

# Macroeconomics I. – Supplementary Materials

**Monetary Policy and Related Concepts**

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# Basic Concepts

## Part I

# Monetary Policy – Overview

- **Over the past 30 years, in developed economies, it has undergone a convergence process -> international differences are rather insignificant**
  - The monetary policy principles are the same
- **The idea of a inflation control -> maintaining efficient and stable environment**
  - **Furthermore, efforts to smooth business cycles and fluctuations**
  - **Independency of the central bank is important** (absolute independency is not possible)
  - (Independency of the ECB is highly questionable)

# Monetary Policy – Overview

- **Today the Keynesian approach (short-term interest rate management) is used**
  - Indirect effects, various transmission mechanisms
  - Monetary aggregates management in the past (monetarist approach)
- **Regulation and supervision of banks (another pillar)**
  - It acts through the volume of money supply
  - Lower regulation -> higher credit expansion -> higher money supply -> boom -> possible increase in inflation, GDP and employment
- **The central bank is unable to control a large number of factors**
  - Typical problem of economic management and regulation

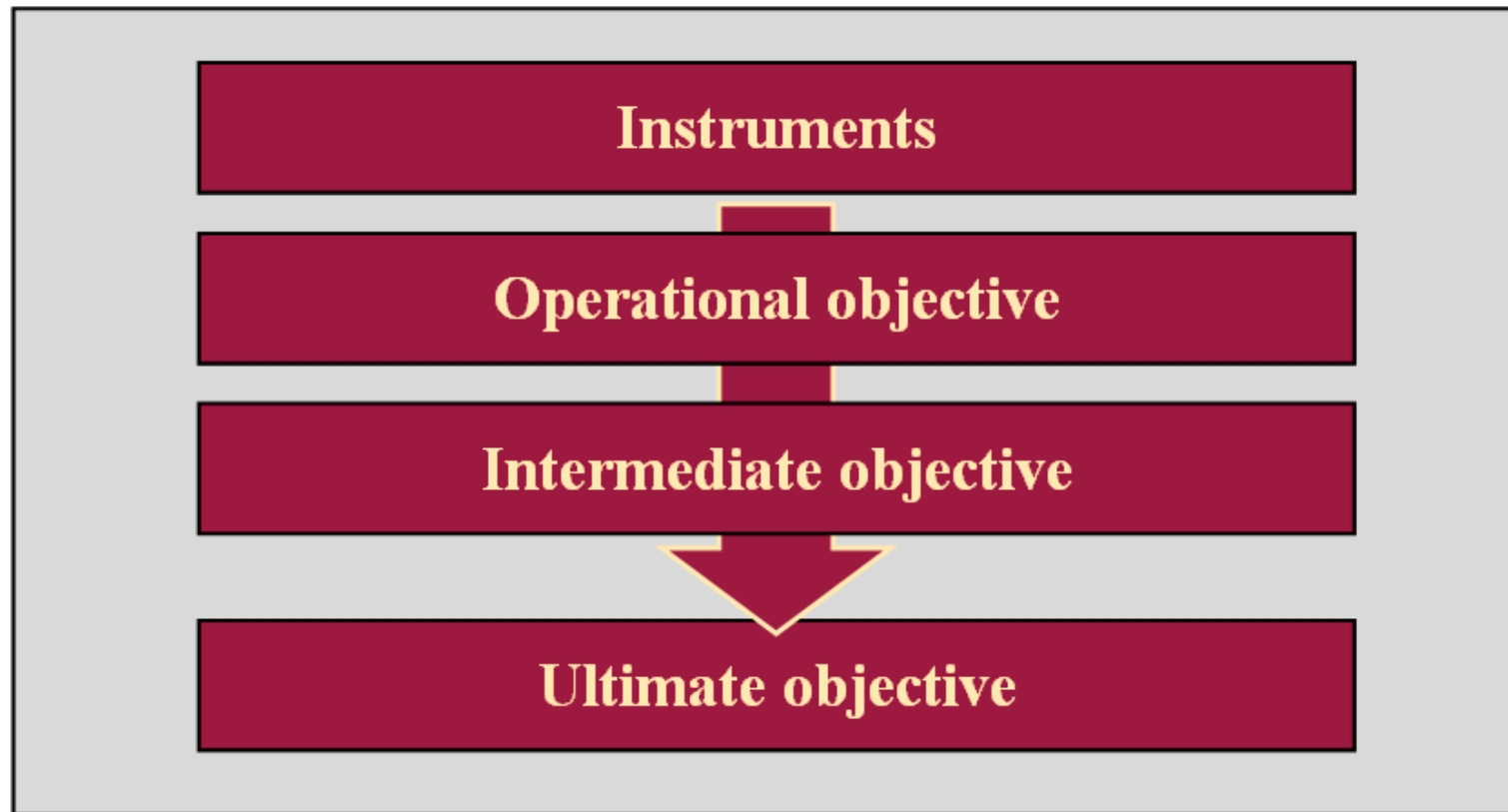
# Monetary Policy – Overview

- **Monetary policy involves the same risks as any other strong regulation of the economy - economic and social damage**
  - Virtually every regulation always harms a group of people
  - The policy is often abused for political purposes
- **Subject of disputes - supporters x opponents of strongly activist monetary policy**
  - Camp 1 - the urgent need for activist economic policy in today's world (Keynesian approach, mainstream)
  - Camp 2 - more emphasis on sound structural policies, efficiency and direct competitiveness, less regulation and less economic intervention

# Monetary Policy – Overview

- The monetary policy instruments are used to regulate the **operating target** in order to influence the other targets (**intermediate and ultimate targets**)
  - The operating target is referred to as **monetary policy tactics**
  - The intermediate and ultimate targets are referred to as a **monetary policy strategy**

# Monetary Policy – Targets



Source: NBRB (2020) – <https://www.nbrb.by/eng/mp/target/general-character>



# Monetary Policy – Overview

## – **Monetary policy objective:**

- **Price stability** (narrow definition) – primacy of this objective is a good practice (money neutrality)
- **Overall economic development** – including economic growth and unemployment, sometimes also exchange rate (broad definition)

## – **For the conduct of monetary policy, the central bank has several main instruments**

- Main interest rates, open market operations, reserve requirements, and direct foreign exchange interventions

# Monetary Policy – Overview

## – Instruments of monetary policy

- These represent a technique of stable adherence to the operating target
- **Indirect instruments** = mainly open market operations
- **Direct instruments** = regulations, limits, recommendations
  - Regulations and limits (on interest rates, loans, deposits) have been used in the past, especially in centrally planned economies
  - However, it was used even in developed countries, before the so-called deregulation of 1975-1985 (pro-market approaches)

# Monetary Policy – Overview

- In order to meet its main objective, the central bank must choose the way in which it will implement monetary policy
  - The whole history of monetary policy is a history of seeking possible ways of conducting monetary policy and of a transmission mechanism that would, by using the possible tools of the central bank, lead to its objectives
- The **transmission mechanism** is the way the operating target affects other targets (chain of indirect relationships)
  - This is the subject of the so-called **classical monetary policy**
- **Time lags:** data-information, cognitive-reaction, implementation, efficiency lag

# Monetary Policy – Overview

## – **Monetary policy horizon**

- The time horizon on which monetary policy focuses in its decision-making, taking into account delays in monetary policy transmission
- This time horizon is about 12 to 18 months in the future (interest rate effect)

# Monetary Policy Stance(s)

## 1. Neutral monetary policy

- Operating and intermediate variables should be at target levels consistent with equilibrium, output at its potential, inflation and inflation expectations being at the inflation objective
- In other words, neutral monetary policy does not constrain or stimulate aggregate demand and inflation
- Monetary policy can rarely be considered to be fully neutral
- Neutral monetary policy in today's situation does not necessarily mean doing nothing
  - Interest rates are set in some way, the environment is regulated
  - It is an attempt (case) not to influence monetary policy objectives in some consistent way

