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"Commodity Prices: How Important are Real and Nominal Shocks?"

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Abstract

We consider the response of both nominal and real commodity prices on world markets to real and nominal shocks by hypothesizing that nominal shocks can permanently affect nominal commodity prices, but can have only temporary effect on real commodity prices. Real shocks, in contrast, can have permanent as well as temporary effects on both nominal and real commodity prices. When nominal and real shocks are decomposed in this manner, real shocks are found to be of much greater importance to the observed movements in commodity prices. Further, when the shocks are related to the rate of growth of world industrial production as an indicator of business cycle movements, the results suggest that the impact of the business cycle is self-stabilizing in that there is an initial positive effect on growth in commodity prices followed by a fully offsetting negative effect.

1. Introduction

While there is a substantial literature on the relationship between commodity prices and the wider economy, much of the research effort over the last two decades has focused on the commodity price – inflation relationship. A particular focus has been on the contribution of the pricing process to changes in national aggregate price levels: hence their importance as forward indicators of national inflation (e.g. Rowlatt (1988), Cristini (1995), Bloomberg and Harris (1995), Bloch *et al.* (2004) and (2007), Fraser and Rogers (1992), Artis *et al.* (1995), Mahdavi and Zhou (1997), Malliaris (2006), Browne and Cronin, (2007)).

An older and continuing literature in development economics deals with the relative price of primary commodities and manufactured goods, with seminal contributions by Raul Prebisch (1950) and Hans Singer (1950). Prebisch and Singer argue that there is a long-run downward movement in the price of primary commodities relative to the price of manufactured goods. This downward trend is reflected in falling terms of trade for developing countries, which depend heavily on primary commodities for export revenues. Modern contributions to the debate have focussed on the statistical properties of time-series data on relative prices of primary commodities and finished goods (e.g. Kim, et al, (2003), Kellard and Wohar, (2006), Harvey, et al, 2009)).

The two literatures mentioned above can be viewed as dealing respectively with nominal and real commodity prices. This paper adds to both literatures by considering nominal and real commodity prices together. More specifically, we focus on the response of both nominal and real commodity prices to real *and* nominal shocks. The basic argument is that while nominal shocks (e.g. monetary shocks) may have temporary effect on the real commodity price, such shocks will not be permanent, albeit they may generate substantial movement in fiscal aggregates if policy makers react by engaging in stabilization policies (see, e.g. Kumah and Matovu (2005)). Real shocks (e.g. supply shocks), however, will have a permanent effect on real commodity prices and may thereby effect the net barter terms of trade between primary commodities and manufactured goods (see Deaton and Laroque (2003)). Hence the impact of commodity prices on economies may depend on whether such shocks are of a permanent (real) or temporary (nominal) nature.

There exists evidence to suggest that shocks to commodity prices tend to be long-lasting (Cashin et al., (1999)) in that mean reversion to fundamental value is very slow (Deaton and Laroque, (2003) and that price trends are shifting, often changing signs over a sample period (Harvey, et al (2009), Kellard and Wohar (2006)). However, as far as the authors are aware, the relative impact of real and nominal shocks on commodity prices as an explanation of such stylized facts, is an area of the literature that remains unexplored.

In order to asses the differential effects of nominal and real shocks we analyse 319 months of world real and nominal commodity prices using a Structural Vector Autoregression (SVAR) approach and the Blanchard and Quah (1989) (BQ) identification procedure. The BQ procedure is based on imposing long-run restrictions to distinguish between nominal and real shocks. In our case the nominal shocks are temporary to satisfy the requirement for linear homogeneity in nominal prices, whereas the remaining shocks are permanent and taken to represent real economic forces.

Once the real commodity price series is decomposed into a time series of permanent (real) and temporary (nominal) components, the permanent component is related to the rate of growth in world industrial production – a variable that can be considered to reflect the world business cycle. Here, we find that changes in industrial growth initially lead to inflation in the permanent component of the real commodity price, but this is followed by a roughly equal negative impact that sets in after about seven months. After a roughly one year the permanent component of the real commodity price returns to its original level. Thus, real commodity prices appear to be self-correcting in response to business cycle shocks, which warns policy makers against strongly reacting of the type examined by Kumah and Matovu (2005).

The structure of our paper is as follows. In section 2 we explain the way in which we identify nominal and real shocks and compute the decomposition of commodity prices into these components. We go on in section 3 to a discussion of the commodity price data used, before turning to a discussion of our results in section 4. The relationship of commodity price shocks to growth in industrial production is discussed in section 5, while section 6 concludes.

2. The Structural VAR

We hypothesize that nominal shocks have no permanent effect on real commodity prices, but may cause temporary changes in real prices. This behaviour of prices is required to satisfy linear homogeneity in nominal prices. Real shocks, constructed as the remainder of the shock to real commodity prices, have a permanent effect, while both real and nominal shocks can affect nominal commodity prices permanently as well as temporarily.

