.0343	-5.42
DLX(-2)			-0.1356	-1.92		
DLX(-3)			0.1408	1.94		
DLX(-4)			0.1784	2.51		
DLPFOR(-2)					-0.0654	-2.80
DLPFOR(-3)			0.0400	2.44		
DLPCP	0.1538	2.63			0.0743	5.97
DLPCP(-1)			0.0234	2.03	0.0526	4.11
DLPCP(-2)	0.0450	1.80			0.0916	5.08
DLWX	2.3455	5.90	0.5743	4.35		
DLW(X-1)					0.1951	5.47
DLWX(-2)			0.2418	3.08	0.2226	6.30
DLWX(-3)	-0.8077	-2.83	0.1561	2.45	0.1411	4.00
DLR					0.0184	2.16
DLR(-2)			0.0293	2.31		
DLR(-3)	-0.0354	-1.81	-0.0244	-1.74		
DLR*	0.0309	3.94				
DLR*(-2)	0.0261	1.76				
SD2			0.0101	5.47		
SD3			-0.0058	-2.75		
Observations	175		152		122	
R-Squared	0.4904		0.7498		0.7905	
R-Bar-Squared	0.4690		0.7262		0.7674	
F-statistic [probability]	6.45	[.000]	29.78	[.0000]	34.27	[.000]
DW-statistic	1.86		1.75		1.94	
Diagnostics[a]	Chi-Square	F stat	Chi-Square	F stat	Chi-Square	F stat
A:Serial Correlation	0.703	n.a.	0.534	n.a.	n.a.	n.a.
B:Functional Form	0.440	n.a.	0.260	n.a.	n.a.	n.a.
C:Normality	0.600	n.a.	0.000	n.a.	n.a.	n.a.
D:Heteroscedasticity	0.620	n.a.	0.018	n.a.	n.a.	n.a.

Notes: The D prefix on a variable indicates it is measured as a first difference, while a following L indicates that the natural logarithm of the variable is being used. a: Chi-square and F-stat figures given for the diagnostics are the probability values. b: The AR process is U(t) = 0.6538U(t-1) - 0.3533U(t-2) with a Chi-square statistic for AR1 vs. OLS of 32.93 (probability = .00000) and a Chi-square statistic for AR2 vs AR1 of 14.39 (probability = .0000). c. instruments used for the US are INTERCEPT, DLX, DLX(-2), DLPCP(-1), DLPCP(-2), DLPCP(-4), DLWX(-1), DLWX(-3), DLR(-3), DLI(-2), DU, DU(-2), DU(-3), instruments used for the UK are INTERCEPT, DLX, DLX(-2), DLX(-3), DLX(-4), DLPX(-3), DLPFOR(-R), DLWX(-1), DLWX(-2), DLWX(-3), DLR(-2), DLR(-3), SD2, SD3, DU

Input price variables have positive and statistically significant coefficients in Table 3 in the regression for each country. Industrial wages clearly have the largest coefficients, with the sum of current and lagged values of the wage variables of about 1.54 for the US, 0.97 for the UK and 0.58 for Japan. This implies that on average

finished goods prices rise by a full percentage point for every one percent increase in wages. The coefficients of the current and lagged primary commodity price variables are uniformly positive, but of much smaller magnitude at about .2 for the US and Japan and only about 0.02 for the UK.[15] Smaller still, and with some offsetting negative values, are the coefficients of the interest-rate variables, R for long-term rates and R* for short-term rates. The sum of coefficients is not greater than 0.02 in any country.[16]

Inflation is negatively related to domestic output growth in the regression for each country in Table 3, as indicated by summing the coefficients of current and lagged growth in output. In the case of the US the elasticity of inflation with respect to output growth is -0.2226, while in Japan it is substantially smaller at -0.058. In the UK negative elasticity with respect to current output growth and a two-quarter lag is substantially offset by positive elasticity with respect to three and four quarter lags, with the sum of the coefficients being similar to that in Japan. These negative impacts of output growth on inflation are consistent with pro-cyclical improvements in productivity being passed on to consumers in lower prices with a fixed degree of monopoly or to counter-cyclical movement in the degree of monopoly.

The deflationary impact of domestic output growth is offset in the case of each country by an indirect inflationary impact of world output growth. Each percentage increase in OECD industrial production leads to about a one and a half percent increase in commodity prices in the regressions in Table 1. Further, the results in Table 3 indicate that for the US and Japan, the rate of finished goods inflation rises by

[15] In part the smaller elasticity estimate for the UK may be attributed to the fact that the dependent variable for the UK regression is a consumer price index, whereas the corresponding variables for the US and Japan are each a producer price index. The consumer price index includes a substantial weighting for services, which do not utilise primary commodities as raw materials in their production.
[16] For the US, we use both a long-term interest rate and a short-term rate, while for the other countries only long-term interest variables attract significant coefficients.

two percent for every ten percent rise in primary commodity prices. This means that a one percent increase in world industrial production leads to about a .3% increase in finished goods inflation in the US and Japan, exceeding the estimated impact on finished goods inflation from a one percent increase in the growth of domestic output. However, for the UK the impact of primary commodity prices on the inflation rate for finished goods is very small, such that it does not exceed even the relatively small deflationary impact of domestic output growth. The important point to remember is that in the case of each country domestic output growth is deflationary while world output growth is inflationary.