# Monetary Policy Stance(s)

## 2. Loose (expansionary/accommodative) monetary policy

- Conditions which stimulate demand and inflation
- Operating and intermediate variables are not aligned with neutral levels
  - For example, the policy interest rate may be below such a level, or money supply would grow faster than is consistent with the inflation objective
  - In turn, expansionary monetary conditions usually mean an undervalued or cheap domestic currency and also cheap credit.
    - When we say cheap, it is in comparison with some neutral level

**The mechanism:**

$M \uparrow \Rightarrow i \downarrow \Rightarrow I, C, NX \uparrow \Rightarrow AD \uparrow \Rightarrow \text{real GDP} \uparrow \Rightarrow P \uparrow$

# Monetary Policy Stance(s)

## 3. Tight (contractionary/restrictive) monetary policy

- Conditions which constrain demand and inflation
- The policy interest rate may exceed the neutral level, or money supply grows slower than is needed to achieve inflation objective
  - Overvalued domestic currency and loans that are expensive in comparison to some neutral level would contribute to contractionary monetary conditions

The mechanism:

$M \downarrow \Rightarrow i \uparrow \Rightarrow I, C, NX \downarrow \Rightarrow AD \downarrow \Rightarrow \text{real GDP} \downarrow \Rightarrow P = \text{or} \downarrow$

# Monetary Transmission Mechanism

## Part II



# Monetary Transmission Mechanism

- Understanding the MTM is essential for monetary policy design and calibration
- **To determine the nature of the transmission mechanism in a specific country requires:**
  - Monitoring the response of key variables / markets
  - Modeling the dynamics and identifying time lags
  - Gauging the projected quantitative response to Monetary Policy decisions
- **Main transmission channels:**
  - **Asset prices**
    - Wealth
    - Cost of equity