According to a form of Wold's decomposition theorem (Hannan, 1970), if changes in real commodity prices, denoted Δcp_t^r, and changes in nominal commodity prices, denoted Δcp_t^n, are stationary processes we can model them as past values of themselves in the form of a Bivariate Vector Autoregression (BVAR) of the form $(\Delta cp_t^r, \Delta cp_t^n)$. From this we can derive a Bivariate Moving Average Representation (BMAR) that will have restrictions consistent with the ability to identify the real and nominal components of commodity prices.

Following Lee (1995) and Hess and Lee (1999), restrictions imposed on the BMAR can be illustrated as follows. Consider a two variable vector autoregression (BVAR)) z_t consisting of Δcp_t^r and Δcp_t^n:

$$z_t = \begin{bmatrix} \Delta cp_t^r \\ \Delta cp_t^n \end{bmatrix} = \begin{bmatrix} \sum_k a_{11}^k \Delta cp_{t-k-1}^r + \sum_k a_{12}^k \Delta cp_{t-k-1}^n + \mu_{1,t} \\ \sum_k a_{21}^k \Delta cp_{t-k-1}^r + \sum_k a_{22}^k \Delta cp_{t-k-1}^n + \mu_{2,t} \end{bmatrix} \tag{1}$$

where $\mu_{1,t}$ is a real-price disturbance and $\mu_{2,t}$ is a nominal-price disturbance. In more compact form:

$$z_t = A(L)z_{t-1} + \mu_t \tag{2}$$

where $A(L) = [A_{ij}(L)] = \sum_k a_{ij}(k)L^{k-1}$ for i,j = 1 and 2 with $\sum_k \equiv \sum_k^\infty$;

$$\mu_t = [\mu_{1,t}, \mu_{2t}]' = z_t - E(z_t \mid z_{t-s}, s > 1);$$

$VAR(u_t) = \Omega = \sigma_{ij}$ for $i,j,$=1 and 2.

Hence μ_t is a non-orthonormalized innovation in z_t .

Since the real $[e_t^r]$ and nominal shocks $[e_t^n]$ are unobservable, the problem is to recover them from the VAR estimation. By the Wold representation theorem, there exists a bivariate moving average representation (BMAR) of z_t:

$$z_t = \begin{bmatrix} \Delta cp_t^r \\ \Delta cp_{t-k-1}^n \end{bmatrix} = \begin{bmatrix} \sum_k c_{11}^k e_{t-k}^r + \sum_k c_{12}^k e_{t-k}^n \\ \sum_k c_{21}^k e_{t-k}^r + \sum_k c_{22}^k e_{t-k}^n \end{bmatrix} \tag{3}$$

or

$$z_t = C\ (L)e_t \tag{4}$$

where $C(L) = [C_{ij}(L)] = \sum_k c_{ij}(k)L^k$ for i,j = 1 and 2, and $e_t = [e_t^r, e_t^n]'$, with the two innovations in e_t being serially uncorrelated by construction and contemporaneously uncorrelated by an orthogonalization. The variance of the vector, $e_t = [e_t^r, e_t^n]'$, is the identity matrix of rank 2 by a normalization.

The critical insight is that the BVAR residuals, μ_t, are composites of the pure innovations, e_t. Comparing the BMAR in (3) (or (4)) with the BVAR in (1) (or (2)), estimates of *C(L)*, are obtained by noting that:

$$C^o e_t = \mu_t \tag{5}$$

and

$$z_t = C(L)e_t = [1 - A(L)l]^{-1}\mu_t \tag{6}$$

where $C^o = [c_{ij}^k]$ with k=0. Using (5) and (6) implies that:

$$C(L) = [1 - A(L)L]^{-1} C^o \tag{7}$$

Hence, given an estimate of *A(L)*, we require an estimate of C^o to calculate C*(L)*, which can be calculated by taking the variance of each side of (5):

$$C^o C^o = \Omega = [\sigma_{ij}] \text{ for } i,j = 1 \text{ and } 2 \tag{8}$$

The relationships between the BVAR and the BMAR provide three restrictions for the four elements of C^o so we need one additional restriction to just identify the four elements of C^o (see Blanchard and Quah (1989)). This is:

