

GLOBAL FINANCIAL CRISES

LIQUIDITY MISCHIEF

Guillermo Calvo

Columbia University

www.columbia.edu/~gc2286

FINANCIAL MARKET CRISES

ROAD MAP

- **Financial Market Crises:**
 - Emerging Market Crises
 - The Great Recession
- **Liquidity: Not a fundamental**
- **Chronic Deflation: Supply-Side Liquidity Trap**
 - Static Model

Financial Crises Since 1995

- Have a large surprise component, centered on the financial channel.
- Are typically accompanied by a Sudden Stop of Flow of Funds toward an economy or significantly large subsector.
- Salient episodes:
 - Tequila 1994/5
 - South East Asia 1996/7
 - Russia 1998
 - Great Recession 2008/now.

EMERGING MARKET CRISES

- **Tequila**. Started in Mexico, Dec 1994, as the **Fed increased interest rates**.
- Sent shock waves around the world, but Argentina was the main casualty (outside Mexico).
- Crisis happened even though:
 - Mexico was the poster boy of the IMF,
 - had just joined NAFTA
 - had recently become a permanent member of the OECD
- **Reaction**. Attributed to large fiscal and CA deficits in AR and MX, and not considered a *systemic* phenomenon.

- **Asian crisis**. Hit the Asian Tigers and economies like Thailand and Indonesia that did not exhibit large deficits, and displayed high growth rates.
 - Korea's output fell by about 10%!
- **Reaction**. Tequila reasons were far from convincing in this case. Since these episodes involved large devaluations, it was quickly concluded that a key factor was ***exchange rate pegging***.
 - Although pegging was indeed a problem, *this does not prove that pegging was the **cause**!*
 - However, this half-truth still holds sway today in the IFIs, which mechanically continue advising *Flexible Exchange Rates* (despite Calvo-Reinhart *Fear of Floating* finding).

- **Russian crisis**. This is the first really strikingly **different** crisis.
- It was associated with default on *Russia* *domestic* debt.
- Russia represented less than 1% of World GDP.
- Was not a financial center.
- **However, the Russian crisis hit virtually all Emerging Markets!!**
- This strongly suggested that the problem may lie *outside EMs*, e.g., malfunctioning of the world capital market, and involve **contagion**.

Russian Crisis: Contagion Mechanics

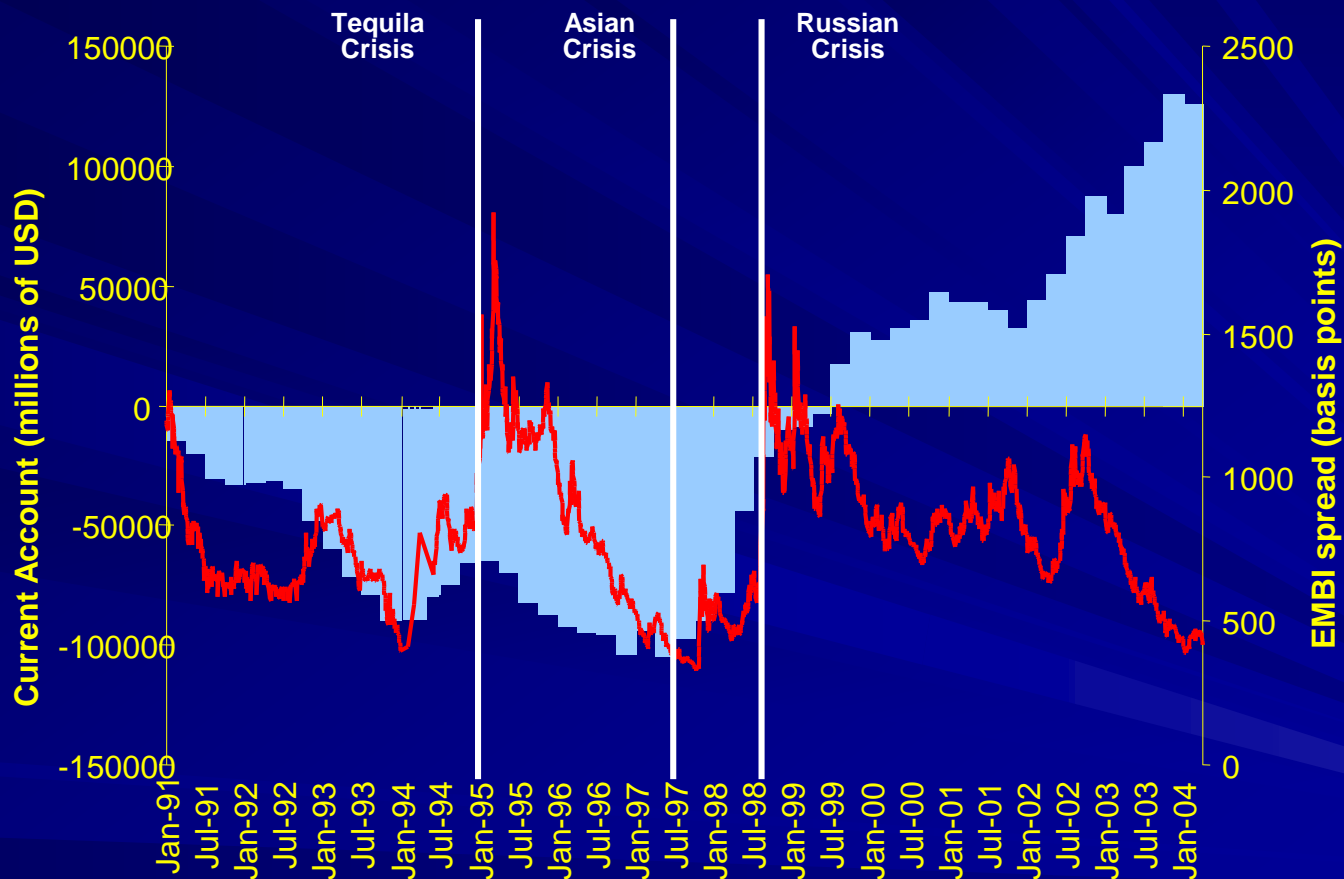
- Market expected that Russia would be bailed out by the IMF. This did not happen, wreaking chaos in 'Wall Street'.
- Experts were hit by margin calls and had to dump part of their financial assets, or stop buying EM paper.
- Non-experts may have taken that as a signal that 'something was rotten in EMs', and exacerbated the run!!
- There was no Lender of Last Resort to soften the blow.

Russia vs. Previous Episodes

- EMBI rose sharply in all episodes
- But it took around 4 years to go back to normal in the case of Russia.
- This suggests that when the fault is located in the financial sector, recovery may take long, especially if there is no Lender of Last Resort.