4.3. Wages

Our model of the determination of wages is given by equation (3) above, according to which the domestic industrial wage is seen as a function of the average domestic price of finished goods, the average price of primary commodities expressed in domestic currency and a vector of other domestic variables (such as the rate of unemployment) that have the potential to influence the bargaining position of workers. The results that are obtained when equation (3) is estimated for the US, the UK and Japan are summarized in Table 4. Because of the potential endogeneity of both finished goods and primary commodity prices discussed above, these equations are estimated by the method of generalized instrumental variables (GIVE). In light of the results of unit-root tests, the wage, finished goods and commodity price variables are each specified as logarithmic first differences, while the unemployment rate is specified as a first difference.

The diagnostic statistics for the US and Japan estimates in Table 4 indicate the presence of serial correlation. Accordingly the model for these countries is re-estimated using the auto-regressive (AR) method. We focus our discussion of the

results for these countries on the AR results, which are reported in Table 5, and discuss in detail the results in Table 4 only for the UK.

Table 4: GIVE wage inflation equation

Country Time period	United States 1958Q2 –2001Q4		United Kingdom 1964 Q2–2001Q4		Japan 1971Q3 –2001Q4	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
INTERCEPT	0.0110	7.58	0.0095	2.52	0.0204	3.33
DLPX	0.2922	3.29	0.5899	4.32	0.7459	3.82
DLPX(-1)						
DLPX(-2)	0.0930	2.06	0.2475	2.62	0.6013	3.74
DLPX(-3)					-0.4663	-3.19
DLPX(-4)	0.1215	2.95				
DU			-0.0122	-1.68	0.0225	2.72
DU(-2)			0.0142	1.94		
DU(-4)			-0.0083	-1.84	-0.0290	-3.36
DLPCP						
DLPCP(-2)					-0.0696	-2.17
DLPCP(-4)	-0.0329	-3.01				
SD1					-0.0187	-4.42
SD2					0.0279	6.88
SD3			0.0113	4.71		
TIME	-0.232E-4	-2.92	-0.460E-4	-1.98		
Observations	175		152		122	
R-Squared[a]	0.4505		0.4507		0.768	
R-Bar-Squared[a]	0.4342		0.4240		0.751	
F-statistic [probability]	25.00	[.000]	20.13	[.0000]	14.164	
DW-statistic	1.83		1.80		1.89	
Diagnostics[b]	Chi-Square		Chi-Square		Chi-Square	
A:Serial Correlation	0.020		0.702		0.003	
B:Functional Form	0.869		0.544		0.000	
C:Normality	0.343		0.045		0.000	
D:Heteroscedasticity	0.106		0.000		0.000	

Notes: The D prefix on a variable indicates it is measured as a first difference, while a following L indicates that the natural logarithm of the variable is being used. a. the reported statistics are the corresponding GR-squared and GR-bar-squared. b: Chi-square and F-stat figures given for the diagnostics are the probability values. c. Instruments for the US are INTERCEPT, DLPX(-1), DLPX(-2), DLPX(-4), DLPCP(-4), TIME, for the UK the instruments are INTERCEPT, DLPX(-1), DLPX(-2), DU (-1), DU(-2), DU(-4), SD3, TIME, DLX, DLX(-4), for Japan the instruments are INTERCEPT, DLPX{-1), DLPX(-2), DLPX(-3}, DU(-1), DU(-2), DU(-4) DLPCP(-2), SD1, SD2, DLX(-2).

The GIVE results for the UK reported in Table 4 reveal significant effects of finished goods prices in both the current period and at two lags. Taken together these estimates imply that in the UK 84 percent of finished goods price inflation passes through to wage inflation. The results yield no evidence of significant transmission of

domestic primary commodity price movements to wages. As the model is specified in first difference-form, the positive and significant intercept implies a positive trend in the UK wage level of about one percent per quarter or four per cent a year, a result consistent with Prebisch's argument that growth in labour productivity is passed through to wages in industrialized countries as a result of union power. The time trend, which is included to capture possible non-linearity in the productivity or union-power effects, has a negative coefficient, implying that the positive influence UK wages weakens over the sample period.[17] The coefficients on the unemployment rate suggest the presence of significant wage-curve effects, although summing across lags shows that the implied size of the elasticity, at -0.0063, is small.