# Monetary Transmission Mechanism (MTM)

## — **Main transmission channels (continued):**

### — **Credit**

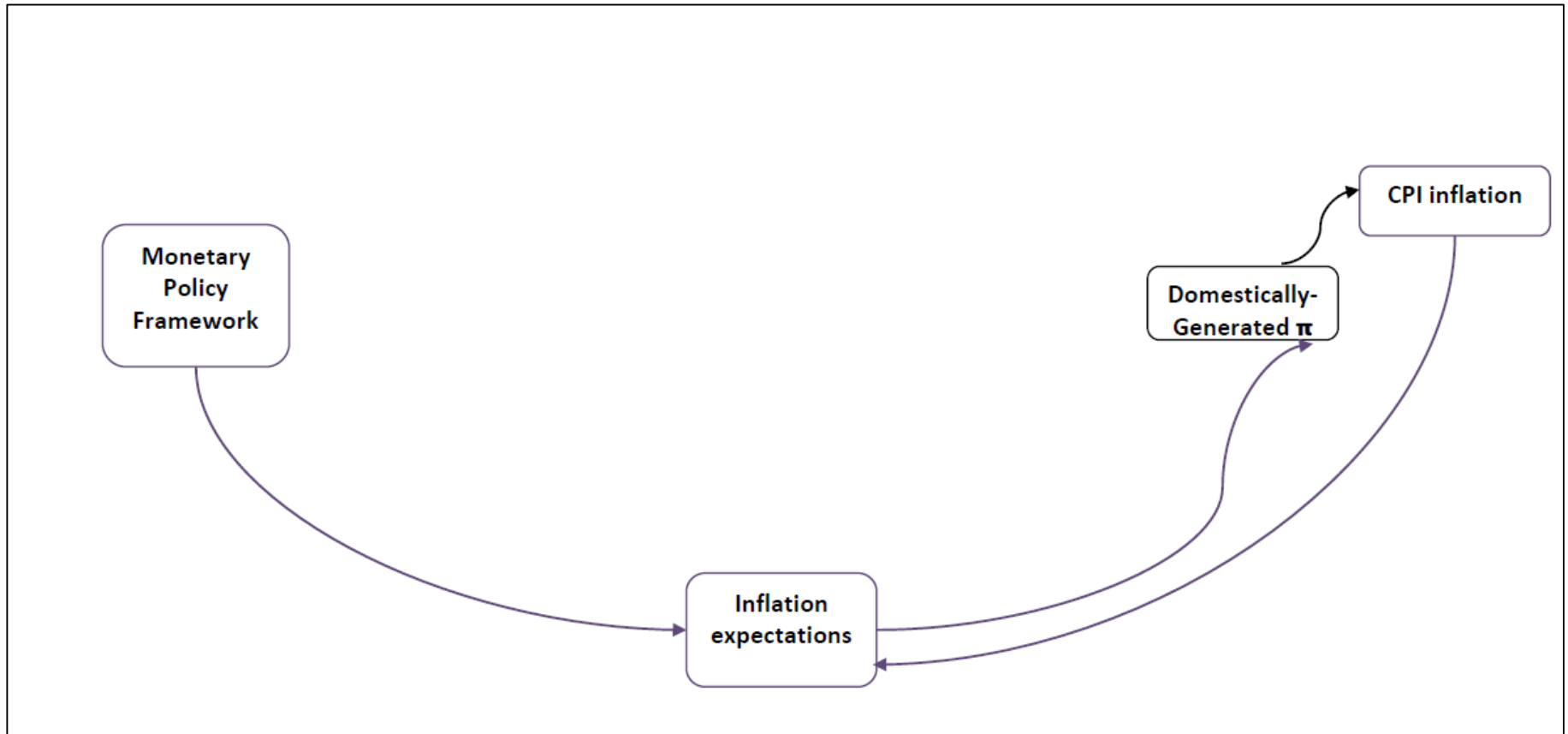
- Bank lending

- Balance sheet

### — **Interest rate**

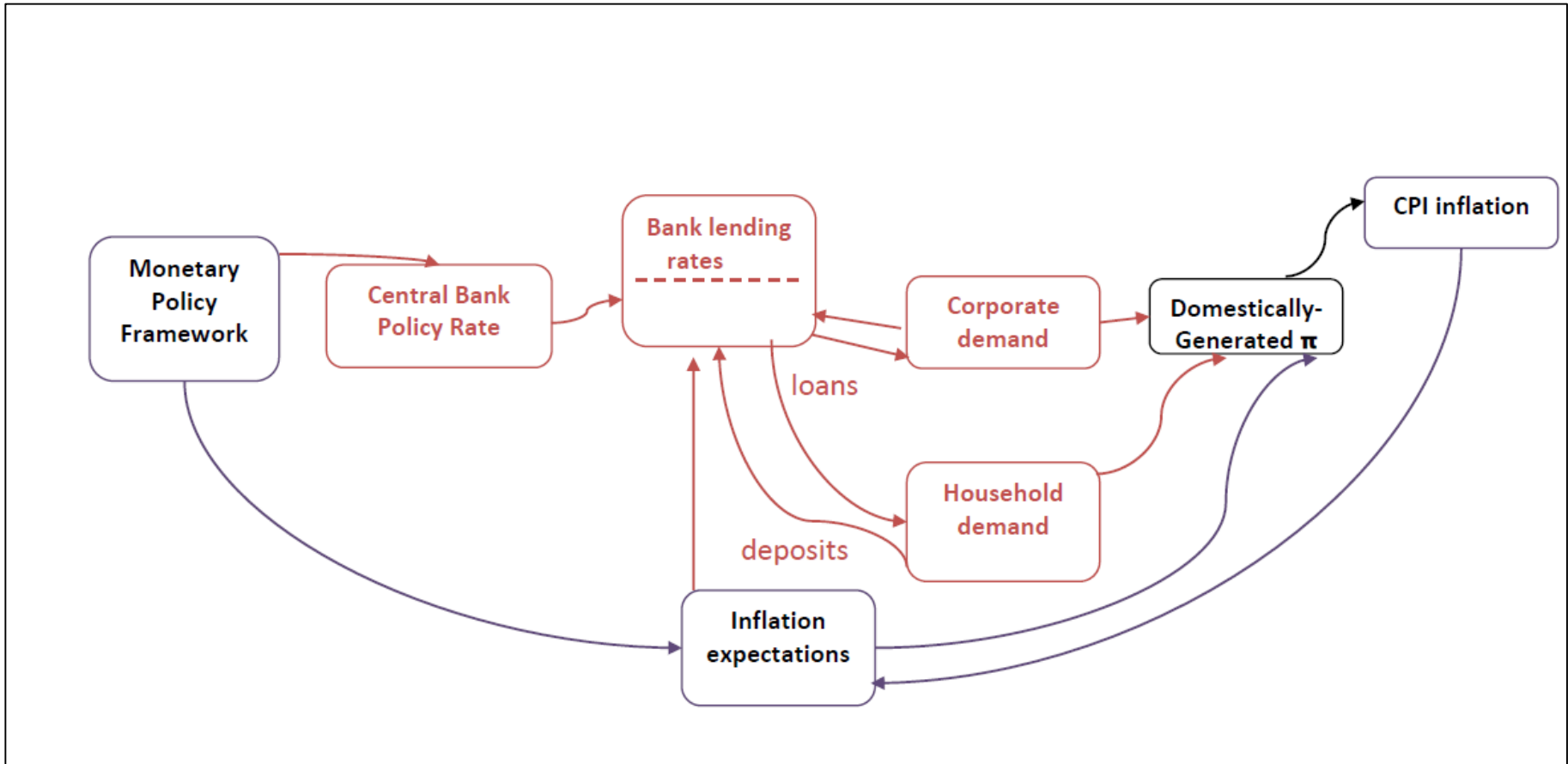
### — **Exchange rate**

# MTM: Inflation Expectations Channel



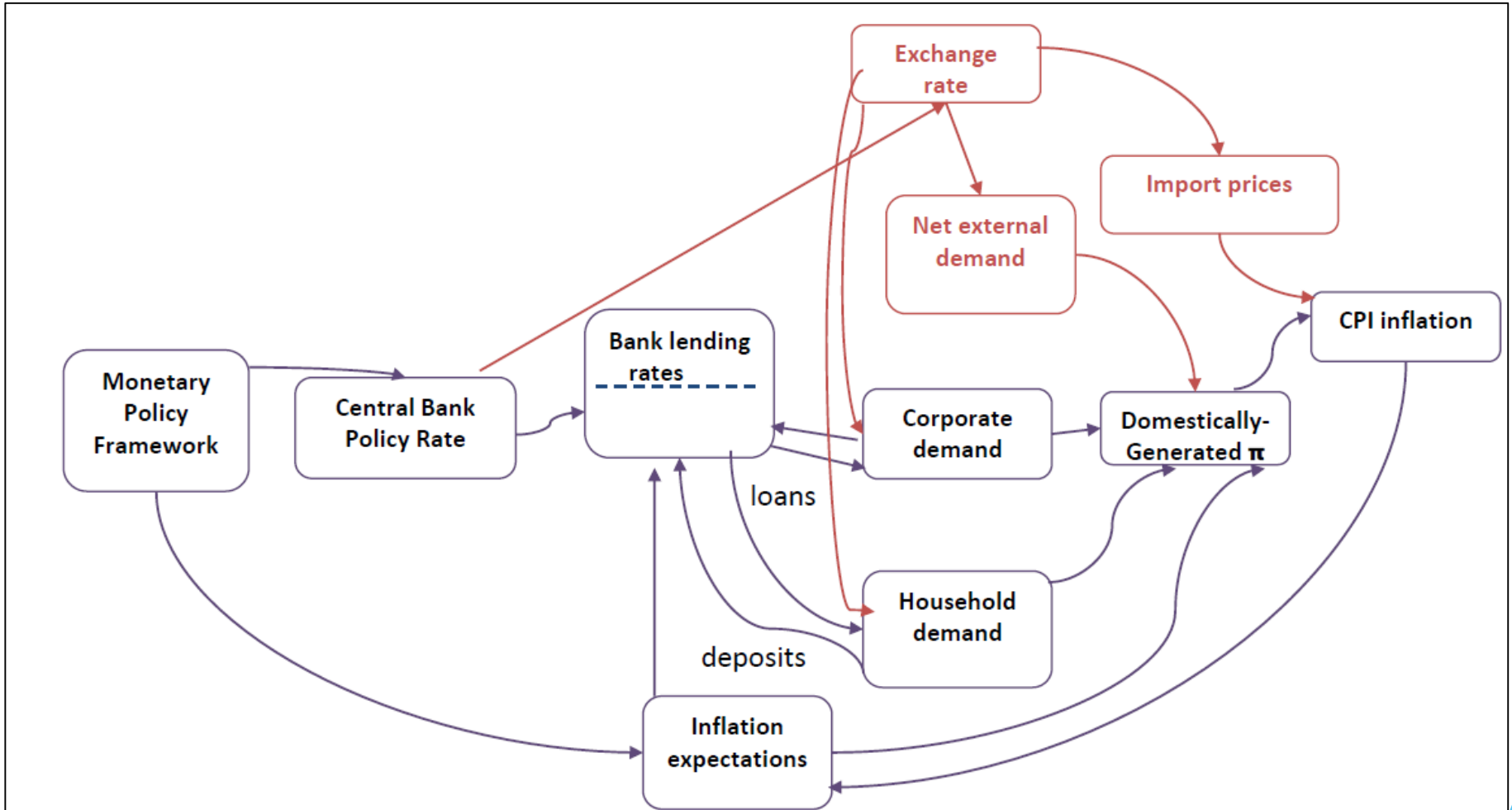
Source: IMF (2018)