External Financial Conditions for EMs

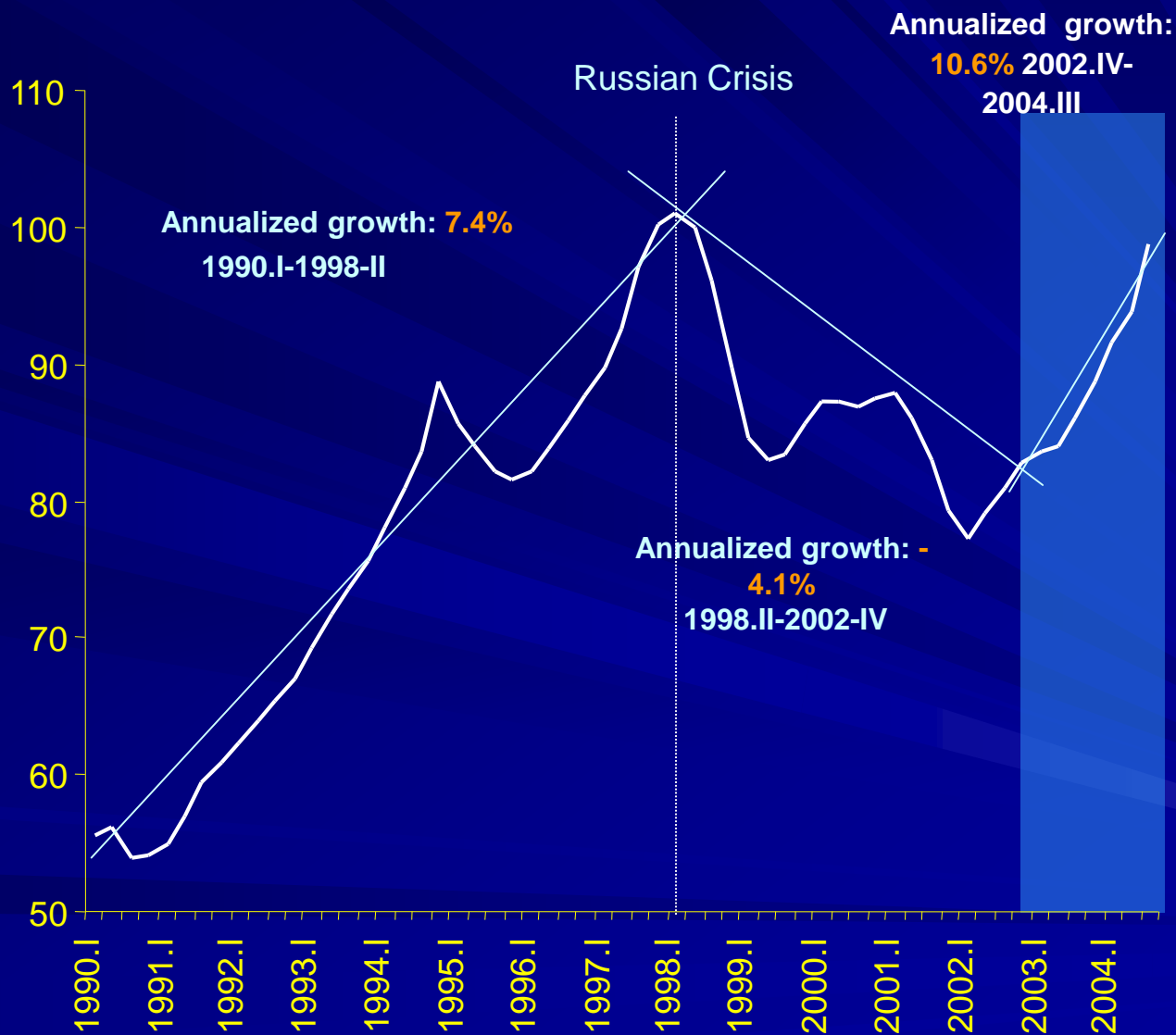
(EMBI sovereign spread & Current Account Balance in EMs, millions of USD, last four quarters)



Note: Includes Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Slovak Republic, South Africa, Thailand, Turkey and Venezuela.

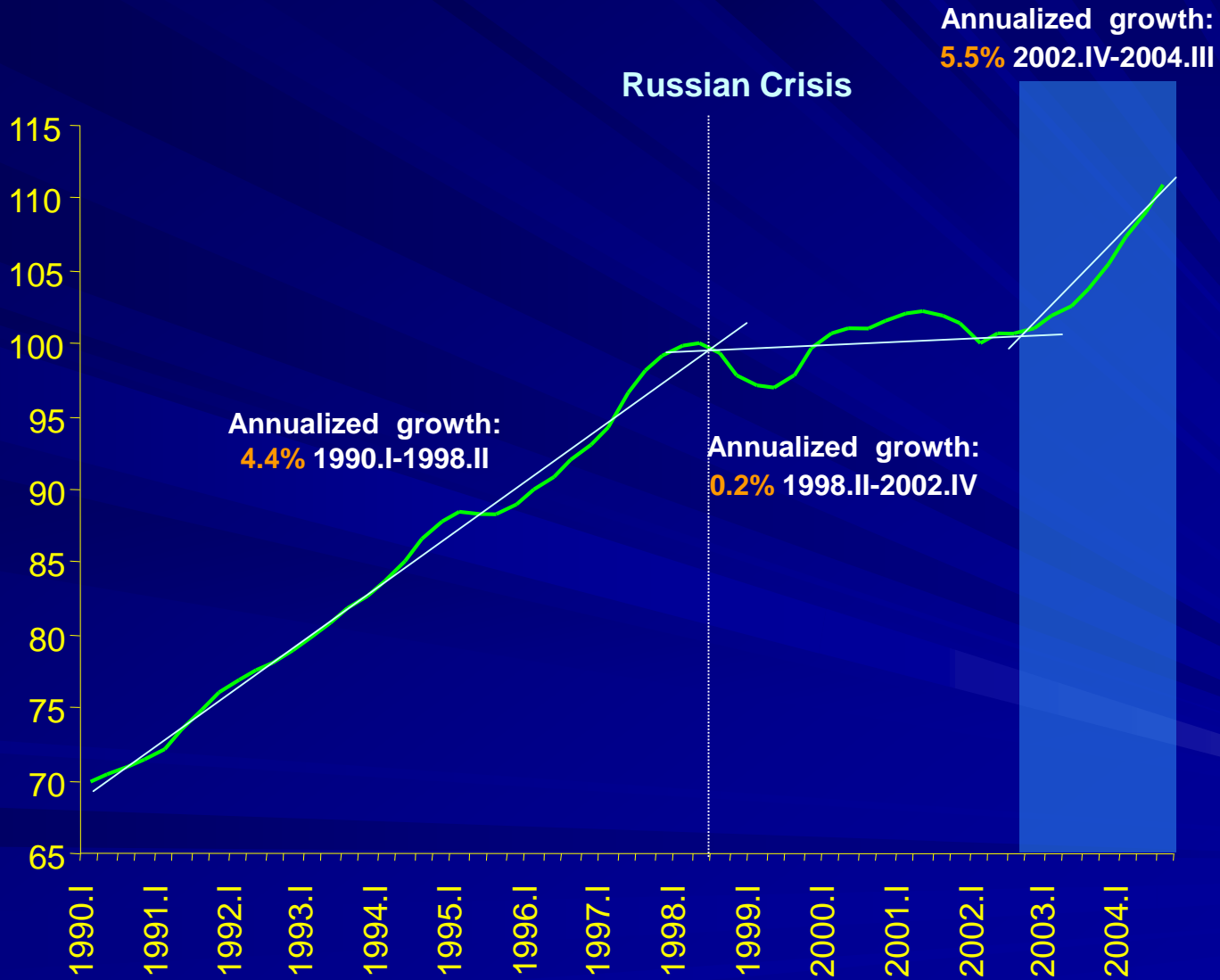
LAC 7: INVESTMENT

(LAC-7, s.a. Investment, 1998.II=100)