The AR results for the US in Table 5 suggest that current finished goods prices and lagged values at two and four quarter exert significant positive effects upon domestic wages. Summing across the relevant lags shows that these estimates imply that once lagged effects are taken into consideration about one-third of an increase in the domestic price of finished goods passes through to domestic wages. The results also show that changes in the domestic price of primary commodities exert a weak, but nevertheless significant, positive effect on domestic wage growth. The estimated intercept is positive and significant as with the GIVE results for the UK, implying the existence of a positive trend in the US wage level. As in the UK, the estimated intercept suggests a positive trend is about one percent a quarter or four percent a year and the negative coefficient on the time trend suggests this positive influence weakens over the sample period. Again, these results are consistent with Prebisch's argument that growth in labour productivity is passed through to wages in industrialized

[17] A non-zero coefficient for the non-linear term is implausible in the long term, as it suggests continual rising or falling in the rate of wage growth. However, over a period as short as that used in our analysis, it can capture structural adjustment. A prime candidate for the UK over our sample period is the impact of Thatcherism in diminishing labour union power (see, for example, Sapsford and Tzannatos, 1993).

countries, but that this reflection of union power has been under attack during the sample period.[18] Again as with the GIVE results for the UK, Lastly, the results suggest that the four-period lag of unemployment changes exert a significant positive effect on US wage movements, a result opposite to that expected for an impact of labour market weakness.

Table 5: AR wage inflation equation

Country Time period	United States 1958Q2 –2001Q4		Japan 1971Q3 –2001Q4	
	Coefficient	t-stat	Coefficient	t-stat
INTERCEPT	0.0118	5.88	0.0267	5.76
DLPX(-1)	0.0735	2.13	0.4775	4.95
DLPX(-2)	0.0905	2.61	0.2157	1.87
DLPX(-3)	0.0800	2.28	-0.2232	-2.34
DLPX(-4)	0.1003	2.84		
DU(-1)			0.0135	2.21
DU(-3)			0.0163	2.22
DU(-4)	0.0025	2.17	-0.0317	-6.02
DLPCP	0.0210	2.36		
DLPCP(-2)			-0.0696	-2.17
DLPC(-4)				
SD2			0.0345	7.90
SD3			0.0078	1.86
TIME	-0.220E-4	-1.91		
Observations	175		122	
R-Squared[a]	0.5186		0.780	
R-Bar-Squared[a]	0.4926		0.758	
F-statistic [probability]	19.75	[.000]	35.46	[.0000]
DW-statistic	2.03		1.90	
AR Process				
U(t-1)	0.2371	3.17	0.1331	1.52
U(t-2)	0.1418	1.89	-0.2585	-2.96
Likelihood ratio test				
(AR1 v. OLS)	11.83	0.001	0.72	0.397
(AR2 v. AR1)	3.05	0.081	4.25	0.039

Notes: The D prefix on a variable indicates it is measured as a first difference, while a following L indicates that the natural logarithm of the variable is being used. a: the reported statistics are the corresponding GR-squared and GR-bar-squared.

The results for Japan in Table 5 indicate that current wage growth increases significantly with one, two and three-period lags in finished goods price growth.

[18] For the US, we associate this effect with the impact of Reaganism as compared to the UK effect that we associate with Thatcherism.

Taken together these estimates imply a 'pass-through elasticity' between domestic finished goods prices and wages of slightly less than 0.5. Interestingly, the results imply that (lagged) growth in the domestic price of primary commodities exerts a weak, but nevertheless significant, dampening effect on domestic wage growth. The estimated coefficients of the unemployment change variables indicate a positive effect at the first and second lag accompanied by a numerically equivalent negative effect at the fourth lag. Thus, we see that these results imply a net wage-curve effect that is very close to zero. Lastly, the estimated intercept, being positive and significant, is consistent with the pass through of productivity effects observed for both the US and the UK, although it should be noted that in the Japanese case the coefficient is much larger and accompanied by extra wage growth in the second and third quarters, implying an annual trend growth in wages of about 15 percent. Also, for Japan there is no significant coefficient for the time trend suggestion no evidence of a structural change in the trend.

In summary, the wage equation results provide strong evidence of pass through from finished goods prices to industrial wages in each country, implying that industrial workers are able, at least in part, to offset the impact of inflation on their real wages through securing nominal wage increases. British workers fare the best in this regard, followed by their Japanese and then American counterparts. There is also strong evidence of trend increases in industrial wages in all countries, with the Japanese workers faring best, followed by their British and then American counterparts. For both the UK and US is there is evidence of weakening in the trend growth over the sample period, which may reflect declines in union power.

There is no clear evidence from Tables 4 and 5 as to influence on wage growth of primary commodity prices and unemployment (as a measure of labour market

weakness). The estimated impact of primary commodity prices is positive for the US, negative for Japan and statistically insignificant for the UK. All of the coefficients are small in magnitude. The influence of unemployment is positive for the US and with mixed signs for various lagged values in the UK and Japan. The net impact summing over all lags is negative in the latter two countries, but the magnitude is very small.

4.4. Further econometric analysis

The econometric analysis reported in the preceding section begins with a straightforward OLS approach that is subsequently extended, via the GIVE procedure, to an AR approach designed to highlight the dynamic nature of the processes involved. In overall terms it seems perhaps reasonable to conclude that the AR form yields the most satisfactory results, whilst noting that the overall character of these and those yielded by the GIVE procedure are similar. The error-correction procedure offers a potentially fruitful alternative approach to analysis, especially given our arguments regarding the possible existence of a long-run relationship.[19] More generally, this alternative approach also offers an opportunity for corroboration, or otherwise, of the specifications reported in Tables 1 through 5 above.