# MTM: Interest Rate Channel

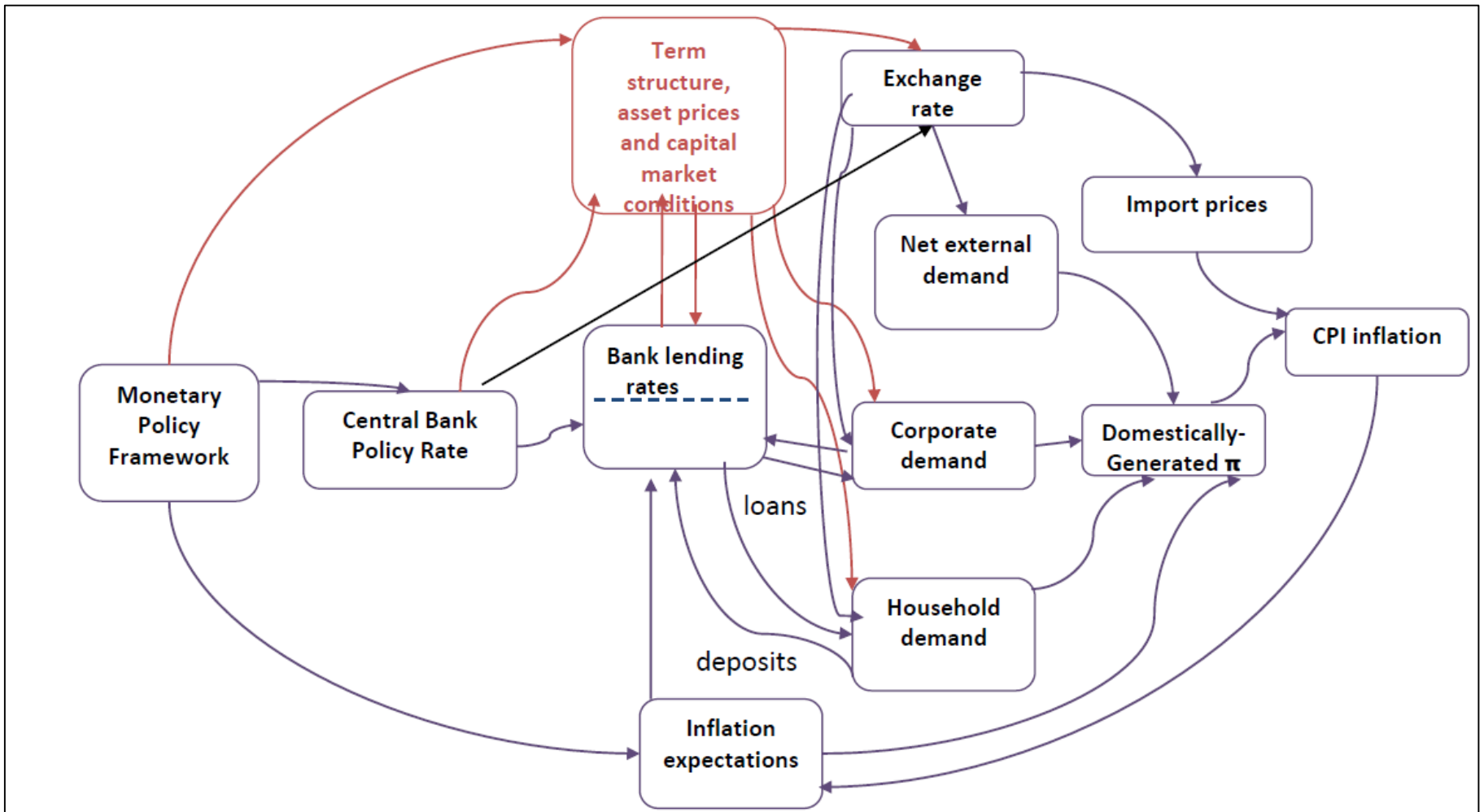


Source: IMF (2018)

