...monetarism reigned supreme, and it was usual to hear that

• Inflation could be stopped if only the central bank slowed down the printing press, and

• Deflation could be prevented by sending Santa Claus in a helicopter full of cash.
Outline of Presentation

• Chronic Inflation:
  – Expectations and Credibility

• Liquidity Puzzles:
  – Fragility and Resilience

• Chronic Deflation:
  – Helicopter out of Gas?
CHRONIC INFLATION
Expectations and Credibility
Rational Expectations

• It was the magic wand that helped to analyze issues involving confidence and credibility.

• Before the RE revolution, macro was stuck in Adaptive Expectation and, worse, the belief that monetary economies were incompatible with RE!
Central Insights from Theory

• **Credibility** is a major stumbling block:
  – **Time inconsistency** (Kydland-Prescott (1977), Calvo (1978)).
  – **Lack of confidence** on the part of the public, which increases the cost of stopping inflation. (Incredible Reforms, Temporariness). Calvo (1986).

• **Vicious high-inflation cycles** (Calvo (1988)):
  – High inflation expectations $\rightarrow$ high interest rates $\rightarrow$ high real rates if inflation is low $\rightarrow$ high debt service $\rightarrow$ high fiscal deficit $\rightarrow$ inevitably high inflation. (Brazil)
  • Same model can be used to explain high risk premia, even though time inconsistency and lack of confidence are not major issues. (Draghi’s “whatever it takes”)
Case Study: Volcker’s StabProgram

• Despite Volcker’s imposing presence, the monetary aggregates failed to defeat inflation.
• Popular story: Proliferation of Liquid assets (quasi-monies), which implied $M$ losing its power over $P$.
• As a result, the Fed switched from $M$ to $i$, and it worked!
• Why did $i$ help to bypass the web of new liquid assets (the liquidity spell)?
Conjecture

• The Fed interest rate took an astronomical leap that helped to break the spell of quasi-monies

• and, together with credibility, had a direct impact on the relative price between today’s and tomorrow’s output.
New Keynesian Approach

• NK assumes that, given inflation expectations, \( i \) is akin to the real interest rate, highly independent of liquidity turmoil.

• Surprisingly, this assumption continued to prevail even when \( i \) hit ZLB.

  — Missing the gorilla in the room?
Bare-Bones New Keynesian Model

\[ r = i - \pi \]  
\[ i = \theta \pi + \gamma c, \theta > 1, \gamma > 0 \]  
\[ \frac{\dot{c}}{c} = r - \rho = (\theta - 1)\pi + \gamma c - \rho \]  
\[ \dot{\pi} = \bar{\pi} - c \]

Fisher equation
Taylor Rule
Euler equation
Calvo staggered prices

Dynamic System: \( c \) and \( \pi \) can jump at \( t = 0 \). All characteristic roots are positive. One can show that, if unstable paths are ruled out, equilibrium is unique.
Calvo & Végh Approach

• In contrast, Calvo and Végh (1985) assume that $i$ is equivalent to paying interest on money or, more generally, liquidity. This is relevant for:
  – Emerging Markets with shallow KMarkets
  – Developed Markets with Liquidity Trap.

• Calvo-Végh implies that the central bank also has to control liquid aggregates. Taylor-type rules play a less prominent role.

• This makes monetary policy more challenging to the Fed, because it has to keep track of all the quasi-US$ that circulate in the world!
LIQUIDITY PUZZLES
Fragility and Resilience
CENTRAL LIQUIDITY PUZZLE

• The Lehman crisis was associated with a phenomenal Liquidity Crunch

Source: G. Gorton and A. Metrick “Securitized Banking and the Run on Repo,” 2012

• However, Developed Market economies (DMs) exhibited Liquidity Trap
What’s So Special about Alex?

**Hint:** It ain't the musical!
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 !!
"[...] 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)
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).
CHRONIC DEFLATION
Helicopter out of Gas?
Euro Area Harmonized Inflation

HICP - Overall index
Percentage change

Latest: -0.2 (-0.5)
Change from Jan 1999 to Feb 2016: -1.0
Min.: -0.7 (Jul 2009)
Max.: 4.1 (Jul 2008)
Eurozone. Broad Money/GDP

Source: World Bank
research.stlouisfed.org
Pigou Effect: A Fallacy?

• Aggregate demand increases with real monetary balances = $M/P$.

• Thus, if $P$ is upward inflexible, the central bank can increase $M/P$ without limit and restore full employment.

• Moreover, Ignoring Fisher’s *Debt Deflation*, price deflation has the same stimulus effect.
Liquidity Deflation

• Suppose the liquidity of $M$ is proportional to $M$’s market value as *credit collateral*.

• The latter depends not only on $M/P$, but also on its real value if there is a run against $M$,
  – which would be bounded even if the Price Theory of Money applies.
• If individuals take into account the probability of a run, the liquidity value of $M/P$ could be represented by $M/P + Z((M/P)^e)$, where $Z' < 0$.

• Thus, an increase in $M/P$ may not increase liquidity after some critical point, due to **Liquidity Deflation** (the “e” component above).

• Pushing $M/P$ beyond that critical point may succeed in stimulating aggregate demand **in the short run** but, eventually, Liquidity Deflation will come back to haunt us!
Liquidity Deflation in Action: Helicopter running out of gas?

• An increase in the price of Treasury bonds (i.e., a fall in T-bond yield) or money supply may fail to increase global liquidity and stimulate growth.

• Moreover, even if such critical point has not been reached, helicopter money and similar devices may show decreasing marginal stimulus effects,

• and call for much larger dosages.
If no QE, Negative Interest Rates?

• They are equivalent to imposing an inflation tax.
• For effectiveness, Inverse-Volcker, e.g., $i = -20\%$, might be needed in order to break the spell of Liquidity Trap.
• Negative rates increase the cost of credit collateral, tending to offset lower loan rates.
• Moreover, negative rates may further shrink the supply international liquid assets.
FROM CHRONIC INFLATION TO CHRONIC DEFLATION

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