$$\sum_k c_{12}^k = 0 \tag{9}$$

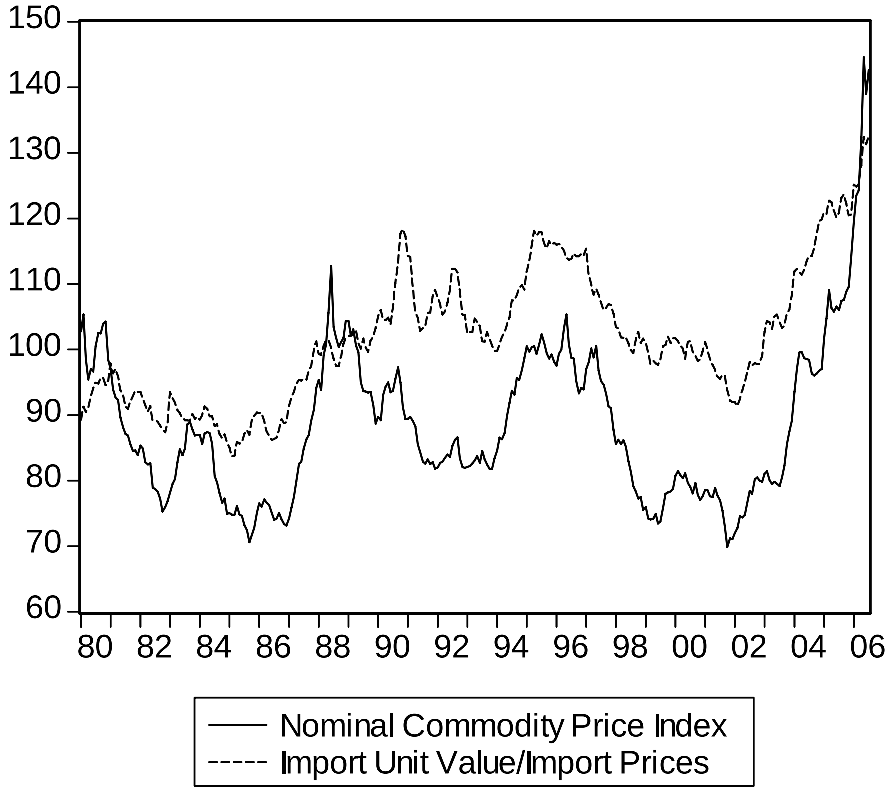
The moving average coefficient c_{12}^k measures the effect of e_t^n on Δcp_t after k periods and $\sum_k c_{12}^k$ denotes the cumulative effect of e_t^n. Setting $\sum_k c_{12}^k$ = 0, therefore requires that the innovation e_t^n does not permanently influence the real commodity price. Essentially, the coefficients c_{ij}^{k} in (3) represent shocks in particular variables and because e_t is serially and contemporaneously uncorrelated, we can allocate the variance of each element in z_t to sources in elements of e_t and this forecast error decomposition can be used to measure relative importance of nominal and real shocks to nominal or real commodity prices.