Accordingly we apply a multivariate cointegration analysis of the commodity price equation using the Johansen and Juselius (1990) method. Results from this analysis reveal evidence of cointegration between the variables involved, implying the existence of a long-run equilibrium relationship. Our results suggest the existence of a unique cointegrating vector, which can be interpreted as an equilibrium long-run commodity price relationship.[20]

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[19] We are grateful to an anonymous referee for suggesting the approach pursued in this Section. In addition, we gratefully acknowledge the valuable assistance of Dr Tim Lloyd of the University of Nottingham in the preparation of this Section.

[20] All computations are performed using PC-GIVE. Full results are available from the authors.

The results yielded by this procedure, in the error-correction mechanism (ECM), are summarized in Table 6. The EC(-1) term denotes, in the usual way, the lagged residuals of the (log) level of commodity prices about the estimated equilibrium (cointegrating) vector. Several observations are in order.

Table 6: World commodity price equation: ECM results: 1958Q2 to 2001Q4

	Coefficient	t-stat
INTERCEPT	-0.0169	-4.52
DLPC(-1)	0.332	4.63
DLPX	1.2947	5.92
DLR(-1)	-0.1443	-3.01
DLR(-4))	-0.0800	-1.83
DLXW	1.223	5.64
EC(-1)	-0.0934	-2.32
Observations	174	
R-Bar-Squared[a]	0.4040	
F-statistic [probability]	18.87	[0.000]
DW-statistic	2.06	

Notes: The D prefix on a variable indicates it is measured as a first difference, while a following L indicates that the natural logarithm of the variable is being used. a: the reported statistics is the GR-bar-squared.

Comparing the results reported in Table 6 with those reported from the AR formulation as Model 1.3 in Table 1, we see that, despite the differing econometric methodologies involved, there is a degree of agreement with respect to both the composition of the vector of included variables and the order of the lag processes attached to each included variable. In particular, both the AR (Model 1.3) and ECM approaches agree on the existence of significant interest rate effects. The former suggests that these occur both contemporaneously and with a one period lag, while the latter approach suggests their occurrence at the first and fourth lags only.[21] Both approaches reveal evidence of significant positive wage growth effects, albeit at

[21] However, the ECM results suggest that negative and significant coefficients are attached to both the one and four period lags of interest rate changes, as opposed the largely offsetting positive and negative coefficients in the results for the AR model and the positive coefficients in the corresponding GIVE model.

different lags, with the ECM results suggesting a higher and more significant estimated elasticity. However, while the AR results suggest that commodity price growth is significantly and positively related to world output growth, both current and one period lagged, when our world output prices are excluded as a contemporaneous endogenous variable. In contrast, the ECM results find no discernable effect exercised by world output, but a positive and highly significant coefficient being associated with world output price.[22] In addition, the ECM results suggest that a significant role is played by the one period lagged value of commodity price growth.

It is important to notice that the estimated coefficient of the error-correction term, EC(-1), in Table 6 is both correctly signed (negative) and statistically significant, indicating that in the current period, changes in (log) commodity prices adjust inversely to disturbances in the previous period of (log) commodity prices from their long-run equilibrium value. The magnitude of the estimated coefficient of the error correction term in the commodity price equation set out in Table 6 implies the existence of an adjustment coefficient of current commodity price growth with respect to the previous quarter's disequilibrium in (log) commodity prices to the order of minus 0.1.

From the econometric viewpoint, the estimated producer-price and wage equations reported in Tables 2 to 5 above effectively embody various exclusion restrictions relating to both particular variables and various lags of non-excluded variables. The exclusions are based on a combination of theoretical argument and empirical analysis. In an important sense the vector autoregressive (VAR) model approaches the issue from the opposite end of the spectrum in the sense that it starts

[22] Comparison of the results suggests that output growth is not part of the long-run equilibrium relationship, which involves only nominal magnitudes. Linear homogeneity in long-run price relationships is normal assumption in economic modelling, whereas impacts of output growth fluctuations on relative prices are normally limited to the short-run.

from the premise that each of the variables of the model may, in principle, enter each equation in both current and lagged forms. Stated differently, the VAR model describes the joint evolution of a number of variables in terms of their common history. As pointed out by a referee, there may well exist a long-run relationship between producer prices and industrial wages, the nature of which might best be investigated through the VAR approach, extended to incorporate error correction mechanisms (the so called vector-error-correction (VEC) model), applied for each of the three countries considered in this paper. Being a generalization of the standard error-correction approach, the VEC model provides us with an opportunity to corroborate, or otherwise, the exclusion restrictions embodied in the models of wages and prices put forward and discussed above, while at the same time allowing for the potential presence of more than one error-correction mechanism.[23]

Tables 7 to 9 report the results that are obtained when the VEC model is estimated jointly for the finished goods-price and industrial-wage equations for each of the three countries in our sample, the US, UK and Japan, respectively. Several comments are in order and these may be conveniently grouped under two headings. First, the implications of the VEC results for the adequacy, or otherwise, of the exclusion restrictions embodied in the country specific wage-price results reported and discussed in Sections 4.1 to 4.3 above. Second, the implications for long-run equilibrium and the presence of error-correction processes in the individual wage-price systems.

