

Effects of Global Liquidity on Commodity and Food Prices

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Summary. — This article investigates the relationship between global liquidity and commodity and food prices applying a global cointegrated vector-autoregressive model. We use different measures of global liquidity and various indices of commodity and food prices for the period 1980–2011. Our results support the hypothesis that there is a positive long-run relation between global liquidity and the development of food and commodity prices, and that food and commodity prices adjust significantly to this cointegrating relation. Global liquidity, in contrast, does not adjust, it drives the relationship.
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Key words — commodity prices, food prices, global liquidity, cointegration, CVAR analysis

1. INTRODUCTION

While prices for most commodities and foodstuff hovered at the same level between 1980 and 2000, they increased dramatically since the early 2000s (Figure 1). Prices peaked in 2008, plummeted during the global financial crisis and started a strong rebound at the beginning of 2009.

There have been two major lines of explanation for these developments in food and commodity markets. The first one centers on demand and supply factors. According to Trostle (2008), Krugman (2008a), Hamilton (2009), Kilian (2009) and others, the rapid growth of emerging market economies, not least China, has increased world demand for all kinds of food and commodities and led to rapid price increases before the summer of 2008.¹ Prices plunged when demand contracted with the outbreak of the global financial crisis.

A second line of explanation argues that these price developments in food and commodity markets have been due to a “financialization of commodities” (Tang & Xiong, 2010; UNCTAD, 2011), which has led to a large flow of investment into commodity markets, especially into index investments.² According to this view, the rising volumes of financial investments in commodity derivatives markets have led to a synchronized boom and bust of seemingly unrelated commodity prices, driving commodity prices “away from levels justified by market fundamentals, with negative effects both on producers and consumers” (UNCTAD, 2011, p. vii).

Commodity and food price inflation and volatility has become a major concern for central banks in developing and advanced countries alike. Much of the analysis has focused on the question of how monetary policy should respond to such price shocks. For instance, the IMF’s World Economic Outlook from September 2011 dedicated a chapter to commodity price swings and monetary policy, finding that commodity prices tend to have stronger and longer-lasting effects on inflation in economies with high food shares in the consumption

basket and in economies with less firmly anchored inflation expectations (IMF, 2011).

Instead of investigating monetary authorities’ policy responses to commodity and food price shocks, this article seeks to analyze the effects that monetary policy itself has on commodity and food price movements. In particular, we seek to understand the effects of “global liquidity”—the liquidity created by the world’s major central banks—on food and commodity prices. As pointed out in a recent report by the Committee on the Global Financial System (2011, p. 1), “[g]lobal liquidity has become a key focus of international policy debates”, and a potential source of instability. The extremely expansionary monetary policies pursued by the world’s major central banks in response to the global financial crisis and the ensuing recession in advanced countries have led to a surge of global liquidity. In this article we investigate whether such policies, which are certainly warranted from a short-term policy perspective to stabilize financial markets and stimulate output, create unintended negative side-effects in terms of long-term inflationary pressures in food and commodity prices.

