Focus: The role of income growth in commodities

Income growth, especially in emerging economies, has played a key role in post-2000 commodity price increases. This section argues that this role has been uneven across commodity groups. Metal prices have been affected the most by growth, especially that in China's manufacturing sector—China currently consumes almost half of world's metals, up from a mere 5 percent two decades ago . Income growth has been the key driver in energy prices; during 2004-13, oil consumption increased by 40 percent in non-OECD economies, while it declined 7 percent in OECD economies. Yet, the effect of income growth on agricultural commodities (including food) is mixed and limited.

Despite the recent weakness across many commodities, most prices are still high compared to recent history. For example, energy and food prices will be on average 150 and 60 percent higher, respectively, in 2014 than 2000-02. Metal, fertilizer, and precious metal prices will be much higher as well (80, 110, and 210 percent, respectively). Numerous factors are associated with these commodity price trends. They include a weak US dollar, which strengthens demand and limits supply from non-US dollar commodity consumers and producers. High prices of energy and other inputs have also played an important role in driving metal and agriculture prices. Low levels of past investment (in turn a reflection of a prolonged period of low prices), along with low inventories have contributed to the boom. Lastly, ample liquidity due to low interest rates and quantitative easing policies

in major high-income economies over the past few years are believed to have supported commodity prices as well. In the case of agriculture, prices have been affected by the diversion of food commodities to the production of biofuels as well as frequent extreme weather events.

Yet, strong and sustained economic growth in emerging economies, notably China, has been the most frequently discussed driver of commodity prices, not only as a cyclical factor but also as a key cause of the post-2000 super cycle—a primarily demand-driven price cycle that lasts several decades instead of the few years typically associated with the cyclicality of economic activity. Indeed, GDP and industrial production in emerging economies (where most of the growth in commodity consumption takes place) grew at an annual rate of 6.3 and 7.8 percent, respectively, during 2002-2012, the highest rate in any 10-year period over the past four decades. During the same period China's GDP and industrial production grew at an average annual rate of 10.6 and 14.7 percent, respectively.

The link between income growth and the post-2000 price increases, was first mentioned in the context of a super-cycle by Rogers (2004) and Heap (2005). In a conceptually related framework, Gordon and Rouwenhorst (2004) showed that diversified investment in commodities has a slightly lower risk than investment in equities, thus rendering commodities an effective risk-lowering mechanism. Other authors began casting the price boom in terms of a super cycle as well, including Cuddington and Jerrett (2008), Jerrett and Cuddington (2008), Stürmer (2013), Erten and Ocampo (2013), and Jacks (2013).

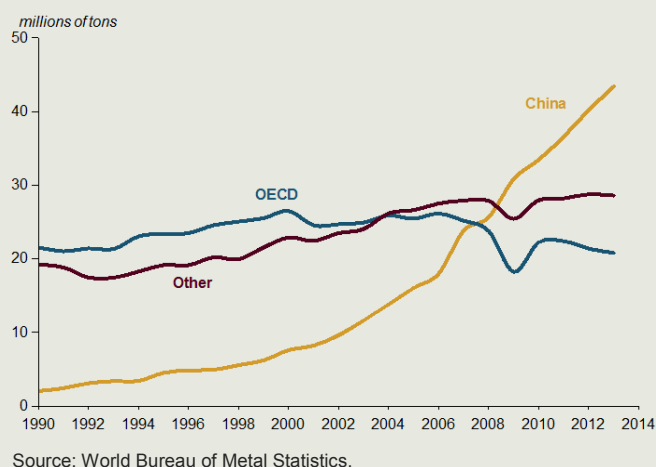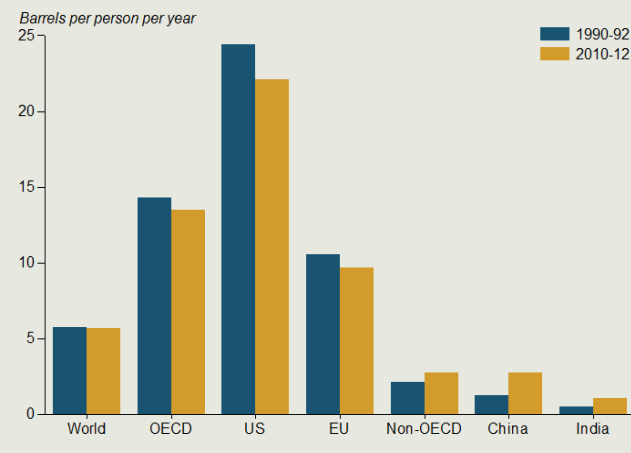| Figure F.1 | Consumption of six base metals |

millions of tons

Source: World Bureau of Metal Statistics.

| Figure F.2 | Per capita crude oil consumption |

Barrels per person per year

Source: BP Statistical Review, UN, OECD, Eurostat.