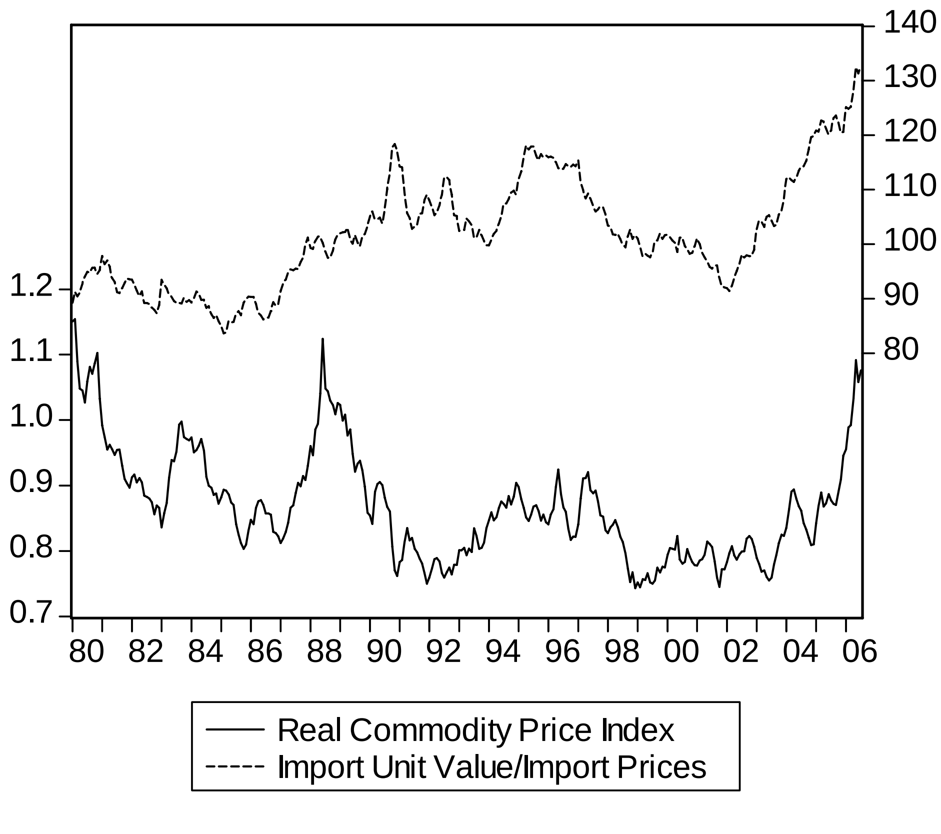
3. Commodity Price Data

Monthly commodity price indices for world markets are collected from the IMF online facility and are deflated by the world import unit value/import prices for manufactured goods from the IMF to provide prices in real terms. The sample period is 1980:1 to 2006:7. Each commodity price index is then transformed into natural logarithms and first differences taken, thus providing a time series of continuously compounded (real and nominal) commodity returns.

Plots of nominal and real commodity prices alongside import prices are shown in Figure 1. Notably, nominal commodity prices track import prices relatively well, particularly since the late 1980s. Conversely, with the exception of the most recent period, the trend has been for an inverse relationship between real commodity prices and import prices. Such features are borne out by simple contemporaneous correlations which showed that the degree of association between real commodity returns and import price inflation was -0.289, while for nominal commodity returns, this was positive at 0.346.

Figure 1 - Real and Nominal Commodity Price Indices and Inflation





4. Decomposing Price Shocks

Results of the standard tests of the optimal lag length (not reported) indicate that 1 lag is optimal. In all cases the optimal lag length is decided by considering the Akaike Information Criterion (AIC) and the Schwartz Information Criterion (SC).[1] Having identified the nominal and real shocks by imposing the restrictions as described in section 2 above, we then examine the variance decompositions of real and nominal commodity returns and the dynamic effects of each type of shock on commodity returns, and commodity price levels over various horizons.

Table 1 and Table 2 show the variance decomposition of commodity-price returns to real and nominal shocks, where the real and nominal returns are given by the first difference of logs of the nominal or real commodity price level, respectively. The tables imply that the variance of real commodity prices is dominated by real shocks, while the variance of nominal commodity prices captures a relatively larger impact from nominal shocks, albeit with real shocks remaining the dominant component.

Table 1 - Real Commodity Price Returns: Variance Decomposition

Period	S.E.	Real Shock	Nominal Shock
1	0.020406	99.80068	0.199321
2	0.020981	99.77450	0.225498
3	0.021014	99.75556	0.244437
4	0.021016	99.75159	0.248410
5	0.021016	99.75099	0.249012
6	0.021016	99.75091	0.249090
7	0.021016	99.75090	0.249099
8	0.021016	99.75090	0.249100
9	0.021016	99.75090	0.249100
10	0.021016	99.75090	0.249100

[1] Lag length choice for the VAR in first differences is based on the validity of a model reduction sequence, information criteria and tests for residual autocorrelation. Since the data are monthly we test down from a lag length of 13 in the VAR, information criteria (SC, HQ and AIC) all select a lag length of 1, F tests for the model reduction from lag 13 to 1 do not reject (the F test for the reduction is F(48,554) = 1.2493, with a p-value of 0.1277) and the VAR(1) shows no evidence of serial correlation (with tests for autocorrelation in the individual equations yielding p-values of 0.23 and 0.28)

Table 2 - Nominal Commodity Price Returns: Variance Decomposition

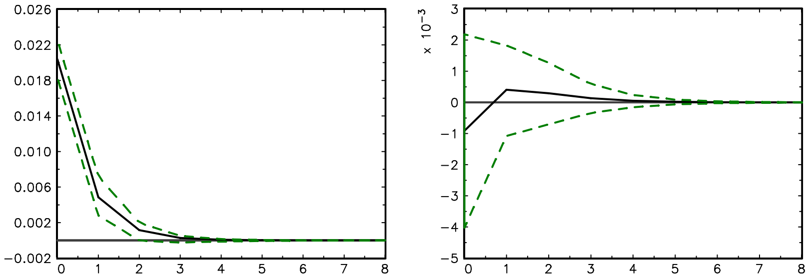
Period	S.E.	Real Shock	Nominal Shock
1	0.020548	69.02414	30.97586
2	0.021327	67.29105	32.70895
3	0.021394	67.01443	32.98557
4	0.021401	66.97929	33.02071
5	0.021401	66.97528	33.02472
6	0.021401	66.97485	33.02515
7	0.021401	66.97481	33.02519
8	0.021401	66.97480	33.02520
9	0.021401	66.97480	33.02520
10	0.021401	66.97480	33.02520

We now turn to the results for the response of real and nominal *returns* to a one-standard deviation real and nominal shock. The results are shown in Figure 2. The response of real returns to real shocks is positive with the impact disappearing after 5 months. Nominal shocks have a very small and insignificant effect on real returns. By construction the initial negative return is offset by a subsequent positive return and no effect lasts more than 5 months. Nominal returns have an immediate positive response to both real and nominal shocks with real shocks having a greater initial impact but nominal shocks enduring for slightly longer with the latter impact disappearing after 6 months.