Comparing the VEC country-specific wage and price equations reported in Tables 7 to 9 with the corresponding estimated equations reported in Tables 3 to 5 above reveals several noteworthy points. First, despite differences in suggested

[23] All computations are again performed using PC-GIVE. Full results are available from the authors.

distributed lag structures, the exclusion restrictions suggested by the VEC approach do not differ markedly from those suggested by the GIVE and AR results discussed above. Second, and not surprising given the very nature of the VEC approach, is the fact that it rejects the exclusion restriction (implicit in the preceding analysis) upon the lagged values of the 'dependent' variable in all the country-specific price equations for the two wage equations in Table 5.

Table 7: Wage and price equations for Japan: VEC Results: 1971Q3 – 2001Q4

	Prices		Wages	
	Coefficient	t-stat	Coefficient	t-stat
INTERCEPT	0.00042	0.375	0.0040	3.74
DLPX			-0.2927	-3.95
DLPX(-1)	0.6709	8.40	0.568	7.49
DLPX(-2)	-0.210	-2.71		
DLPX(-3)			-0.0494	-0.88
DLX	-0.0280	-4.62		
DLX(-1)	-0.0221	-3.53		
DLWX	-0.2490	-3.31		
DLWX(-1)	0.1567	3.46		
DLWX(-2)	0.0787	2.22		
DLWX(-4)	0.173	2.81		
DLPFOR(-2)	-0.0745	-3.52		
DLR	0.0238	3.51		
DLJPCP	0.0679	5.75		
DLJPCP(-1)			0.0411	2.79
DLJPCP(-2)	0.0581	3.22		
DU			-0.0161	-3.67
DU(-1)			0.0066	1.63
EC(-1)	-0.1576	-4.82	-0.028	-2.58
Observations	113		113	
R-Bar-Squared[a]	0.8185		0.8547	
F-statistic [probability]	34.35		76.48	
DW-statistic	1.83		1.95	

Notes: The D prefix on a variable indicates it is measured as a first difference, while a following L indicates that the natural logarithm of the variable is being used. a: the reported statistics are the GR-bar-squared.

It is noteworthy that the analysis suggests the existence of correctly signed and statistically significant error-correction terms for all three countries for the respective price equations. However, as far as the wage equations are concerned the picture is less clear. The error-correction term for the Japanese wage equation is both correctly

signed (negative) and significant.[24] However, that for the US is positive and significant, while we could find no evidence of the existence of any cointegrating vector for the case of UK wages.[25]

Table 8: Wage and price equations for US: VEC Results: 1958Q2 – 2001Q4

	Prices		Wages	
	Coefficient	t-stat	Coefficient	t-stat
INTERCEPT	-0.0019	-1.36	0.0044	6.16
DLPX			0.1564	5.56
DLPX(-1)	0.3185	4.52		
DLPX(-3)	0.2401	3.63		
DLX(-1)	0.1078	2.77		
DLWX	0.3512	2.71		
DLWX(-3)			0.4952	8.54
DLR	0.0348	2.83		
DLR*	0.0226	2.56		
DLPCP	0.0559	3.29		
DLPCP(-1)	-0.0366	-1.88		
DLPCP(-2)	0.0307	1.83		
EC(-1)	-0.1062	-3.51	0.00716	1.97
Observations	169		169	
R-Bar-Squared[a]	0.6504		0.5356	
F-statistic [probability]	29.39		63.42	
DW-statistic	2.1		1.89	

Notes: The D prefix on a variable indicates it is measured as a first difference, while a following L indicates that the natural logarithm of the variable is being used. a: the reported statistics are the GR-bar-squared.

In overall terms, the results reported in this sub-section provide an encouraging degree of corroboration of those reported in 4.1 to 4.3 above. Despite the differing econometric methodologies employed, there is an appreciable degree of concordance between both sets of results in terms the suggested vectors of included variables, their lag structures and levels of statistical significance. However, the fact that the further econometric analysis reported in this sub-section isolates the presence

[24] By its nature the VEC model has the potential to reveal the presence in any one of the equations of more than one error correction mechanism. It is noteworthy that in no case did our analysis of country specific wage-price behaviour provide evidence to suggest the existence of more than one cointegrating vector.

[25] Both of these findings invite further research beyond the scope of the present study. However, it is useful to note that as far as the UK evidence is concerned there is a view in the literature to suggest that this sort of result might reflect structural changes brought about by the substantial labour market reforms that took place during the 1980s and 1990s. See, for example, Sapsford and Tzannatos (1993).

error-correction terms in the world primary commodity price equation and all but one of the country-specific wage and price equations might be seen as useful further insight offered by the ECM and VEC approaches.