LAC 7: GROWTH

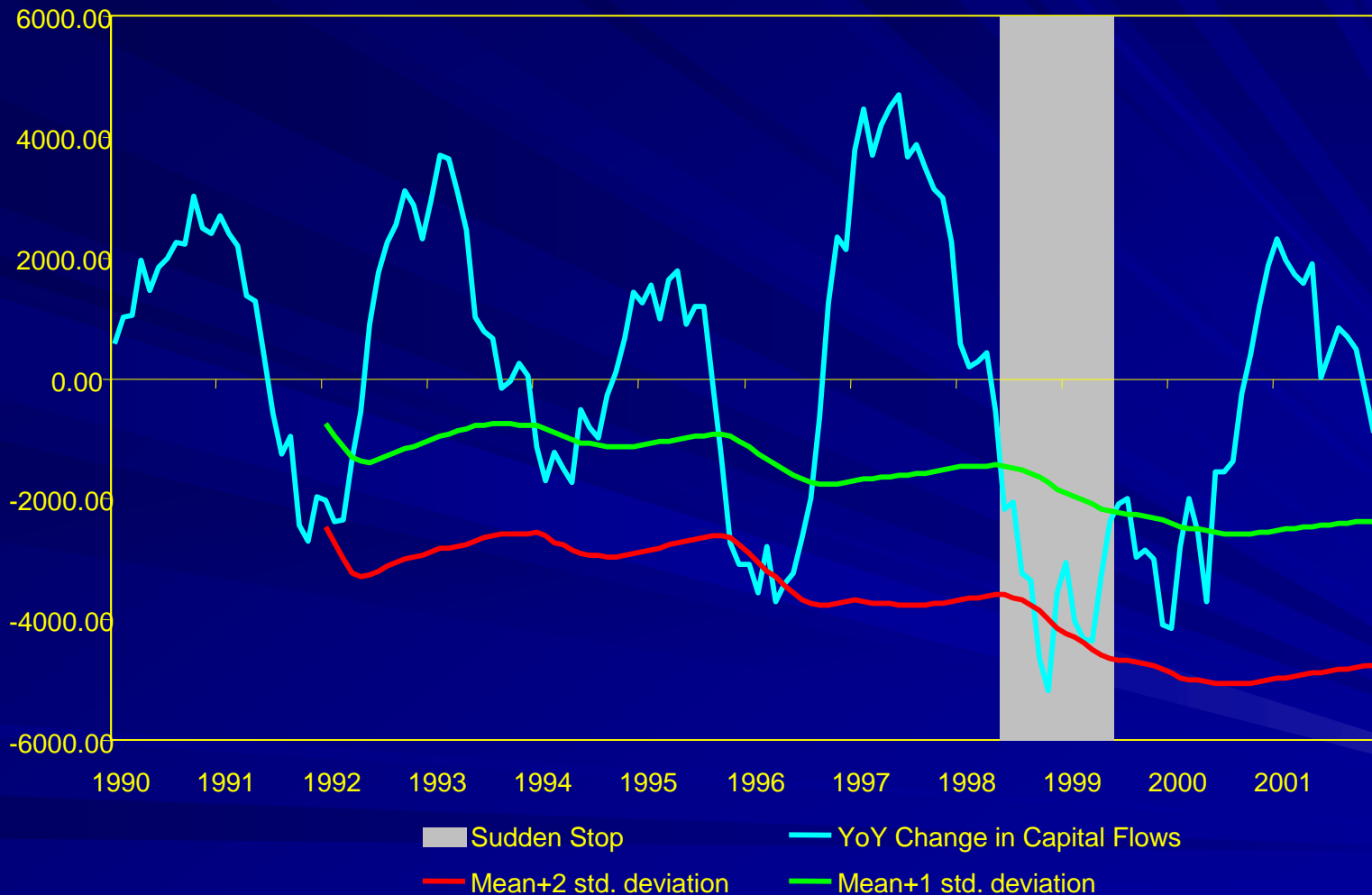
(LAC-7, s.a. GDP, 1998.II=100)



SUDDEN STOPS

- Research centered on Sudden Stops.
- SS are large and largely unanticipated cuts in capital inflows.
 - Main focus was on **Incomplete Markets**
- SS are defined as falls in capital inflows that exceed more than 2 standard deviations, and coincided with an equally large spike in the EMBI.

Sudden Stop: An Example



SS in EM conditional on Spike in EMBI: Findings

Probability of conditional SS increases with

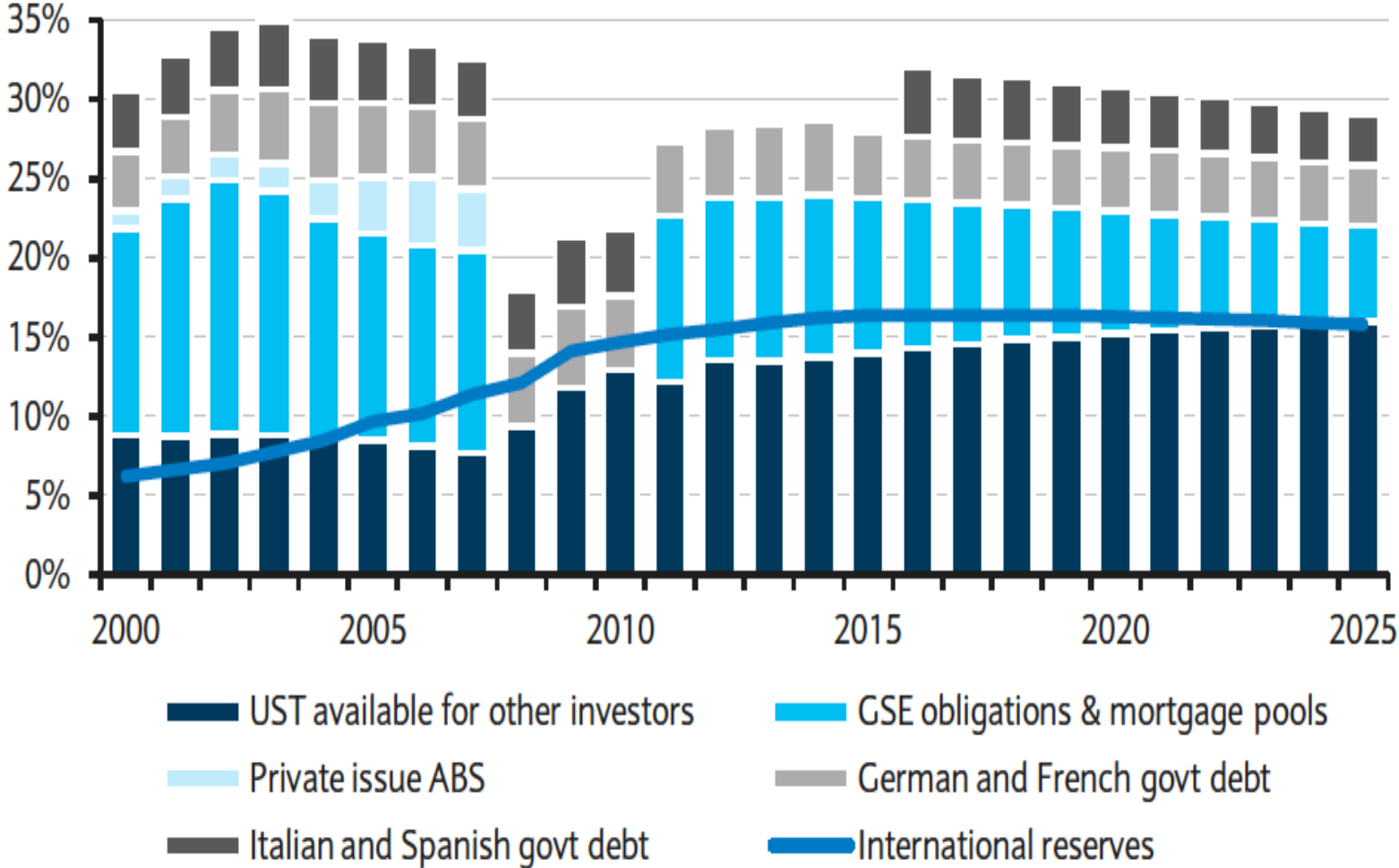
- Current Account Deficit/**Saving Rate (new result)**.
- Balance-Sheet denomination mismatch, e.g., Domestic Liability Dollarization.
- Typically, for EMs, integration to international capital market.
- Low international reserves