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1. Introduction

2. Previous research

3. Empirical analysis

4. Conclusions

1. Introduction

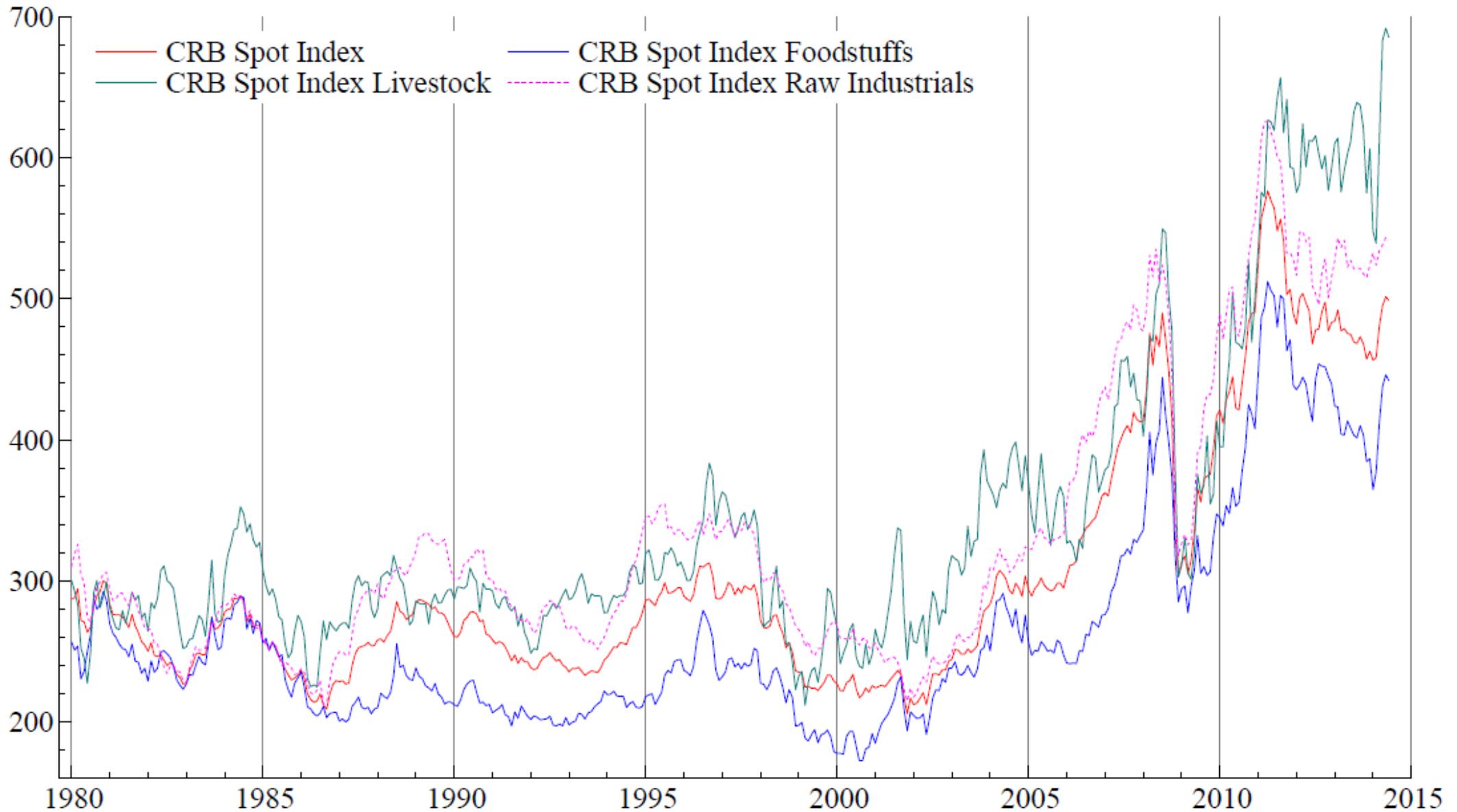
2. Previous research

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4. Conclusions

- **Commodity and food prices have increased dramatically since 2000**
 - Food prices peaked in 2008 at levels 80% above the levels in 2000
- **Are commodity prices driven by demand and supply factors?**
 - According to Krugman (2008), Hamilton (2009), Kilian (2009), Stoll and Whaley (2009, 1010) and Fattouh et al. (2013) the rapid growth of emerging economies such as China propelled the quick increase in world demand and caused commodity prices to soar before the summer of 2008
 - Prices later fell sharply as the world recession caused demand to fade
- **“Financialisation of commodities” (Tang and Xiong 2010; Cheng and Xiong 2013; UNCTAD 2011)**
 - Large flow of investment into commodity markets, esp. indices
 - Synchronised boom and bust of seemingly unrelated commodity prices in 2006-08 and 2009-11