Table 9: Wage and price equations for UK: VEC Results: 1964Q2 – 2001Q4

	Prices		Wages	
	Coefficient	t-stat	Coefficient	t-stat
INTERCEPT	-0.0040	-2.26	0.0059	3.71
DLPX			0.3091	4.59
DLPX(-1)			0.2751	3.75
DLPX(-3)	-0.1904	-3.03		
DLPX(-4)	0.3632	5.69		
DLX	-0.2020	-2.61		
DLX(-4)	0.2567	3.52		
DLWX	0.2998	5.13		
DLWX(-1)			0.2700	3.68
DLWX(-2)	0.2988	4.20		
DLWX(-3)	0.2048	2.99		
EC(-1)	-0.0758	-2.22		
Observations	152		151	
R-Bar-Squared[a]	0.6935		0.5081	
F-statistic [probability]	40.45		50.6	
DW-statistic	1.65		2.05	

Notes: The D prefix on a variable indicates it is measured as a first difference, while a following L indicates that the natural logarithm of the variable is being used. a: the reported statistics are the GR-bar-squared.

5. Conclusions, implications and prospects

Our analysis of the dynamics of pricing and wage setting in industrialized countries reveals a complex set of relationships between national and international markets centred on the role of primary commodities as industrial raw materials. Growth in industrial output of individual countries contributes to worldwide demand for primary commodities, which drives price increases impacting on all industrial producers. Results in Table 1 show that in the short run the primary commodity price index increases by about one and a half percent for every one percent increase in world industrial output, with at most a one-quarter lag, while the results in Table 6 suggest that this effect disappears in the long run.

Increases in primary commodity prices on world markets increase costs for manufacturers in all countries, leading to increased finished goods prices. However, our estimates show that the finished goods price increases are always less than proportional. We find a short-run elasticity of finished goods price with respect to primary commodity prices in Table 3 of about 0.2 for Japan and the US, but as low as 0.024 for the UK.[26] Further, the impact is gradual, with lags of as much four quarters before the full impact is felt. Thus, faster world industrial output growth leads to substantially higher relative prices for primary commodity producers in the short run. If industrial growth is fast enough, the impact can more than offset the negative trend in relative commodity prices predicted by the Prebisch-Singer hypothesis. According to our estimates, the required growth rate for world industrial production is of the order of four percent per annum.

Many, if not most, developing countries depend heavily on primary commodities as the source of their export earnings. Fast growth in the industrialized countries improves the net barter terms of trade for these countries and raises the real incomes of primary producers throughout the world.[27] Even in the richer countries, many primary producers, especially in agriculture, are among the poorer members of society. Thus, we identify a mechanism by which prosperity for industrialized countries in terms of fast growth in industrial output leads to increased prosperity for

[26] The VEC results for the UK in Table 9 show no role for primary commodity prices in explaining the long-run evolution of finished goods prices. However, Beckerman and Jenkinson (1986) argue forcefully that primary commodity prices were responsible for the acceleration of inflation in the UK during the 1970s and the subsequent slowing in the 1980s.

[27] An anonymous referee points out that the real incomes of residents of the countries exporting primary commodities improved (decline), provided that the country's currency appreciates (depreciates) following a boom (bust) in commodity prices. While some countries might attempt to sterilize the impact of terms of trade changes, there is clear evidence from Bloch (1991) that at least the value of Australian currency has followed the movements in her terms of trade arising from the commodity price cycle during both a fixed exchange rate regime (pre 1983) and a floating rate regime (post 1983).

those less fortunate groups in the world economy that depend on earnings from primary production. So far, so good for all concerned.

Unfortunately, our estimates show that rising primary commodity prices stimulate inflation in the industrialized countries as well as raising real incomes of primary producers. While our estimates of the short-run elasticity of finished goods prices suggest the direct impact is gradual and small, this combines with larger estimates of the impact of finished goods prices on wages and of wages on finished goods prices to suggest there is a strong wage-price spiral that greatly amplifies the direct impact. The amplification is particularly strong in the UK where we find the direct impact of commodity prices to be relatively small. British wage increases lead to almost proportional increases in finished goods prices and finished goods prices increases lead to almost proportional increases in wages. Finished goods prices are estimated to rise more than proportionally with wages in the US, but wages only rise by about one-third of the increase in finished goods prices. In Japan the elasticity of wages with respect to finished goods prices and the elasticity of finished goods prices with respect to wages are both at least 0.4.

What happens in industrialized countries when they are faced with the prospect of rising inflation arising from commodity price increases? The experience of the past few decades indicates a strong tendency to implement deflationary policies. Indeed, many countries now have instituted policy regimes that require monetary authorities to act against inflation rates above specific targets. Their primary weapon is raising interest rates. Our primary commodity price equations show the efficacy of such policies. In Table 1 we find a generally negative short-run impact of the interest rate variable on the rate of price change for primary commodities and any induced slowdown in the growth of industrial output further reduces the rate of

commodity price growth. This policy response of industrialized countries to the threat of inflation poses a serious obstacle to developing countries that export primary products in trying to improve their terms of trade with the industrialized countries.