In Figure 3, we can see the effect of real and nominal shocks on the *levels* of real and nominal commodity prices. While the real shock has a permanent effect on the level of real commodity prices, the nominal shock has a negative, albeit very small, impact. Conversely, the impact on nominal commodity prices from both types of shocks is permanent with the immediate impact being only slighter greater for real shocks. The impact of both types of shocks however appears to level after around 4 months.

Figure 2 - Impulse Response Analyses*

Response of Real Commodity Returns to Real (left) and Nominal (right) Shocks



Response of Nominal Commodity Returns to Real and Nominal Shocks

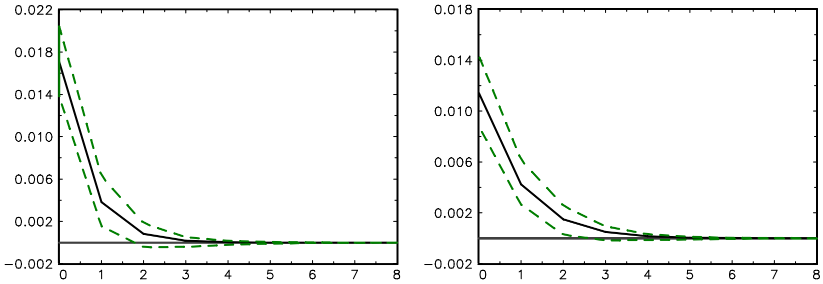
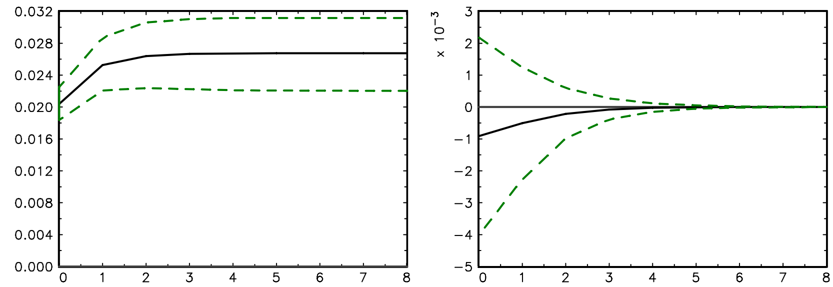
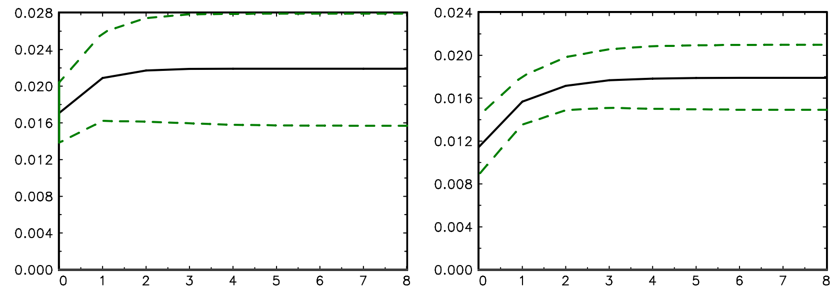


Figure 3 - Accumulated Impulse Responses

Response of Real Commodity Price Level to Real and Nominal Shocks



Response of Nominal Commodity Price Level to Real and Nominal Shocks



* Impulse response confidence intervals are based on 5000 bootstrap replications using Hall's percentile interval (Hall, 1992), implemented in Jmulti (see Lütkepohl and Krätzig, 2004).

We can also decompose commodity prices into their permanent (real) and temporary (nominal) components. Following from the discussion of the SVAR in section 2 above, the estimated change in the temporary component is $c_{12}(L)e^{T}_{t}$, which is then cumulated to get the temporary component of the commodity price series. The same procedure can be carried out to get the permanent component.[2] This decomposition is shown in Figure 4.