Indeed, most industrial commodities have experienced an unprecedented consumption boom during the past 15 years. In 2012, China consumed almost half of the 91 million tons of metals produced globally, up from only 4 percent of global supplies of 43 million tons in 1990 (Figure F.1). In contrast, OECD economies consumed as much metals in 2012 as they did in 1990. Similarly, crude oil consumption increased by 40 percent during 2004-14 in non-OECD economies, while it declined 7 percent in OECD economies. In 2014, non-OECD economies will consume more oil than OECD economies for the first time in history—yet, on a per capita basis OECD economies consume 5 times more oil than non-OECD ones (Figure F.2)

While there is a broad consensus on the role of income growth in industrial commodities, this is not the case for agriculture as reflected in debates in popular media. Krugman (2008) argued that the upward pressure on grain prices is due to the growing number of people in emerging economies, especially China, who are becoming wealthy enough to emulate Western diets. Likewise, Wolf (2008) concluded that strong income growth in emerging economies, including China and India, was the key factor behind the post-2007 increases in food prices. Similarly, Bourne (2009) noted that demand for grains has increased because people in countries such as China and India have prospered and moved up the food ladder.

Yet, the share in global consumption of most agricultural commodities by large emerging economics has not increased during the recent price boom as dramatically as often assumed (Figures F.3 and F.4). Indeed, this has been noted by numerous authors. For example,

Alexandratos (2008) concluded that China's and India's combined average annual increment in grain consumption was lower in 2002-08 than in 1995-2001. In a similar vein, FAO (2008) noted that since 1980, imports of cereals in these two countries have been trending down, on average by 4 percent per year, from an average of 14.4 million tonnes in the early 1980s to 6.3 million tonnes over the past three years. It also noted that China has been a net exporter of cereals since the late-1990s, with one exception during 2004-05. Similarly, India has been a net importer of these commodities only once, during 2006-07, since the beginning of the twenty-first century. Numerous other studies have reported similar findings regarding consumption patterns, including Alexandratos and Bruinsma (2012), Sarris (2010), Baffes and Haniotis (2010), FAO (2009), and Lustig (2008). In fact, Deaton and Drèze (2008) found that, despite increasing incomes, there has been a downward trend in calorie intake in India since the early 1990s.
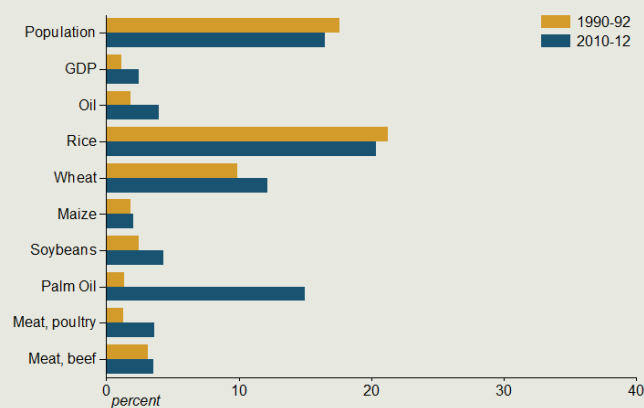
The dichotomy regarding the response of commodity prices to income is confirmed by the empirical literature. Food commodities are subject to Engel's Law of less than unitary income elasticity, whereas metals and energy commodities are not. Indeed, Baffes and Etienne (2014) concluded that income elasticity for most food commodities is either small or close to zero. In contrast, income elasticity of metals (proxied by industrial production) exceeds unity by far (see, for example, Baffes 2007, Labys, Achouch, and Terraza 1999, Issler, Rodrigues, Burjack 2013, and Baffes and Savescu 2014). Likewise, the income elasticity of energy has been estimated to be around unity, based on a literature review by Webster, Paltsev, and Reilly (2008).

Figure F.3 China's importance in key commodities
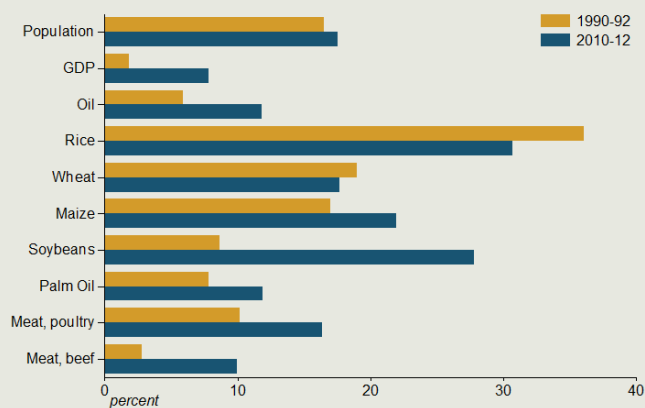
Source: World Bank.

Figure F.4 India's importance in key commodities

Source: World Bank.