Development of commodity and food prices, 1980-2014

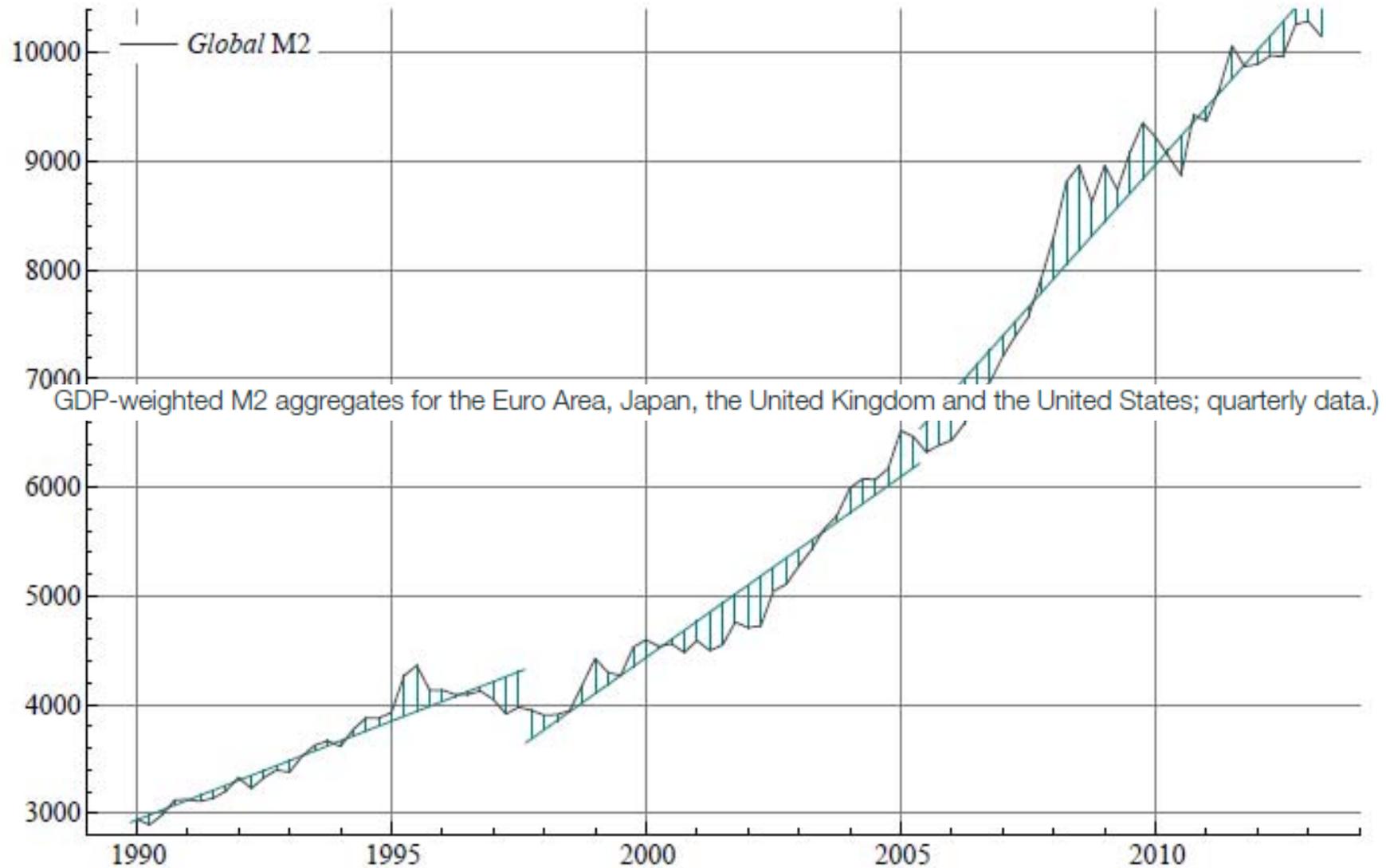


Source: Compiled with data from CRB and Thomson Reuters.

- **Commodity and food price inflation and volatility has become a major concern for central bankers in developing and advanced countries alike**
 - How should monetary policy respond to such price shocks?