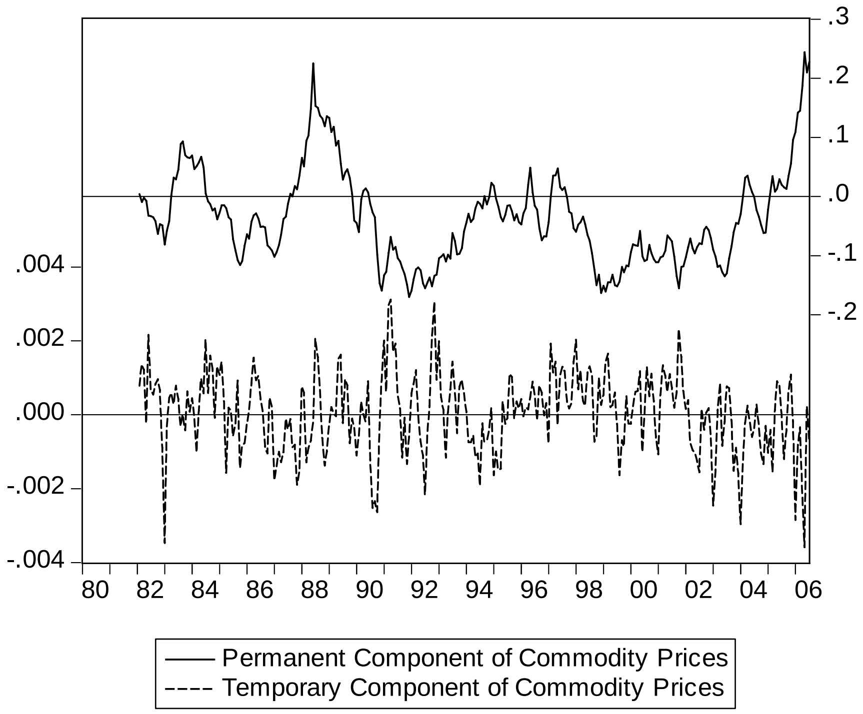
It is clear from Figure 4 that real shocks have added considerably to commodity price movements over the period. It is interesting to note that in the late 1980s there was a sharp negative change in the permanent component of commodity prices and that the beginning of this slow decline in the permanent component of prices occurs prior to a the recessionary period of the early 1990s. We also see a steep rise in the permanent component of price from 2003-2004 as the economic impact from the changing structure of the global economy begins to be felt, particularly the emerging economies of Brazil, Russia, India and China. In contrast, and consistent with results discussed above, the size of the temporary component of real commodity prices appears has been relatively small over the sample period as well as less variable. The standard deviation of the temporary component is 0.0011 compared to a standard deviation of 0.079 for the permanent component.

With the exception of the 1990s, the temporary component is often in negative territory, which implies that commodity prices tend to be lower than they otherwise would have been in the absence of such shocks. Conversely, when the temporary component is positive, this tends to coincide with periods when the permanent component was negative, with the interaction between components keeping prices

[2] The deterministic component was also decomposed. While this had a negative trend, values were of very small magnitude having a mean of -0.123.

higher than they would otherwise have been. Over the period the correlation between the permanent and temporary component is -0.112.

Figure 4 - Permanent (Real) and Temporary (Nominal) Components



In general our finding that the permanent or real component of prices tends to dominate supports the work of Cashin et al (1999) who, using disaggregated data and measuring duration as the half life of a shock, report evidence to suggest that shocks to prices of many primary products are long-lasting. Our results would suggest that the distinction between real and nominal shock may explain the duration of shocks to commodity prices.

5. The Relation of Price Shocks and Fluctuations in Industrial Production

In order to analyze further the relationship between the real and nominal components of commodity prices with the state of the world economy, we generate a time series of deviations of world real industrial production from its long-term trend and compare the time-series characteristics of this with the permanent and temporary components of real commodity prices. Essentially, we are relating the world business cycle (as measured by fluctuations of industrial production around trend) to real commodity prices through the decomposed permanent and temporary components, where the construction of the temporary component is related to nominal shocks and the permanent component to real shocks. The world industrial production data are collected from IFS. The sample period is 1980:1 to 2006:7 as with the commodity price data.

Whilst cointegration tests suggest that there is no evidence of a long-run relationship between industrial production and the real commodity price index (although both series are I(1)), this does not preclude the possibility that the short-run dynamics of the series may be inter-related.[3] We therefore consider the relationship between a series for the log of industrial production and both the permanent and temporary components of the commodity price series (which we abbreviate to lip, perm and temp, respectively, in the empirical results below).

As would be expected, the permanent component of commodity prices is I(1) whilst the temporary component is I(0). Since industrial production and the permanent component of real commodity prices are both I(1) and are not cointegrated, we estimate a bivariate VAR in first differences. The results of the BVAR with a lag length of 12 are reported in Table 3.[4]

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[3] Full results of the cointegration tests are available from the authors on request.

[4] The lag order is initially set at 13 and with model reduction tests (both information criteria and F tests) of the reduction sequence. The tests are conflicting. Both the Schwarz and Hannan-Quinnn criteria suggest lower order lags of 3 in the VAR, however the VAR(3) shows significant evidence of autocorrelation, whilst the AIC selected a larger lag order (12). The lag length of 12 is further supported by tests on reducing lag length.