2008 Great Recession

- The Great Recession brought about a massive **Global Liquidity Crunch** and
- threatened to become another 1930s Great Depression hitting the whole world.
- The timely reaction of the Fed, the Bank of England, the European Central Bank, etc., succeeded in preventing major collapse.
- **However, there was a major worldwide contraction, and recovery in Advanced economies was exceedingly slow!**
 - **but not so in EMs!**

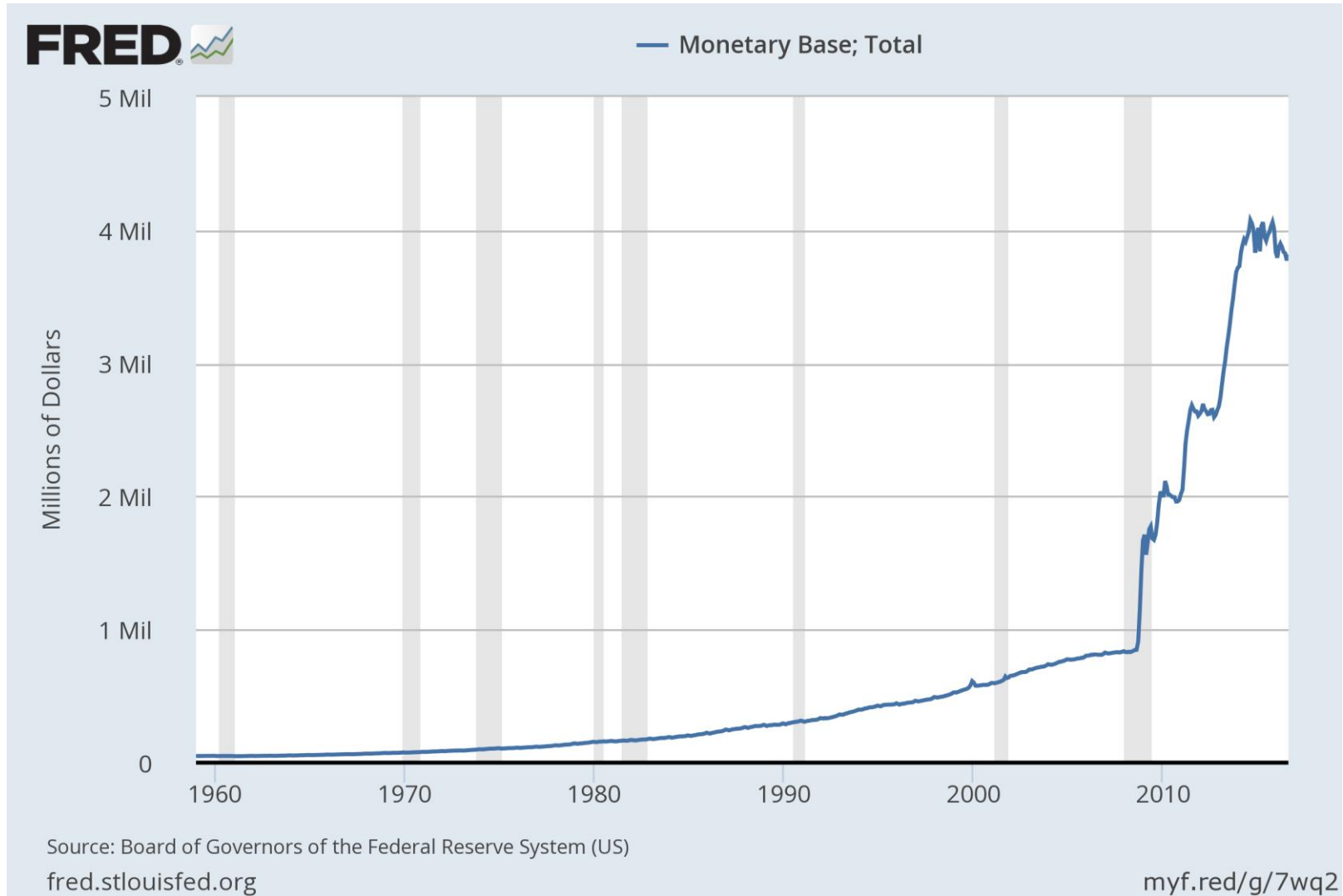
FIGURE 10

The 'safe asset shortage' is not as acute as in 2008-2010, but is set to intensify over time

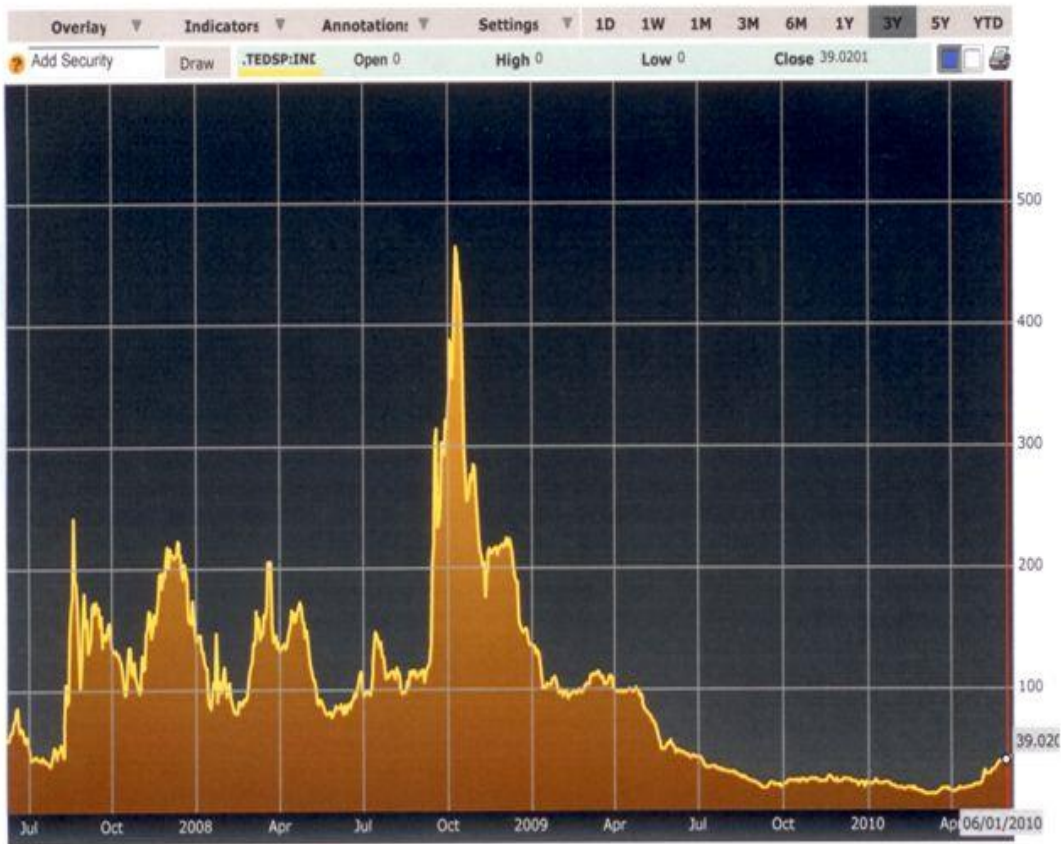


Note: All variables are measured as a percent of world GDP. 2015-2025 are projections. Source: Barclays Research