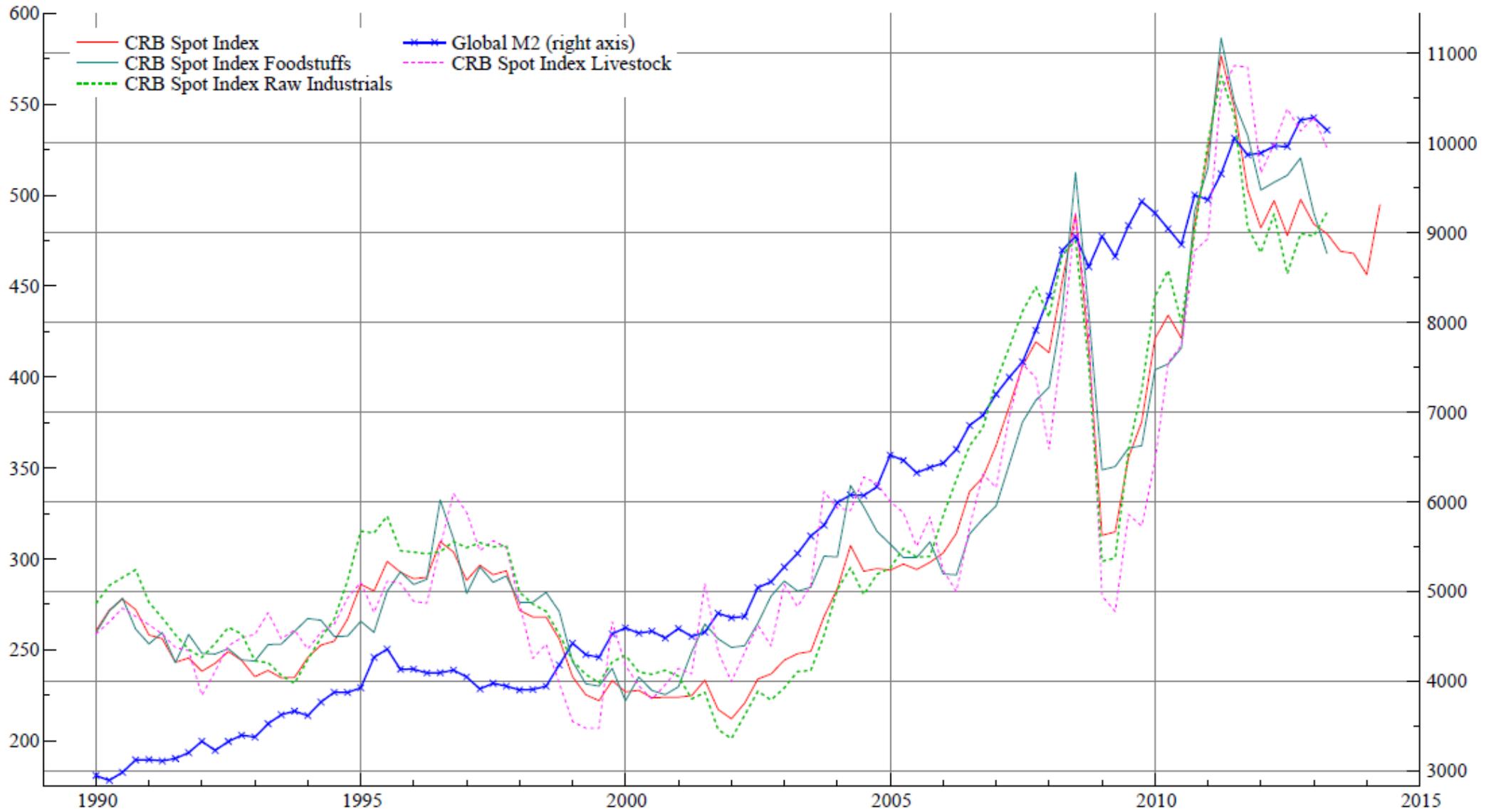
- **Instead of investigating monetary authorities' policy responses to commodity and food price shocks, we analyse the effects that monetary policy itself has on commodity and food price movements**
 - What is the effect of “global liquidity” – the liquidity created by the world’s major central banks – on food and commodity prices?
 - Does monetary easing fuel food and commodity price inflation?

Expansion of global liquidity (in bn US\$)



Note: GDP-weighted M2 aggregates for the Euro Area, Japan, the UK and the US; quarterly data
Source: Compiled with data from Thomson Reuters Datastream and IMF IFS.

Development of commodity and food prices & global liquidity



Source: Compiled with data from CRB, Thomson Reuters Datastream and IMF IFS.