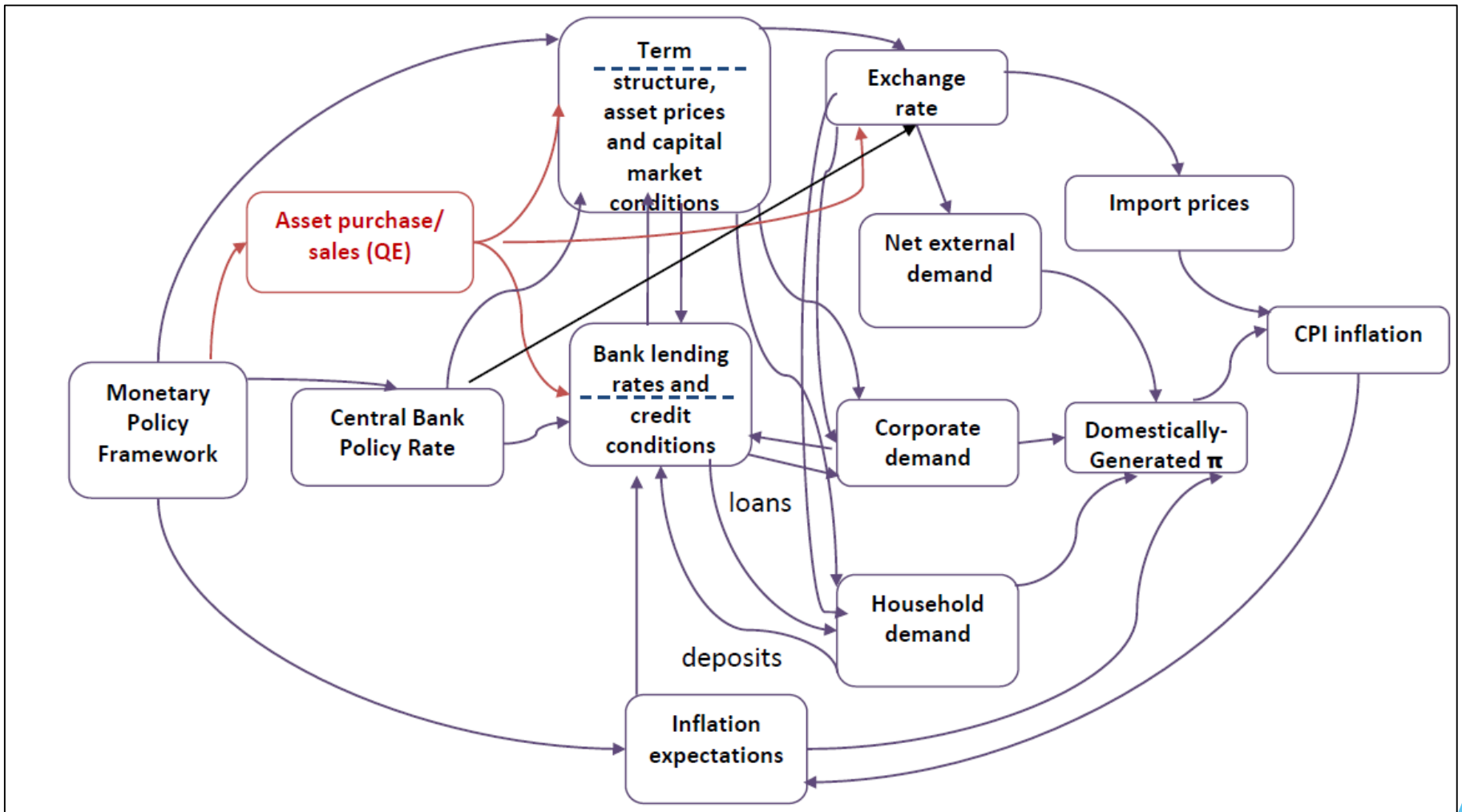
# MTM: Exchange Rate Channel



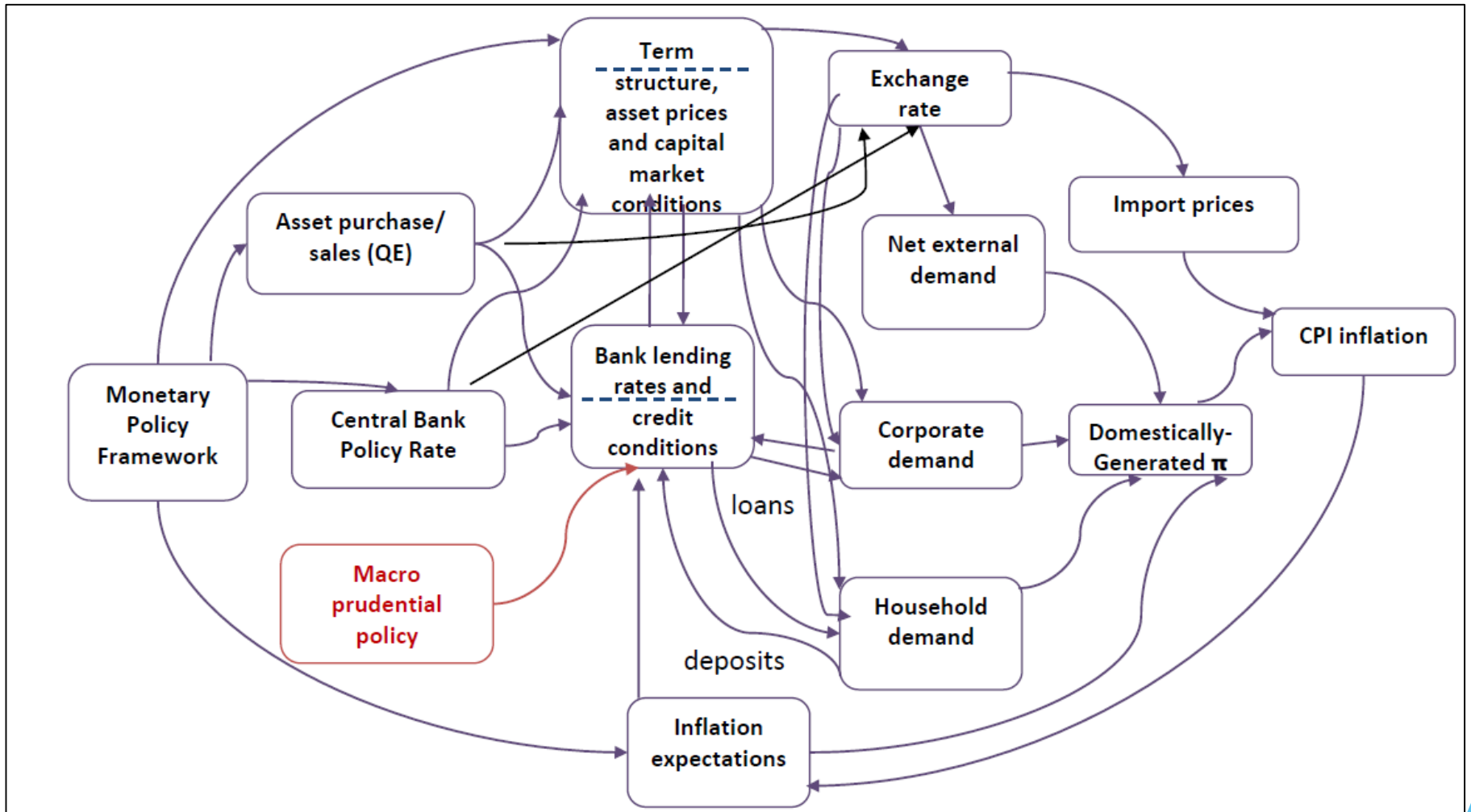
# MTM: Asset Price Channel



# MTM: Quantitative Easing

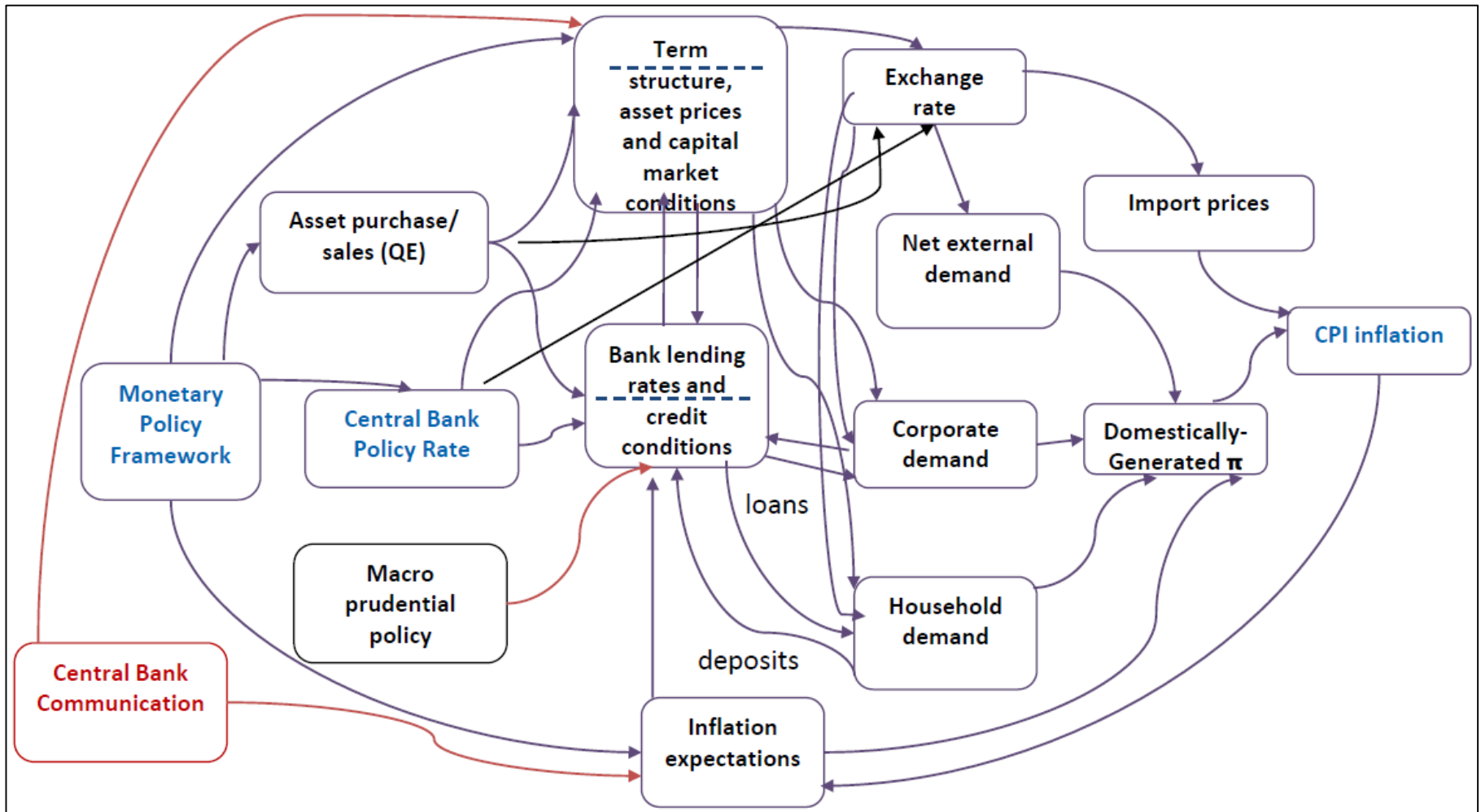


# MTM: Macroprudential Policy





# MTM: The Role of Communication



# Monetary Policy Regimes

## Part III

# Monetary Policy Regimes

- Monetary policy seeks to influence the economy through the money market by affecting **the amount** (monetary aggregates) or **price of money** (interest rates)

## 1. Fixed exchange rate regime

- The central bank seeks to ensure the stability of the nominal exchange rate vis-à-vis the currency of the so-called anchor country through changes in interest rates and direct foreign exchange interventions -> **thus importing price stability from that country**

# Monetary Policy Regimes

## 1. Fixed exchange rate regime (continued)

- **Prerequisites to maintain the exchange rate commitment:** an appropriate combination of economic policies ensuring a low inflation differential vis-à-vis the anchor country, sufficient foreign exchange reserves, maintaining the country's competitiveness and overall credibility, including its institutional and legal framework and political stability
- **The central bank, however, loses a considerable degree of its autonomy**
- **Usually, this variant of monetary policy chooses an economy less advanced, with built-in tendencies to higher inflation, which have strong trade and financial ties with a more advanced low-inflation economy**

# Monetary Policy Regimes

## 2. Regime with an implicit nominal anchor

- Targeting a particular nominal variable adopted only internally within the central bank without it being announced explicitly
- A prerequisite for successful functioning of this regime is high credibility of the central bank, which enables the desired changes in inflation or inflation expectations to be achieved without explicit targets

## 3. Money targeting regime

- The regime focuses on the growth rate of a chosen monetary aggregate

# Monetary Policy Regimes

## 3. Money targeting regime (continued)

- The management of the money supply is based on the monetaristic assumption that price growth is affected in the long run by money supply developments, or that monetary aggregates are related to the price level
- A problem, however, lies in the choice of an appropriate monetary aggregate to target
- **Furthermore, the relationship between monetary aggregates and important variables (inflation, GDP) has been significantly weakened**
  - Effect of financial innovations, market computerisation and globalisation
  - -> Instability of the velocity of money and money multipliers