USA: Monetary Base

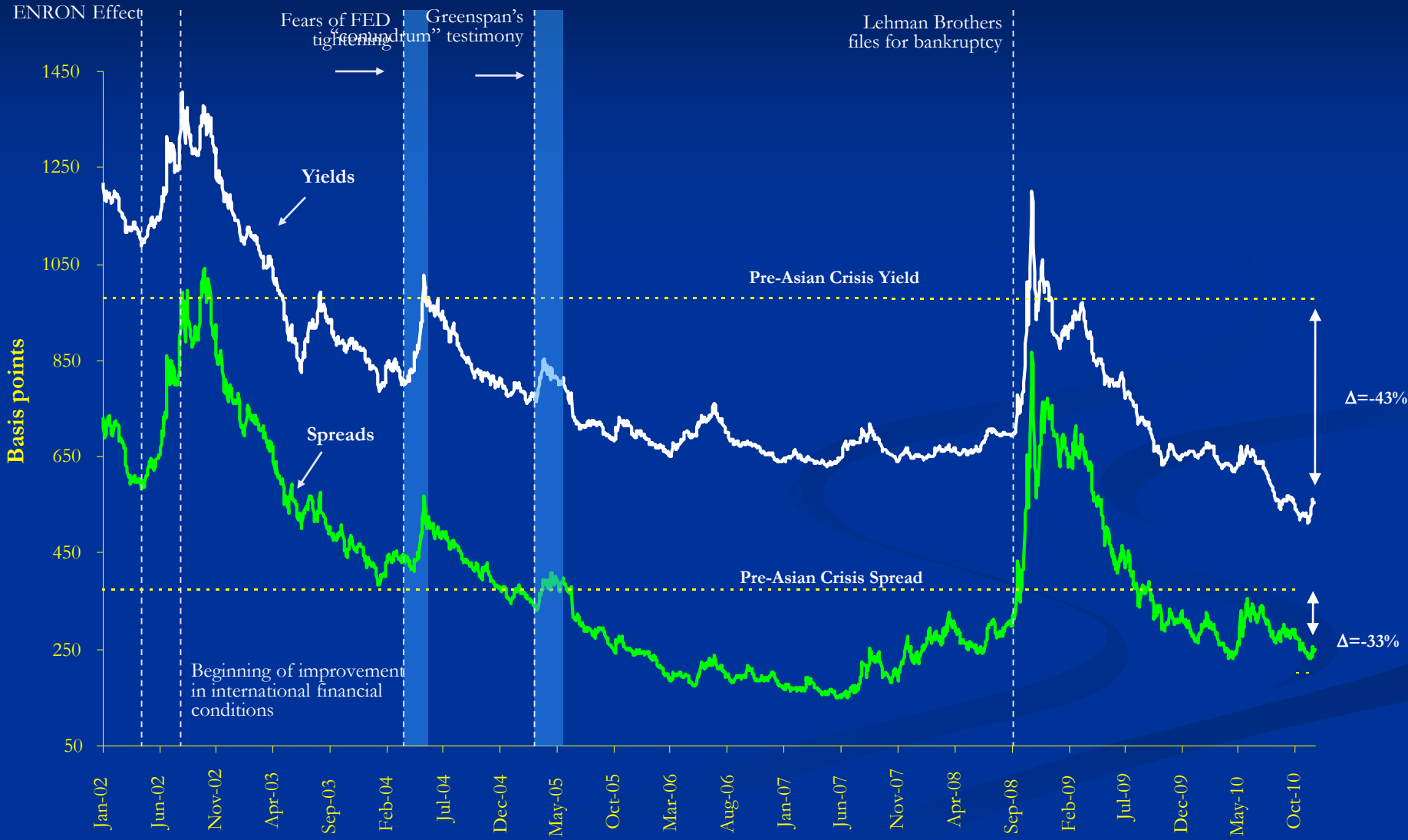


TED Spread



SURPRISE: EMs Fared Quite Well!!

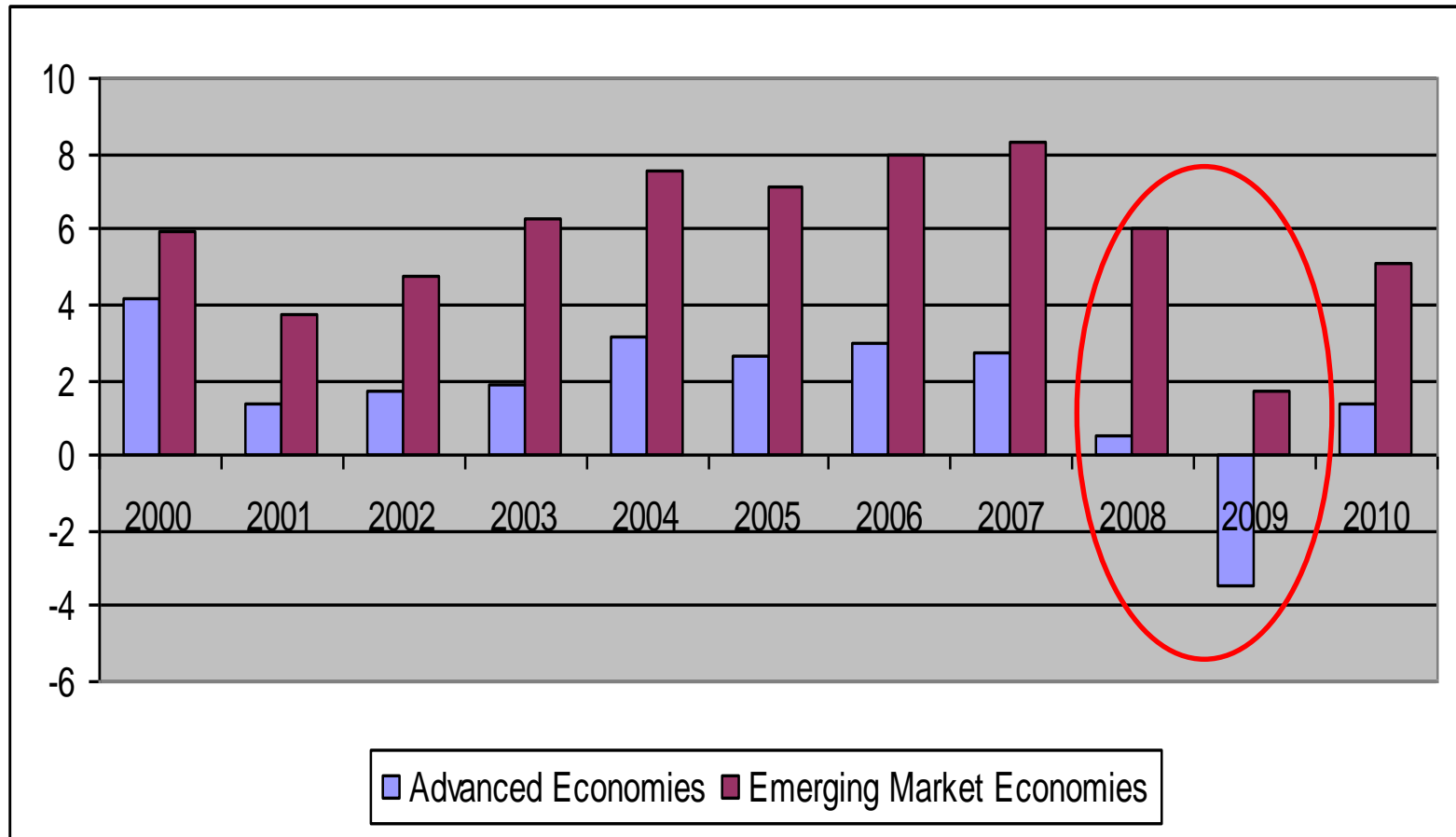
(daily data, EMBI+, bps, last value 22-Nov-10)



