BOX 1: Experience with Managing Commodity Markets

The long-term declines along with high variability of commodity prices prompted many governments to take collective measures to either prevent the decline or reduce the variability. Coffee producers, led by Brazil, organized the 1962 International Coffee Agreement (and a subsequent series of agreements) to restrict exports and boost coffee prices. Similar efforts were undertaken by cocoa producers while attempts were also made in other markets (e.g. cotton, grains). The oil producers formed the Organization of Petroleum Exporting Countries (OPEC) in 1960 in order to raise prices through supply controls. Similarly, buffer stocks were used by organizations of commodity producing countries in order to stabilize prices. Tin producers, through the International Tin Agreement managed buffer stocks to maintain prices within a range. The International Cocoa Agreement, form in 1972, also attempted to stabilize prices through buffer stocks but was suspended in 1988. The International Natural Rubber Organization was formed to stabilize rubber prices but major producers withdrew from the Organization following the East Asia financial crisis of 1997. With the exception to OPEC, all these agreements failed to achieve their stated objectives as coordination and monitoring among many sovereign nations turned out to be a difficult task. In addition to the post-WWII commodity agreements, there was another wave of agreements that were formed in response to the low prices following the Great Depression.

### BOX 2: The Role of Speculation during the Recent Commodity Boom

Since 2003 index fund investors, who allocate funds across a basket of commodities by taking long positions various commodities traded in organized futures exchanges, have invested almost $250 billion in U.S. commodity markets, about half of it in energy commodities (Masters 2008). While such transactions are not associated with real demand for commodities, they may have influenced prices for a number of reasons. First, because investment in commodities is a relatively new phenomenon, there have been mostly inflows (not outflows) of funds implying that some markets may have been subjected to extrapolative price behavior (i.e., high prices leading to more buying by investment funds consequently leading to even higher prices, and so on). Second, these funds invest on the basis of fixed weights or past performance criteria and hence investment often takes places in contrast to what market fundamentals would dictate. Third, the large size of these funds compared to commodity markets may exacerbate price movements. Their influence on prices is especially likely, if the rapid expansion of these markets contributed to expectations of rising prices, thereby exacerbating swings, as argued by Soros (2008, p. 4) who called commodity index buying "... intellectually unsound, potentially destabilizing and distinctly harmful in its economic consequences." Similar views are shared by numerous authors (see for example, Eckaus (2008) and Wray (2008)).

Yet, the empirical evidence on whether such funds contributed to the price boom has been, at best, mixed. In the non-ferrous metal market, Gilbert (2008) found no direct evidence of the impact of investor activity on the prices of metals but some evidence of extrapolative price behavior that resulted in price movements not fully justified by market fundamentals. He also found strong evidence that futures positions of index providers over the past two years have affected the soybean (but not the maize) prices in the US futures exchanges. Plastina (2008) concluded that between January 2006 and February 2008, investment fund activity might have pushed cotton prices 14 percent higher than what would have been otherwise. On the other hand, two IMF (2006, 2008) studies failed to find evidence that speculation has had a systematic influence on commodity prices. A similar conclusion was reached by a series of studies undertaken by the Commodities Futures Trading Commission, the agency that regulates U.S. futures exchanges (Büyükşahin, Haigh, and Robe 2008; CFTC 2008).

Although the empirical evidence regarding the effect of investment fund activity is mixed and inconclusive, the large amount of money that does into commodities certainly has an effect on prices, which is the consensus among experts. On the other hand, market fundamentals will determine the long-term trends of commodity prices, which implies that investment fund activity has induced higher price variability.