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Monetary policy, asset prices: general nexus

- **Fisher (1932), Kindleberger (1978), Borio and Lowe (2002), Congdon (2006), Gerdesmeier et al. (2009): boom and bust cycles in asset markets closely associated with large movements in money and credit aggregates**
- **IMF's Global Financial Stability Report from April 2010 investigates effects of global liquidity expansion**
 - Finds strong links between global liquidity expansion and asset prices, such as equity returns, in “liquidity-receiving” economies, as well as official reserve accumulation and portfolio inflows
- **Frankel (1986), Angell (1992), IMF (2010): role of commodity prices in setting monetary policy**
- **Marquis and Cunningham (1990), Cody and Mills (1991): doubt that commodity prices can be used effectively in formulating monetary policy**
- **Bessler (1984), Pindyck and Rotemberg (1990), Hua (1998): causality should run from monetary variables to commodity prices**

Taking a global perspective

- **Baks and Kramer (1999): evidence of important common components in G7 money growth**
- **Rüffer and Stracca (2006): for the G7 countries around 50% of the variance of a narrow monetary aggregate can be traced back to one common global factor**
- **Sousa and Zaghini (2006), Giese and Tuxen (2007), Ciccarelli and Mojon (2005), Borio and Filardo (2007): global aggregates are likely to internalise cross-country movements in monetary aggregates**
 - Simultaneous shifts in major economies may have significant effects on worldwide goods price inflation
 - Inflation is to a large degree a global phenomenon

1. Introduction

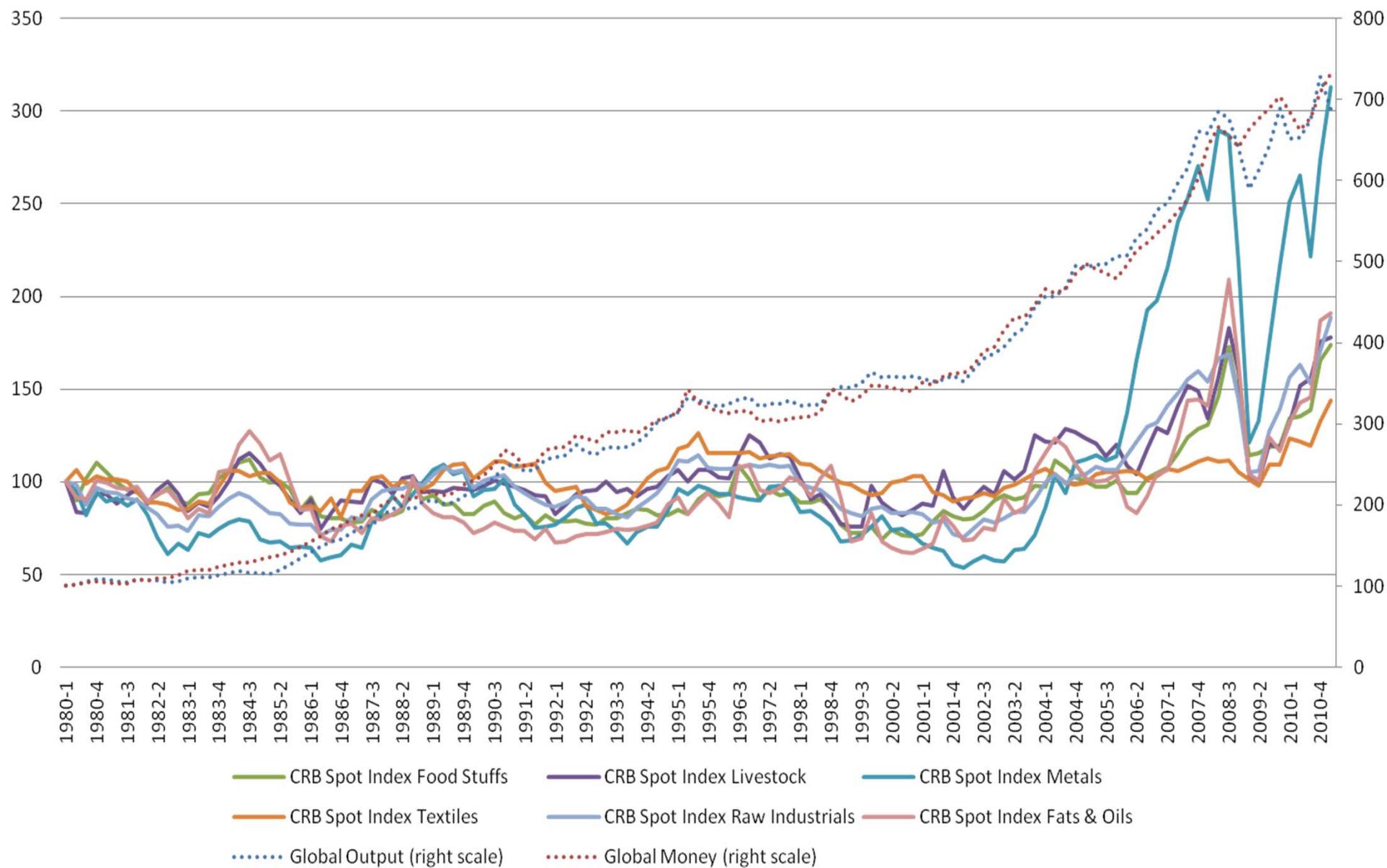
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- **We investigate the interactions between global liquidity and commodity and food prices on a global level**