Source: Datastream.

But Large QE Did Not Prevent Recession

GDP Growth (%)



LIQUIDITY

Not a Fundamental

The Ultimate Liquid Asset



However...

Hahn's Problem

- Frank Hahn (1965) showed that in a general equilibrium model with fiat money bearing zero *intrinsic* value, barter equilibria cannot be ruled out.
- The idea is simple: if the price of money in terms of output is nil, the demand for money is *undetermined*. Hence, there exists an equilibrium in which money demand and supply are equated at the zero price.
- **In contrast, for regular goods, zero price → excess demand !!**

Price Theory of Money (PTM)

"[...] the fact that contracts are fixed, and wages are usually somewhat stable in terms of money,

UNQUESTIONABLY

plays a large part in attracting to money so high a liquidity-premium"

Keynes (*General Theory*, Chapter 17, p. 236, emphases are mine)



AND STICKY PRICES

PTM Conjectures

- The degree of money's resilience is likely to be a function of the area where the currency is employed as a unit of account (UA).
- The US dollar's advantage as Unit of Account may be its global coverage, including commodity prices, and financial transactions.
 - Notice that **there exists a Eurodollar market, but NOT a US-pound or US-euro market that compares with the former.**

More Conjectures

- The dollar will continue being a dominant reserve currency if key commodities and financial contracts are denominated in dollars.
- Gold or bitcoins will not become a serious threat to reserve currencies if prices are not denominated in gold or bitcoins.
- **Floating exchange rates may undermine a currency's credibility.**
 - This may help to rationalize Fear of Floating, Calvo-Reinhart (2002).

LIQUID ASSETS \neq UNIT OF ACCT.

- E.g., Asset Backed Securities, **ABS**, **Emerging Market Monies**.
- If above assets' **market value > collateral**, **there exists a liquidity component that is subject to runs like fiat money** (with PTM protection).
- This helps to explain why **the Dollar appreciates and EM Monies depreciate during a liquidity crisis**.

LIQUIDITY CRISES

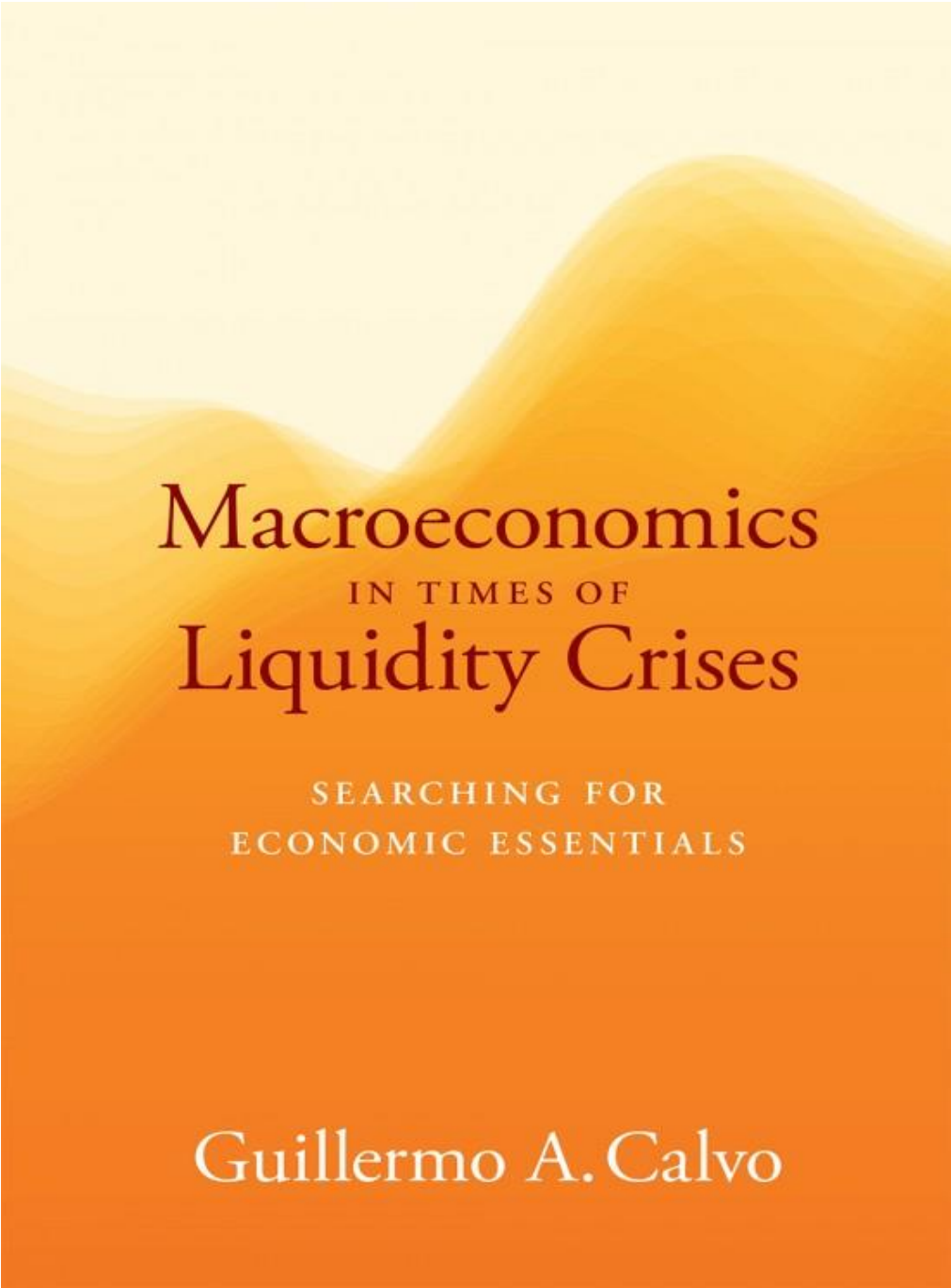
- Crunch of ABS liquidity is likely to depress relative price of underlying assets, e.g., real estate, → **financial stress**.
- Increasing money supply equivalent to the loss of ABS market value does not necessarily restores the relative price of underlying assets.
- This helps to explain why Friedman-Schwartz type of recommendation may not be sufficient to restore equilibrium.