Table 3 - Estimated Parameters and P-Values for the VAR(12)

	Δperm equation	Δlip equation
Constant	0.00 [.22]	0.00 [.00]**
Δperm(-1)	0.13 [.04]**	0.03 [.12]
Δperm(-2)	0.06 [.37]	-0.02 [.41]
Δperm(-3)	-0.02 [.78]	0.06 [.01]**
Δperm(-4)	-0.07 [.25]	-0.01 [.83]
Δperm(-5)	-0.00 [.99]	0.03 [.15]
Δperm(-6)	-0.03 [.68]	-0.02 [.42]
Δperm(-7)	-0.10 [.10]*	-0.01 [.83]
Δperm(-8)	-0.03 [.63]	0.00 [.98]
Δperm(-9)	0.04 [.58]	-0.02 [.44]
Δperm(-10)	0.11 [.09]*	0.03 [.16]
Δperm(-11)	0.07 [.27]	-0.00 [.99]
Δperm(-12)	0.12 [.05]**	0.02 [.35]
Δlip(-1)	-0.01 [.96]	-0.43 [.00]
Δlip(-2)	0.04 [.84]	-0.10 [.14]
Δlip(-3)	0.39 [.04]**	0.29 [.00]
Δlip(-4)	0.54 [.01]**	0.15 [.03]
Δlip(-5)	0.41 [.05]**	0.31 [.00]
Δlip(-6)	0.17 [.43]	0.19 [.01]
Δlip(-7)	-0.30 [.15]	-0.01 [.91]
Δlip(-8)	-0.39 [.06]*	-0.08 [.29]
Δlip(-9)	-0.44 [.03]**	0.04 [.60]
Δlip(-10)	-0.41 [.03]**	-0.24 [.00]
Δlip(-11)	-0.36 [.06]*	-0.14 [.03]
Δlip(-12)	-0.31 [.07]*	0.04 [.54]

In the equation for Δperm, the coefficients on lagged changes in industrial production show significant (at the 5 per cent level) positive coefficients for several of the low order lags (3,4,5) and significant negative coefficients for several higher order lags (8,9,10 and 11). A Wald test for the exclusion of the lags of Δlip in the Δperm equation yields a test statistic of $\chi^2(12) = 24.77$ which is significant at 1.6 percent. In contrast, the test for the exclusion of lags of Δperm in the Δlip equation yields a test statistic of $\chi^2(12) = 17.92$ which is not significant at the 10 per cent level (11.8 percent). Causality is seen to run from changes in industrial production to changes in the permanent (real) component of real commodity prices, but not in reverse.

The impact of this lag structure in the Δperm equation is shown in the simple impulse responses from the VAR in Figures 5 and 6, with Figure 6 showing the accumulated responses (the effect on the level of perm). The impulse responses show significant positive effects only from 3 to 5 months, but they do indicate a cyclical pattern. Positive shocks to the growth rate of world industrial production initially raise the growth rate of the permanent component of real commodity prices but that these positive impacts are offset by later falls. The accumulated responses, which give the effect on the level of the permanent component, return to zero after approximately 12 months. In this sense fluctuations in industrial production appear self-correcting in terms of an impact on the permanent component of real commodity prices.

Figure 5 - Impulse Response of Δperm to a Shock in Δlip

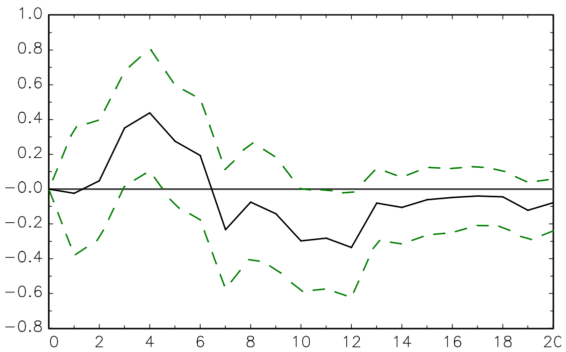
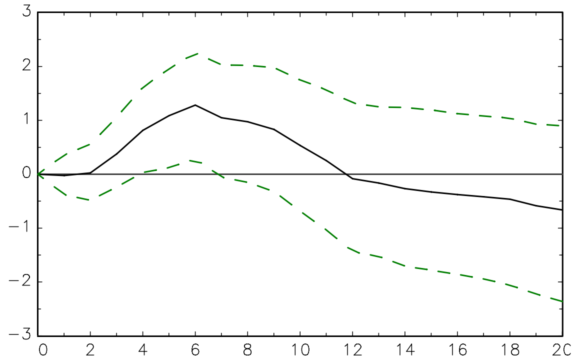


Figure 6 - Accumulated Impulse Response of Δperm to a Shock in Δlip



The absence of cointegration between real commodity prices and industrial production implies that the variables are not related in the long run. Yet, in the short run (three to five months) the growth in the permanent component of commodity prices responds positively to fluctuations in industrial production, as would be expected for a positive demand shock. The apparent paradox between the short-run and long-run impact is explained by the fact that between seven and thirteen months there is a negative impact of industrial production growth on growth in the permanent component, such that after about a year it appears that any initial impact is reversed and the overall effect on the level of the permanent component of the real commodity price is negligible.