# Monetary Policy Regimes

## 3. Money targeting regime (continued)

- Quantitative Money Theory: (Cambridge Money Equation)

$$M * V = P * Y$$

- The assumption of constant  $V$  and  $Y$  (in the long term)  $\rightarrow M$  affects  $P$
- = if there is money neutrality in the long run -  $M$  has no effect on potential  $Y$  or other real variables (e.g. real exchange rate, real interest rate, employment, ...)
- **Explanation:**
  - Monetary expansion cannot increase either the national savings rate or the investment rate

# Monetary Policy Regimes

## 3. Money targeting regime (continued)

- **Problem:**
  - Overly expansive and restrictive monetary policy can negatively affect real economic growth
- **Keynesians refute the neutrality in the short run**
  - Claiming that prices and wages are rigid in the short term
  - Money hoarding, liquidity trap



# Note: Monetary Aggregates

- **The volume of money found in the economy is approximated by monetary aggregates**
- **Monetary aggregates represent a grouping of liabilities with different degrees of liquidity, they are called M0 to M3**
  - The breakdown proceeds cumulatively from lower (more liquid) to higher (less liquid) including the previous aggregates
- **M0 = monetary base = cash in circulation + bank reserves**
  - Reserves = minimum reserves + voluntary bank reserves + cash reserves in cash registers
  - Heavy criticism from Post-Keynesian economists (comparing apples and oranges)

# Note: Monetary Aggregates

- **M1 (narrow money)** = currency in circulation + overnight deposits (money which are immediately available)
- **M2 (medium money)** = M1 + Quasi-money (deposits with agreed maturity)
- **M3 (broad money)** = M2 + marketable instruments (repo operations, money market fund shares or units and debt securities with maturities of up to two years)

**The definitions are just for illustration, it may differ internationally**

# Monetary Policy Regimes

## 4. Inflation targeting

- Manage inflation through central bank instruments without an intermediate target
- **Most often, changes in short-term interest rates (e.g. through open market operations) are intended to achieve the inflation rate set as the inflation target for a predetermined period of time**
- **Three main elements:**
  - 1. Setting an inflation target**
    - CPI or its variant, 2% in developed economies

# Monetary Policy Regimes

## 4. Inflation targeting (continued)

— Three main elements (continued):

### 2. Creating inflation forecasts

— Inflation forecast - key element of the inflation targeting regime (replaces the intermediate monetary policy target in the money targeting regime)

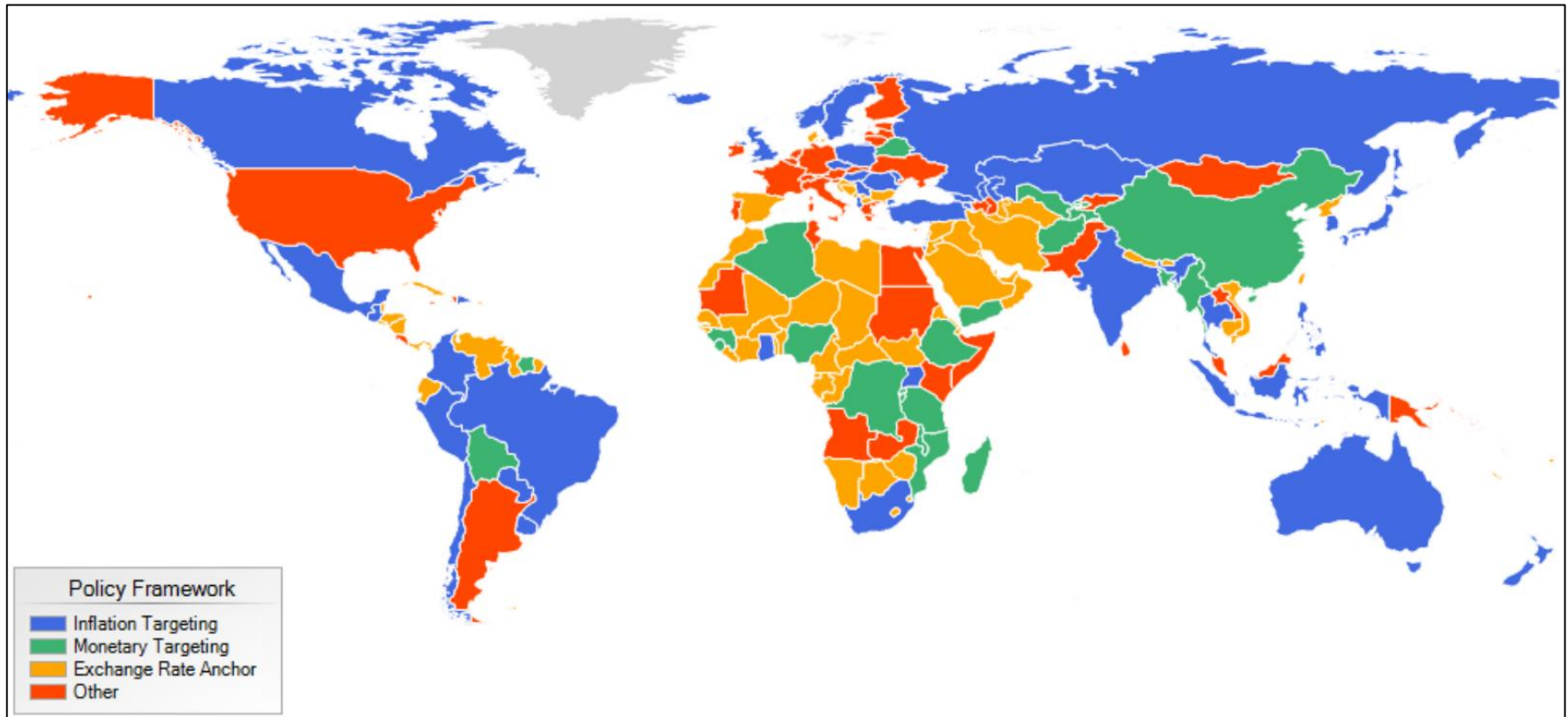
— **Conditional forecast**

(= not anticipating changes in interest rates in the forecast period)

— **Unconditional forecast** - includes changes in interest rates consistent with the forecast (forecast with reactive monetary policy) – CNB since July 2002

### 3. Operational management using a short-term main interest rate

# Monetary Policy Frameworks Around the Globe (2016)



Source: IMF (2016): Annual Report on Exchange Arrangements and Exchange Restrictions