The main point that is worth stressing is that by definition

LIQUIDITY CRISES ARE SYSTEMIC

and, therefore,

**CALL FOR SYSTEMIC POLICY
TO FIX SYSTEMIC FAILURE**



Macroeconomics
IN TIMES OF
Liquidity Crises

SEARCHING FOR
ECONOMIC ESSENTIALS

Guillermo A. Calvo

MIT PRESS 2016

CHRONIC DEFLATION: Supply Side Liquidity Trap

Preliminaries

- Let m denote real monetary balances.
- If the liquidity services of m depend on, e.g., its collateral (e.g., PTM), then money's liquidity may not be proportional to m .
- This is ignored in standard models where liquidity is measured by $M/P = m$.
 - e.g., the standard LM curve assumes $m = L(i, y)$.

LIQUIDITY DEFLATION

- Liquidity Deflation postulates that, within a certain range, **money's liquidity increases less than in proportion to m .**
- The reason is that in evaluating the liquidity services of m individuals take into account money held by the *rest of individuals*, m^e . **The larger is m^e , the smaller are the services provided by m** (e.g., congestion, limited collateral).
- Therefore, m^e is equivalent to an externality.

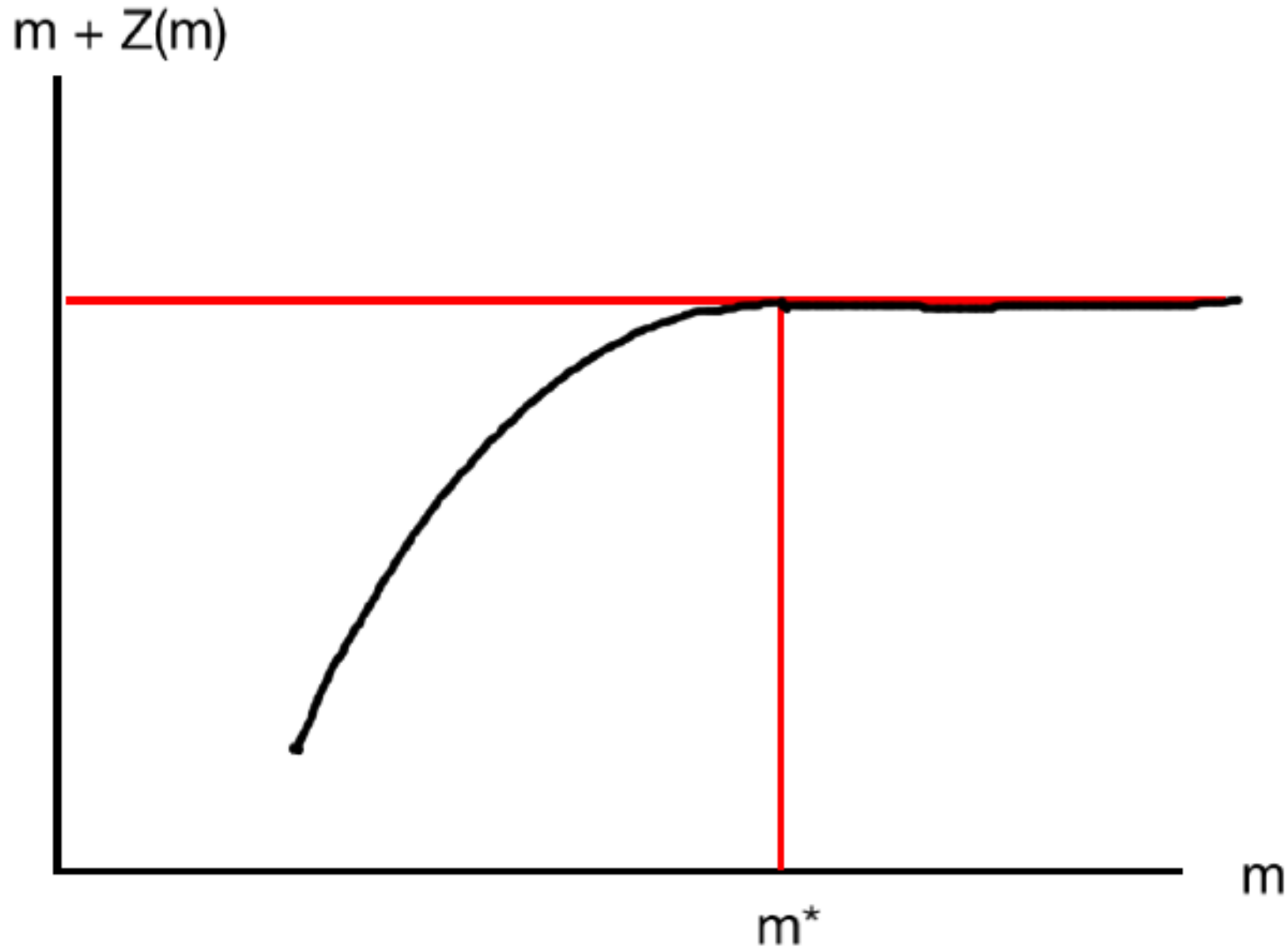
Links with Safe Assets Literature

- Main focus: Shortage of transactions services (e.g., means of exchange, collateral assets) that interfere with full employment and capacity utilization, e.g., Caballero et al, AER 2016, Barro et al NBER 20652, Gary Gorton, several papers.
- Present approach inspired by Price Theory of Money; the ultimate anchors are reserve currencies; and it is much simpler and can be articulated in terms of IS/LM model.

STATIC MODEL

- Assume money's liquidity services = $m + Z(m^e)$, but at equilibrium $m^e = m$.
- Moreover, assume that $m + Z(m)$ is monotonically increasing and achieves a maximum at $m = m^*$

m and Real Liquidity = $m + Z(m)$



Money Market (Dis-)Equilibrium

- At equilibrium $m + Z(m) = L(i, y)$, $i = \rho + \pi$
 - where ρ = natural interest rate, π = inflation.
- As shown in the next slides, there exists a critical rate of nominal interest, i^* , below which there is no full-employment equilibrium.