- We use different measures of global liquidity and various indices of commodity and food prices
- Quarterly data, 1980Q1-2011Q1
- Data Sources: IMF (IFS), EABCN database, Thomson Financial



- **Global liquidity (M_G)**
 - For baseline analysis: ratio of global nominal money to nominal world GDP (Rüffer and Stracca 2006)
 - Measure includes monetary aggregates (M2/M3/M4) and GDP of the world's major economies (OECD and non-OECD), representing approx. 80% of world GDP in 2011
 - Two alternative measures for global liquidity: US M0 plus total foreign exchange reserves excluding gold (Chinn 2011; Matsumoto 2011); and total foreign exchange reserves excluding gold

- **Commodity and food price indices (CP_FOOD, CP_RI [raw ind.]**
 - Thomson Reuters/Jefferies CRB Index
 - Estimations with other indices confirm results

- **Other variables**
 - Global Output (Y_G), weighted by market rates
 - Consumer price index CPI (CPI_G) on a global level
 - Nominal effective exchange rate of the USD (USD_EER) to account for dollar valuation effects
 - Export data of emerging and developing economies to ROW (EC_EX) as proxies for demand driven impulses

- **For our analysis we use a global cointegrated vector-autoregressive (CVAR) model**
 - Seek stationary linear combinations of non-stationary data
 - Can model endogeneity between variables
 - Can test (weak) exogeneity of variables