One possible ray of hope for primary producers is revealed in our estimates of the way domestic output growth directly impacts domestic inflation. We show in Table that domestic output growth has a negative short-run impact on the growth of finished goods prices in all countries examined, although these impacts diminish or reverse in the long-run impacts associated with the VEC results in Tables 7 through 9. These short-run impacts act against the positive impact of world industrial growth on primary commodity prices. Countries that grow relatively fast improve their relative price position, providing individual countries with a type of prisoner's dilemma. Fast growth contributes to worldwide inflation, but the fastest growing countries are least affected and actually improve their relative position. This provides a temptation to break away from attempts to achieve policy coordination among the major industrialized countries. Also, outsiders are encouraged to stay out of the coordination game. Thus, the emergence of new industrial powerhouses, such as China, may offer some hope for primary producers of a sustained burst of worldwide industrial growth and commodity price increases, albeit accompanied by a re-emergence of worldwide inflationary pressures.

REFERENCES

Atesoglu, H S (1997), "A Post Keynesian explanation of U.S. inflation", *Journal of Post Keynesian Economics*, 19, 639-649.

Beccarello, M (1997), "Time series analysis of market power: Evidence from G-7 manufacturing", *Review of Industrial Organization*, 15, 123-136.

Beckerman, W and Jenkinson, T (1986), "What stopped the inflation? Unemployment or commodity prices?", *Economic Journal*, 96, 39-54.

Bloch H (1991), "The Impact of World Manufacturing Growth on Australia's Trading Position", *International Review of Applied Economics*, 5, 100-115.

Bloch, H (1996), "International competition and the degree of monopoly in Australian manufacturing", *International Review of Applied Economics*, 10, 373-387.

Bloch, H and Olive, M (2001), "Pricing over the cycle", *Review of Industrial Organization*, 19, 99-108.

Bloch, H and Sapsford, D (1997), "Some estimates of Prebisch and Singer effects on the terms of trade between primary producers and manufacturers", *World Development*, 25, 1873-1884.

Bloch, H and Sapsford, D (2000), "Whither the terms of trade?", *Cambridge Journal of Economics*, 24, 461-481.

Bloch, H, Dockery, A M and Sapsford, D (2004), "Commodity prices, wages and US inflation in the 20th century", *Journal of Post Keynesian Economics*, 26, 523-545.

Domowitz, I, Hubbard, G R and Petersen. B C (1988), "Market structure and cyclical fluctuations in U.S. manufacturing", *Review of Economics and Statistics*, 70, 55-66.

Haskel, J, Martin, M and Small, I (1995), "Price, marginal cost and the business cycle", *Oxford Bulletin of Economics and Statistics*, 57, 25-41.

Hotelling, H (1931), "The Economics of Exhaustible Resources", *Journal of Political Economy*, 39, 137-175.

Johansen, S. and Juselius, K. (1990), "Maximum Likelihood Estimation and Inference on Cointegration – with Applications to the Demand for Money", *Oxford Bulletin of Economics and Statistics*, 52, 169-210.

Kalecki, M (1971), *Selected Essays in the Dynamics of Capitalist Economies*, Cambridge: Cambridge University Press.

Maizels, A (1992), *Commodities in Crisis*, Oxford: Clarendon Press.

Oliviera Martins, J, Scarpetta, S and Pilat, D (1996), "Mark-up pricing, market structure and the business cycle", *OECD Economic Studies*, 27, 71-105.

Prebisch, R (1950), "The economic development of Latin America and its principal problems", *United Nations ECLA*; also published in *Economic Bulletin for Latin America* (1962), 7, 1-22.

Reynolds, P J (1987), *Political Economy*, Brighton, Sussex: Wheatsheaf Books.

Rowthorn, R E (1977), "Conflict, inflation and money", *Cambridge Journal of Economics*, 1, 215-239.

Sapsford, D and Morgan, C W, eds (1994), *The Economics of Primary Commodities: Models, Analysis and Policy*, Aldershot, Hants and Brookfield, Vt: Edward Elgar Publishing.

Sapsford, D. and Tzannatos, Z. (1993) *The Economics of the Labour Market*, London: Macmillan.

Sarantis, N (1991), "Conflict and inflation in industrial countries", *International Review of Applied Economics*, 5, 155-169.

Sarantis, N and Stewart C (2000), "The ERM effect, conflict and inflation in the European Union", *International Review of Applied Economics*, 14, 25-43.

Singer, H W (1950), "The distribution of gains between investing and borrowing countries", *American Economic Review, Papers and Proceedings*, 40, 473-485.