Figure B1. Graphical Derivation of Figure 2

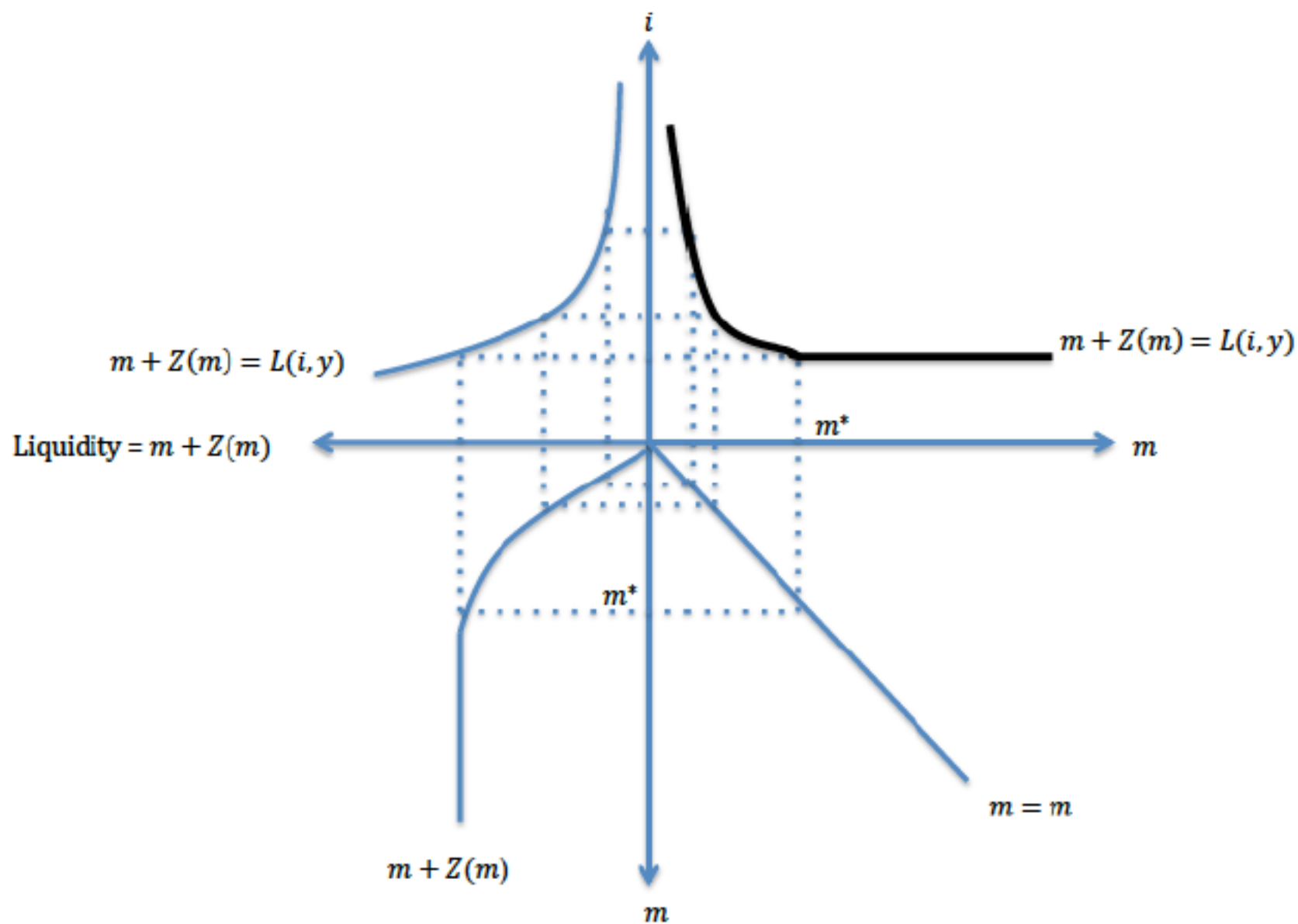
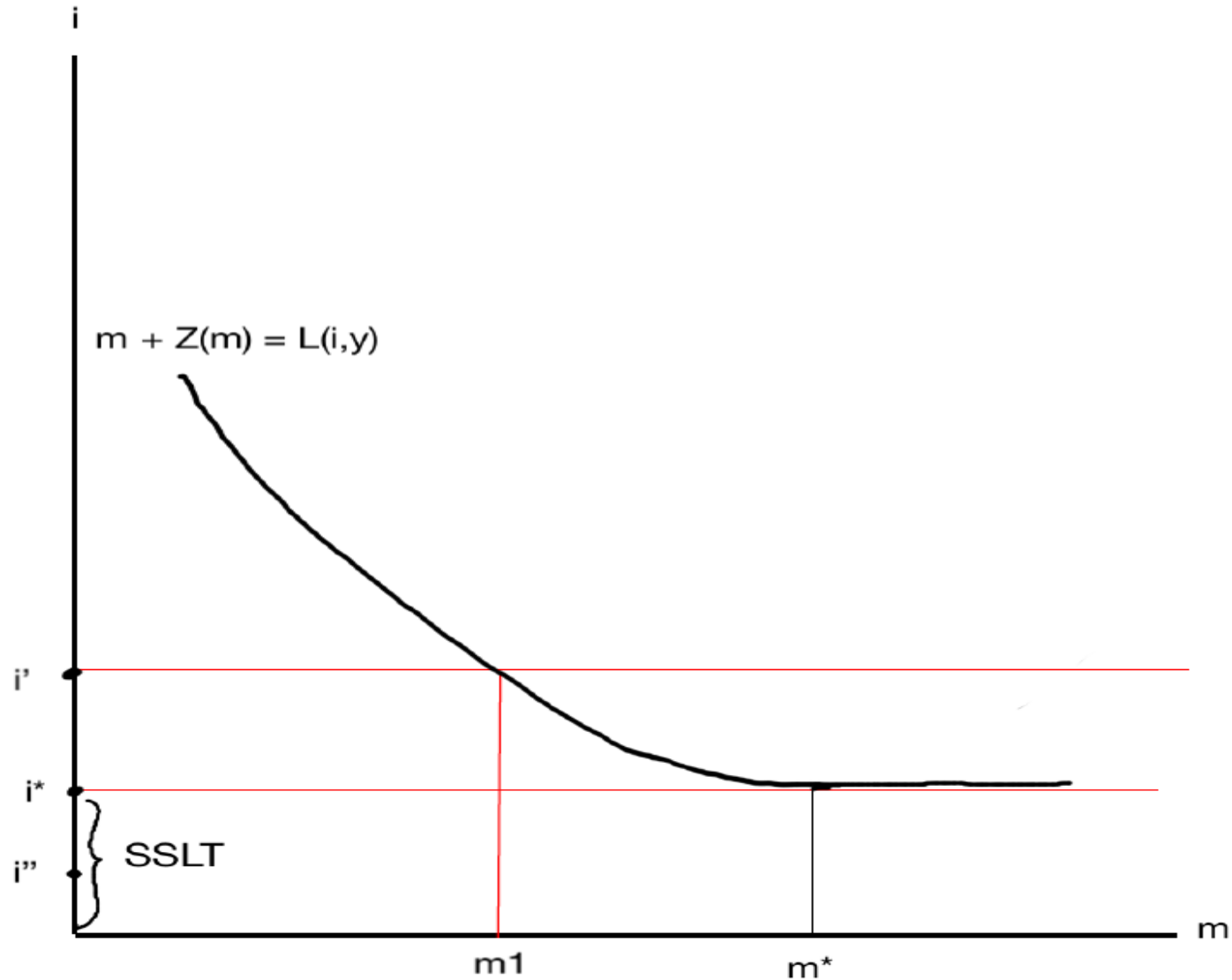


Fig 2. Money Market (Dis-)Equilibrium



Involuntary Excess Capacity/Unemployment

- If $i < i^*$, output $< y$, possibly generating deflation,
- further lowering i , and excess capacity and/or unemployment.
- **The central bank may try to prevent this by increasing m , but this will not work unless it results in increasing the rate of inflation.**
- **If expected inflation does not budge, m will keep growing but will be swallowed by Liquidity Deflation! A Supply-Side Liquidity Trap, SSLT.**

Liquidity Traps: DS vs. SS

- Keynes (1936) assumed infinite elasticity of the demand for money with respect to the nominal interest rate.
- This is a strong assumption because it implies that aggregate demand will not be stimulated enough even though m exceeds all other forms of wealth! Pigou effect.
- **SSLT is free from this criticism. It focuses on liquidity creation, and assumes that liquidity services cannot be expanded without bound.**

SSLT may be specially relevant when the economy is hit by a major Liquidity Crunch.

SSLT may subside with the passage of time but, as the Great Recession suggests, recovery may take a long time.

GLOBAL FINANCIAL CRISES

LIQUIDITY MISCHIEF

Guillermo Calvo

Columbia University

www.columbia.edu/~gc2286