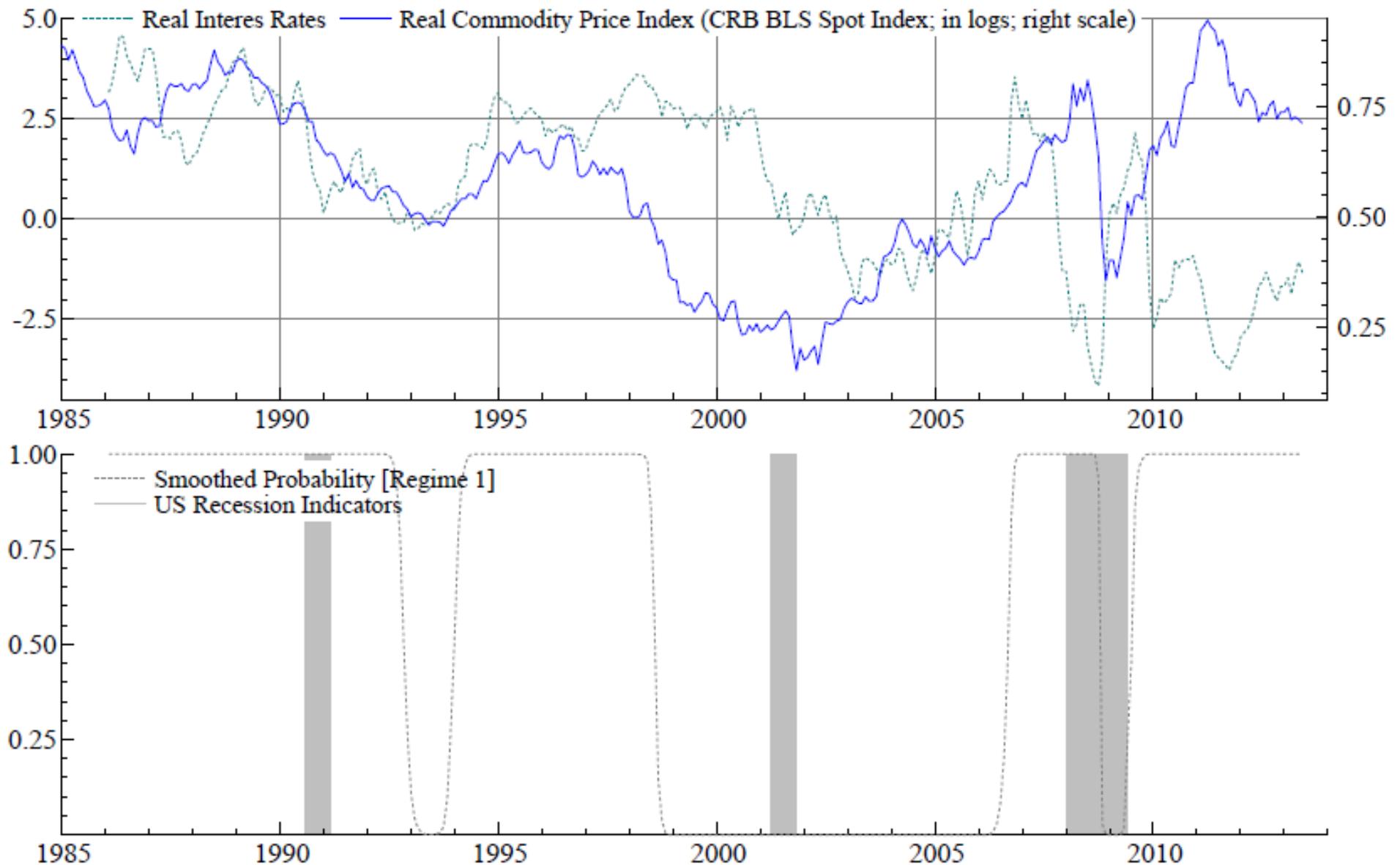
- **Model specification**
 - Two systems, one for food (X'_{t_1}) and one for commodity prices (X'_{t_2})

$$x'_{t_1} = [M_G, CPI_G, CP_FOOD, Y_G, USD_EER]_t$$

$$x'_{t_2} = [M_G, CPI_G, CP_RI, Y_G, USD_EER, EX_EC]_t$$
 - Cointegration rank of 2 and lag length of 2
 - No autocorrelation, no ARCH effects
 - Dummy variables to account for unconventional large scale expansionary monetary policy implemented during the peak of the financial crisis in 2008

- **Results underscore long-run relation between global money aggregate and development of food and commodity prices**
 - Food and commodity prices adjust significantly to cointegrating relation
 - Global liquidity does not adjust, it drives the relationship
- **Effective US\$ exchange rate has significant impact on food prices**
- **Exports of emerging and developing economies have significant impact on the long-run path of commodity price dynamics**
 - “Real” demand does matter, too

Real interest rates and real commodity price index / Graphical analysis of Markov-switching model



Data sources: Federal Reserve Bank of St. Louis, FRED economic database; Thomson Reuters Datastream; NBER Business Cycle Dating.

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- **Our results support the hypothesis that there is a positive long-run relation between global liquidity and the development of food and commodity prices**
 - Results can be seen as supporting the view of a “financialisation of commodities”, where food and commodity prices are driven to a large extent by flows of portfolio investment seeking return in commodity markets and not merely by demand from the real economy
- **Findings highlight the dilemma that arises when the central banks of virtually all major economies engage in expansionary monetary policies at the same time in order to stabilise their domestic economies and financial sectors**
 - Policymakers should take into account the negative side-effects of loose monetary policy and consider stricter regulation of food and commodity markets to prevent a further flow of liquidity into these markets

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