Turning now to the temporary component of commodity prices, since the temporary component is stationary by construction, we estimate a bivariate VAR with the temporary component in levels and the first difference of industrial production.[5] A Wald test for the exclusion of the lags of Δlip in the temp equation yields a test statistic of $\chi^2(11) = 17.14$, which is only significant at 10.4 percent. The test for the exclusion of lags of temp in the Δlip equation yields a test statistic of $\chi^2(11) = 17.92$,

[5] Model reduction tests lead us to adopt a lag length of 11 for these regressions. Detailed results of the estimates are available from the authors on request.

which is clearly not significant (p-value of 0.785). There are significant coefficients for some lag lengths with some positive and some negative coefficients. However, we don't present these results in detail in view of the lack of the significance of the Wald tests, the quantitatively small coefficients relative to those in the BVAR for the permanent component and the absence of a clear pattern of coefficients suggesting self-correction.

Our results regarding the relation, or lack of it, between industrial production and the components of real commodity prices help to inform the existing literature on commodity prices reviewed in the introduction. First, with regard to the literature on commodity prices and inflation, a positive relationship between fluctuations in world industrial production and movements in world commodity prices is identified as a key link in the transmission of the world business cycle into movements in inflation in the US, UK and Japan by Bloch, et al., (2007). Bloch, et al., find that inflation, as measured by the change in finished goods prices, is directly impacted by commodity prices in local currency and indirectly impacted by wage rates in each of the countries. The result found here that deviations from trend in industrial production have a short-run impact on real commodity prices but no long-lasting effect is consistent with the impact of industrial production on nominal commodity prices being fully passed through to finished goods prices with lags. In the long-run, both nominal commodity prices and nominal finished goods prices are proportionally impacted by industrial production, but the real commodity price, measured as the ratio of these two nominal prices, is unaffected.

Second, with regard to the literature on long-run trend in the net barter terms of trade, the finding that impact of the growth of industrial production on the permanent component of real commodity prices occurs only in the short run and is self-correcting means that there is no lasting impact on real commodity prices of fluctuations in the derived demand for commodities as raw materials in industrial production. This is consistent with the argument of Deaton and Laroque (2003) that the long-run supply of commodities is perfectly elastic. It also fits nicely with the findings of Harvey, et al (2009) that real prices of individual commodities are subject to shifting trends that are distinct across commodities in the course of the last four centuries, with the trends being negative wherever there are found to be statistically significant. Shocks on the supply side of commodity markets of the type associated with technological change or major resource discovery would be expected to lead to persistent changes in the price of individual commodities that are specific to that commodity and reflected in a time-series analysis of the data shifts in trend.

6. Conclusion

The purpose of this work is to assess the impact of world-wide real and nominal shocks on commodity prices. Nominal shocks are constrained to have no permanent effect on real commodity prices – only real shocks matter in this respect. In this sense the nominal shocks are temporary and the real shocks are permanent The results indicate that the impact of nominal shocks on changes and levels of real commodity prices is relatively small when compared to that from real shocks, but that impacts on changes and levels of nominal commodity prices are sizeable. Permanent shocks in contrast have sizeable impact on changes and levels of both nominal and real commodity prices. An important implication is therefore that the ‘terms of trade’ between primary products and manufactured products are relatively unaffected by monetary disturbances, at least in the long run, but rather depend on shocks to the real economy, such as changes in technology for production or use of primary products as raw materials in production.

We investigate these issues further by decomposing commodity prices in order to consider real (permanent) and nominal (temporary) influences at different periods in time and relating these influences with the state of the world economy as measured by deviations of world industrial production from its long-term trend. We find that fluctuations in industrial production are significantly related to changes in the permanent component of real commodity prices, but that the effects are short-lived. There is a positive impact in the first five months following an industrial production shock, but this is fully offset by a negative impact over the following seven months, implying that that the shocks are self-correcting in terms of their impact.

Overall, beyond a one-year time frame real commodity prices appear to be little affected by macroeconomic influences of the type associated with monetary shocks or fluctuations in industrial production. There are clear impacts of these shocks on nominal commodity prices, but these appear to be offset within the one-year time frame by corresponding movements in prices of manufactured goods (the denominator of the real commodity price). Policy makers should be aware of these short-run dynamics when engaged in the construction and implementation of stabilization policies or risk such policies having unfortunate unintended consequences. The reader is left to ponder how much the use of contractionary monetary policy to combat rampant commodity inflation may have contributed to the recent economic crisis.

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