# Unconventional Monetary Policies

## Part IV

# Unconventional Policies

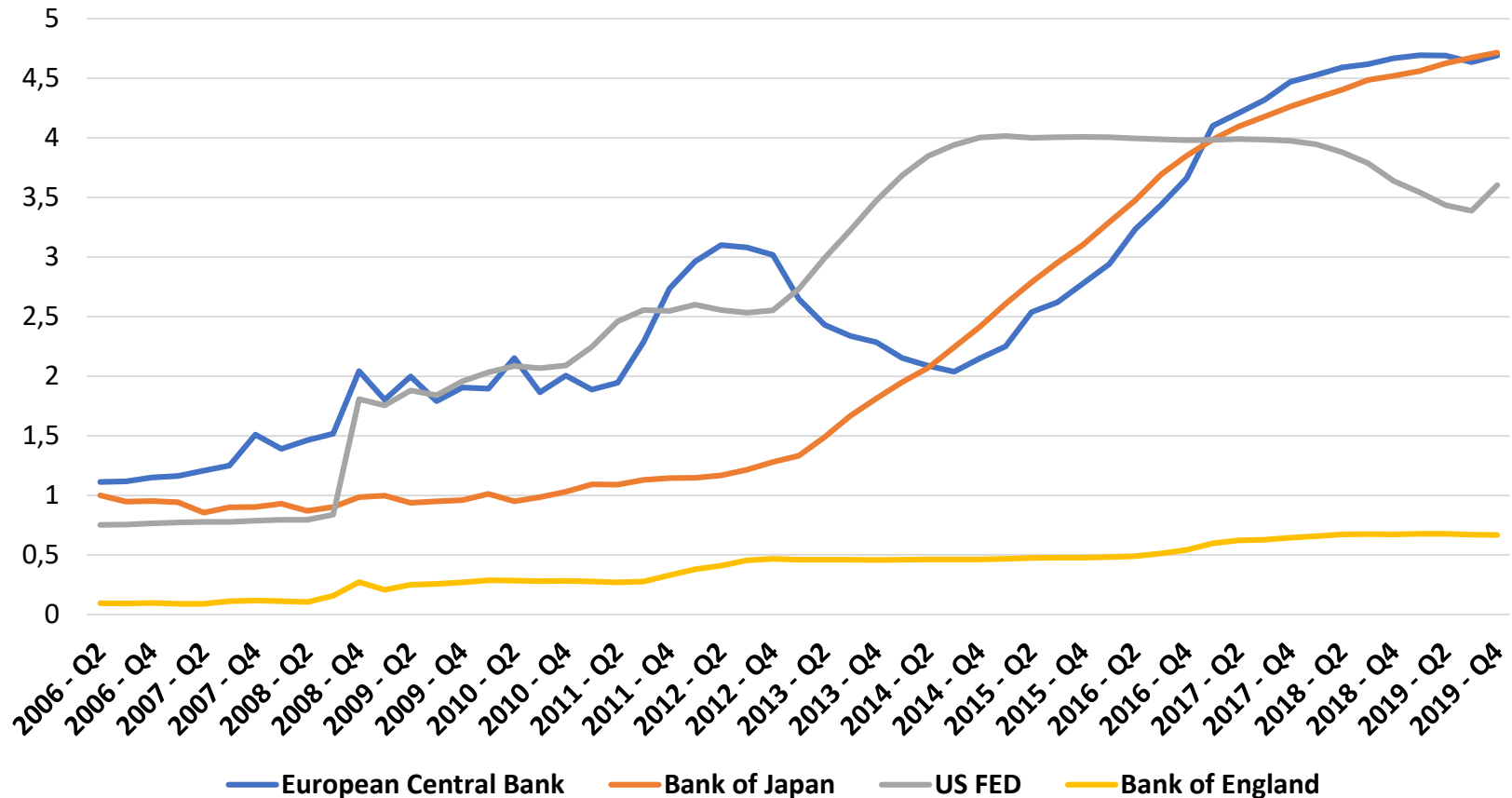
- **Since 2008 (Global Financial Crisis), unconventional measures have been used (USA, Europe)**
  - Zero-bound interest rates + recession -> standard monetary policy tools (classical monetary policy) were not effective
- **Three main types of unconventional policies:**
  1. Providing liquidity to markets affected by its scarcity
  2. (Large-scale) Purchases of various types of assets (not only government bonds)
  3. The introduction of negative interest rates (deposit rates)

# Unconventional Policies

- -> the second measure is often referred to as **Quantitative easing (QE)**
  - QE is expansionary (unconventional) type of monetary policy – tool, not a regime
  - Usually defined as large scale assets purchases – central bank buys predetermined (HUGE) amounts of government bonds or other financial assets in order to stimulate the economy
  - Central bank's balance sheets are getting enormous



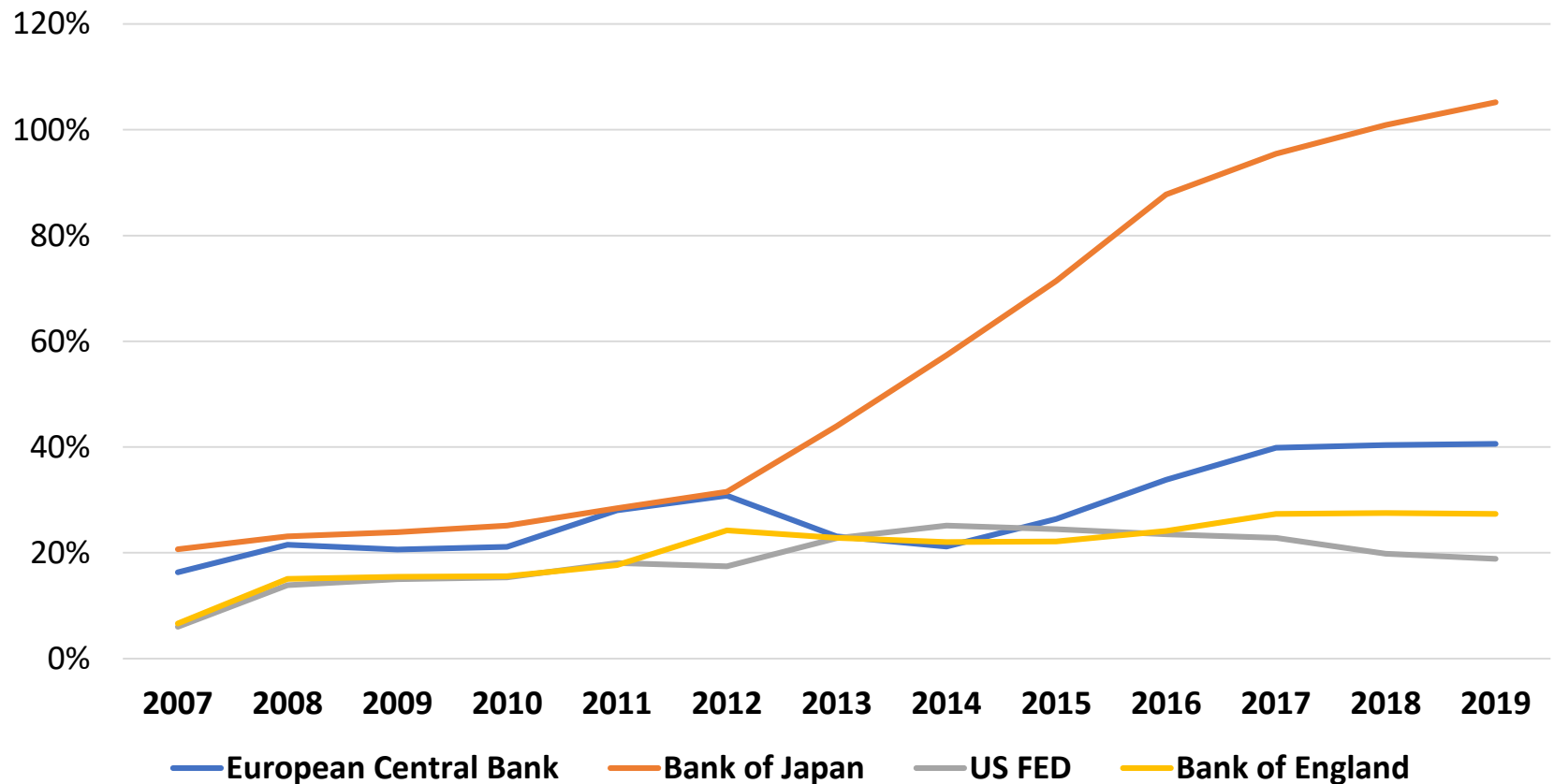
## Total Assets of the Main Central Banks in the World (EUR trillions) – 2Q 2006 - 4Q 2019