BOX 3: The Global Income Distribution Dynamics model

The World Bank Development Economics Prospects Group (DECPG) has developed the Global Income Distribution Dynamics (GIDD), the first global CGE-microsimulation model. The GIDD takes into account the macro nature of growth and of economic policies and adds a microeconomic—that is, household and individual—dimension to it.
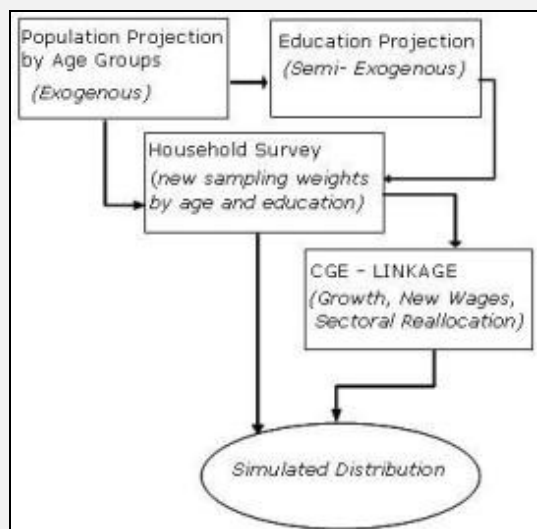
The GIDD includes distributional data for 121 countries and covers 90 percent of the world population. Academics and development practitioners can use the GIDD to assess growth and distribution effects of global policies such as multilateral trade liberalization, policies dealing with international migration and climate change, among others. The GIDD also allows analyzing the impacts on global income distribution from different global growth scenarios and to distinguish changes due to shifts in average income between countries from changes attributable to widening disparities within countries.

The macro-micro modeling framework described here explicitly considers long-term time horizons during which changes in the demographic structure may become a crucial component of both growth and distribution dynamics. The GIDD's empirical framework is schematically represented in the figure to the left.

The expected changes in population structure by age (upper left part of the figure) are exogenous, meaning that fertility decisions and mortality rates are determined outside the model. The change in shares of the population by education groups incorporates the expected demographic changes (linking arrow from top left box to top right box in the figure). Next, new sets of population shares by age and education subgroups are computed and household sampling weights are re-scaled according to the demographic and educational changes above (larger box in the middle of the figure). The impact of changes in the demographic structure on labor supply (by skill level) is incorporated into the CGE model, which then provides a set of link variables for the micro-simulation:

> (a) change in the allocation of workers across sectors in the economy,
> (b) change in returns to labor by skill and occupation,
> (c) change in the relative price of food and non-food consumption baskets, and
> (d) differentiation in per capita income/consumption growth rates across countries.

The final distribution is obtained by applying the changes in these link variables to the re-weighted household survey (bottom link in the figure).

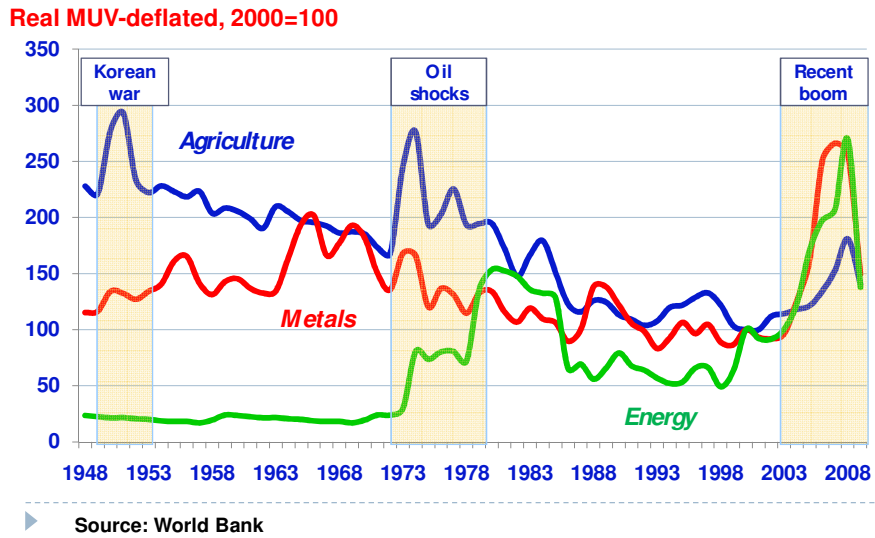**Figure 2.1: Unlike earlier booms, the current boom involved all commodity groups**