DATA APPENDIX

World Commodity Prices

World commodity price index (all commodities) – International Monetary Fund, International financial statistics series. 1957Q1-1980Q3 from *International Financial Statistics, Supplement on Price Statistics*, supplement series No. 2, 1981; 1972Q1-1987Q4 from *International Financial Statistics, Supplement on Trade Statistics*, supplement series No. 15, 1988; 1988Q1 on from *International Financial Statistics*, IMF, various editions.

World industrial production

IMF Industrial output for industrial countries, volume index, sa (1957Q1 on). Source: Datastream series TCI66..IG, IMF International Financial Statistics.

World wage level

OECD hourly wages in manufacturing, index, nsa, 1963Q1 on (source: Datastream series OC7HRLYEF, OECD - Database copyright OECD).

US Industrial Production

Industrial production: Industry and market aggregates (real) – total index, nsa (1957Q1 on). Source: US Federal Reserve Statistical Release http://www.federalreserve.gov/releases/G17/table1_2.htm.

US Producer Price Level

US PPI – all commodities monthly, nsa (1957Q1 on). Source: U.S. Department of Labor, Bureau of Labor Statistics, http://research.stlouisfed.org/fred/data/ppi.html (Federal Reserve Bank of St Louis)

US and World Cost of capital/ Interest rates

Long term (cost of capital) - 10 year Treasury constant maturity rate, average of business days (%) (monthly 1957Q1 on). Source: release H.15 from Federal board of Governors, downloaded from Federal Reserved Bank of St Louis; http://research.stlouisfed.org/fred/data/irates.html

Short term - US Discount Rate - averages of daily figures, Rate for the Federal Reserve Bank of New York (1957Q1 on). Source: release H.15 from Federal board of Governors, downloaded from Federal Reserved Bank of St Louis; http://research.stlouisfed.org/fred/data/irates.html

US Manufacturing Wage Rates

Average hourly earnings of production or nonsupervisory workers on private nonfarm payrolls by industry, seasonally adjusted – Manufacturing (1957Q1 on). Source: US Bureau of Labour Statistics: http://stats.bls.gov/ces/home.htm (historical data from the employment situation, Table B-4).

US Unemployment Rate

Civilian Unemployment Rate, %, sa. (1957Q1 on). Source: Federal Reserve Bank of St Louis; http://research.stlouisfed.org/fred/data/employ.html (original source U.S. Department of Labor, Bureau of Labor Statistics).

Japan Exchange Rate
Yen to $US exchange rate (market rate average), nsa, monthly, 1957Q1 on. Source: Datastream, IMF International Financial Statistics (series JPI..RF.).

Japan Domestic Price Level
Japan consumer price index, monthly index, 1995=100, nsa (1957Q1 on). Source: Datastream, IMF International Financial Statistics (series JPI64...F).

Japan producer price index, monthly index, 1995=100, nsa (1970Q1 on). Source: Datastream, IMF International Financial Statistics (series JPI63...F).

Japan Long Term Interest Rate
JP Prime Rate - long term, original series. Monthly end-point (1966Q1 on). Source: Datastream, Bank of Japan (series JPPRLNGA)

Japan Short Term Interest Rate
JP discount rate, percentage – monthly end-point series averaged, (1957Q1 on). Source: Datastream, Bank of Japan (series JPDISCRT).

Japan Output
JP GDP volume index, sa, 1995=100. (1957Q1 on) Source: Datastream, IMF International Financial Statistics (series JPI99BVRG).

Japan Wage Rates
JP Wage index: contract cash earnings – manufacturing, nsa (1952Q1 on). Source: Datastream – Ministry of Labour, Japan (series JPWGMFREF).

Japan Unemployment Rate
JP unemployment rate, percent of total labour force, nsa, monthly series averaged, (1960Q1 on). Source: Datastream, OECD - Database copyright OECD (series JPOCUNE%F).

UK Exchange Rates
National currency unit to $US - average, nsa (1957Q1 on). Source: Datastream, IMF International Financial Statistics (series UKI..RF.). (NB rate is floating from 1971Q4 inclusive)

UK domestic price level
UK consumer price index, monthly index, 1995=100, nsa (1957Q1 on). Source: Datastream, IMF International Financial Statistics (series UKI64...F).

UK Long Term Interest Rate
UK Government bond yield – long term, nsa, monthly average, (1957Q1 on). Source: Datastream - IMF International Financial Statistics (series UKI61…)

UK Short Term Interest Rate
UK Bank Bill Rate 3 month discount, sa, monthly series averaged (1957Q1 on). Source: Datastream – UK Office for Natinoal Statistics (series UK3MTHINE).

UK Output
UK GDP volume index, sa, 1995=100 (1957Q1 on). Source: Datastream, IMF International Financial Statistics (series UKI99BVRG).

UK Wage Rate
UK average earnings index, Great Brittain – whole economy, sa, monthly series averaged, index 1995=100 (1963Q1 on). Source: Datastream, OK Office for National Statistics (series UKWAGES.E).

UK unemployment rate
UK Registered unemployment - percent of total labour force, sa, monthly series averaged, (1960Q1 on). Source: Datastream, OECD - Database copyright OECD (series UKOCUNE%E).

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