**Note:** Constant exchange rates against the euro have been used – 2019 averages.

**Data sources:** The national central banks, own calculations.

## Total Assets of the Main Central Banks in the World (GDP shares) – 2007-2019



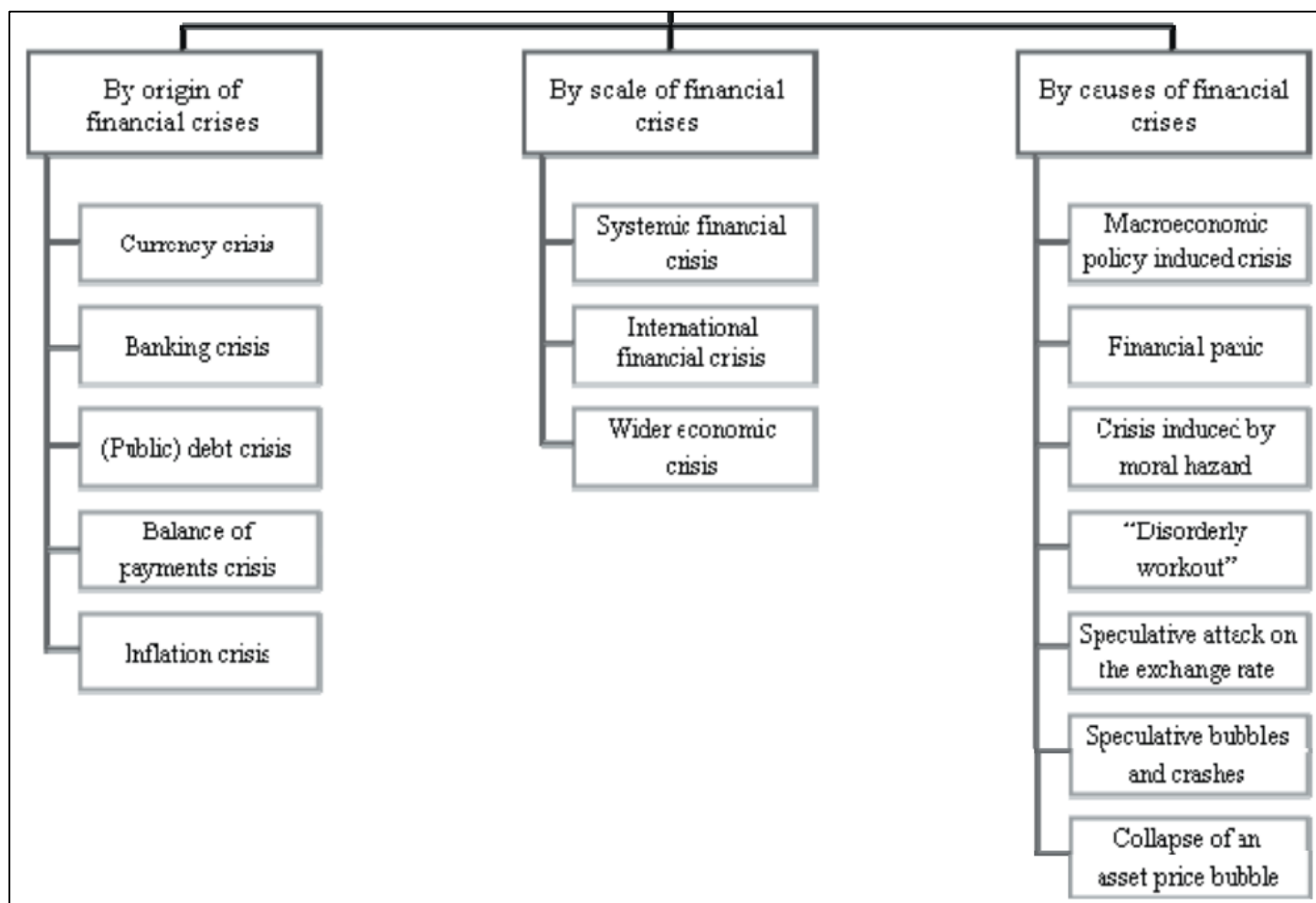
**Note:** Annual data (31/12 – 4Q of each year).

**Data sources:** The national central banks, own calculations.

# Monetary and Financial Crises

## Part V

# Classification of Financial Crises



# Currency Crises

- Not an isolated phenomenon, they accompany financial turbulences
- They do not remain limited to foreign exchange markets and their actors, but usually have **wider negative impacts on the economies of the affected countries**
- Mandel and Tomšík (2008) define the currency crisis as "**a significant depreciation (or forced devaluation) of the exchange rate, which leads to national economic losses in the form of a decline in real economic growth and an increase in inflation.**"
  - Possibly accompanied with a **significant decline in the foreign exchange reserves of the central bank and a large increase in main interest rates**

# Currency Crises

- Helísek (2004): “... an attack by domestic and foreign investors on a certain currency in terms of the conversion of assets of the affected currency into assets in foreign currencies. The result is a strong depreciation of the affected currency.”
- Currency crisis theories: finding generally applicable rules, why and when currency crises arise
  - **But, historical experience suggests that the causes of currency crises can hardly be described by any generally valid model**

# Currency Crises – Examples

## — Since the 1990s:

- Mexico (1994-1995)
- Mini-crisis in the Czech Republic (1997)
- East Asia (1997-1998)
- Russia (1998)
- Mini-crisis in Brazil (1999)
- Ecuador (1999)
- Ukraine (1999-2000)
- Turkey (2000 and 2001)
- Argentina (2001)
- Uruguay (2002)
- Iceland (2008)

# Currency Crises – Interconnections

- **Indicators mapping risks in the financial sector are now being added**
  - Banking crises and stock price developments
- **In the current economic reality, different types of crises are interconnected, and they are spreading rapidly in today's globalized environment**
- **Historically, the link between the occurrence of the banking crisis, the default on foreign debt and the currency crisis is evident**



# Currency Crises – Interconnections

- **Banking crises are fueling these additional financial turbulences through a number of related channels**
  - Problems in the domestic banking sector constrain the financing of real economic activity and inevitably lead to a fall in tax revenue and an increase in government spending
    - Reinhart and Rogoff (2009): public debt will rise by 86% after the banking crisis
- **The accompanying effect of the debt crisis and possible attempts at inflationary liquidation of the debt burden -> currency pressures**

# Banking Crises

- **A banking crisis is defined by bank runs with depositors asking back their money, and just withdrawing their deposits, or a large scale government intervention needed to rescue banks**
  - Banking crises are spreading through the crisis of confidence channel to other countries
  
- **Causes of banking crises**
  1. Bursting bubble in equity or real estate prices
  2. Interest rate, exchange rate, or growth shocks
  3. Burst typically follows lending booms  
(stimulated by financial liberalisation/capital inflows)

# Banking Crises

- **Reinhart and Rogoff (2009), banking crisis indicators:**
  - Deviation of the real exchange rate from trend trends
  - Real estate prices
  - Short-term capital inflow in % of GDP,
  - Current account / investment ratio
  - Real share prices

# Price Bubbles

- **Excessive growth in asset prices is currently considered as very important**
  - Real estate and stock markets
- **Speculative price bubble means that the (spot) market price significantly exceeds the intrinsic (natural, long-term equilibrium) value of a financial or real asset**
- **Some examples:**
  - Tulip mania (Netherlands, 1634–1637)
  - South Sea Bubble (Great Britain, 1720)
  - Japanese asset price bubble (1986–1991)
  - Dot-com bubble (USA, 1994–2000)
  - Subprime mortgage crisis – US real estate market bubble (USA, 2004–2006)

# Crises – Other Factors

- **Reinhart and Rogoff (2009), psychological factors play a significant role and do not change much over time**
  - **Excessive optimism in the growth period**
    - Often supported by the populist attitude of economic policymakers who argue that the current boom is not unhealthy, but sustainable and will not lead to a crisis
- **Warning signals exist in the pre-crisis period (and are usually captured by some of the mentioned indicators), but are often overlooked by economic policy-makers**
- **The lesson is that excessive debt accumulation, whether by governments, banks, businesses or consumers, poses a greater risk than it seems during a boom**



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