Real MUV-deflated, 2000=100

Source: World Bank

Figure 2.2: All commodity prices have declined sharply since the mid-2008

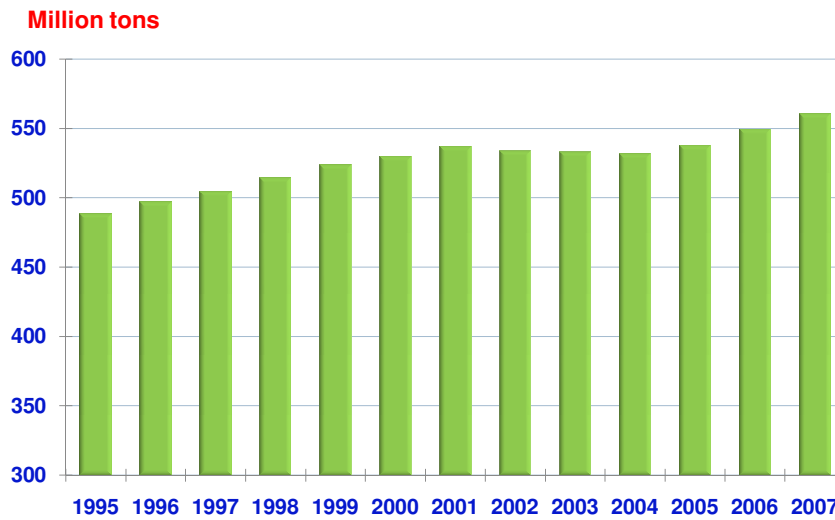**Nominal price indices (2000=100)**
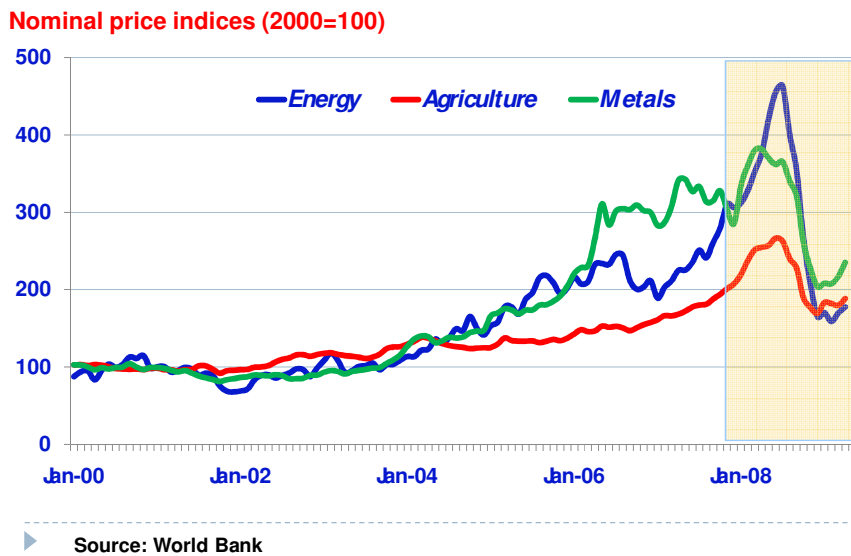
Source: World Bank

Figure 2.3: Investment by major multinational oil companies follows energy prices

US investment in Oil & Gas (Real 2006, US$ billion) [left]
Energy Price Index (Real 2000=100) [right]
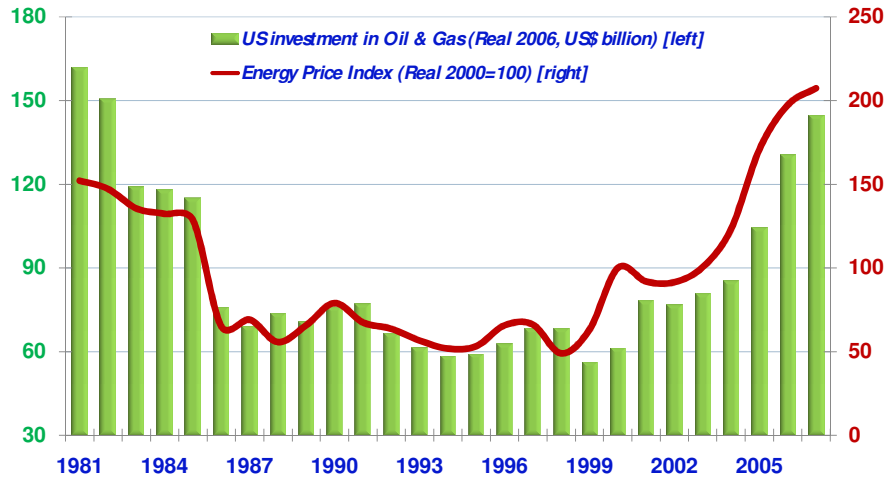
► **Source: International Energy Agency and World Bank**

Figure 2.4: Total grain consumption by China and India (rice, maize, wheat)

Million tons

► **Source: World Bank calculations based on FAPRI data**