A brief chronology of the crisis and the impact of policy responses

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This presentation reflects work-in-progress. It is loosely drawn from a “Chronology of the euro area crisis” which I am writing with Gonzalo Camba-Mendez. The presentation today benefitted from discussions and contributions from Björn Fischer, Michael Ehrmann, Guido Wolsijk, and Lorenzo Ferrante. The views expressed here are mine and might not reflect those of the ECB or the Eurosystem.
Phases of the crisis (I)

• It started with a liquidity crisis during the “Financial Turmoil” (Aug. 2007 to Sept 2008).
• Followed by a solvency crisis after Lehman’s default (in mid-Sept. 2008).
• This sparked the “Global Financial Crisis” and not long thereafter the “Great Recession”.
• The recession exacerbated the internal and external imbalances already building up within several euro area countries.
• Then, in early 2010 the Sovereign Debt Crisis of the euro area was triggered by:
  • budgetary shortfalls of some governments,
  • excessive private indebtedness in some countries, and
  • high banks leverage.
• There were no financial backstops for sovereigns and banks.
• This brought financial fragmentation, a disruption in monetary transmission, and almost a break-up of the euro area.
Phases of the crisis (II)

To proceed with order, from ECB standpoint crisis can be articulated in 4 phases:

- “Acute Phase” that started in April 2010;
- “Renewal Phase” that started in Summer 2012 after the OMT announcement which reverted break-up risks and financial meltdown risks;
- “Low Inflation Phase” with crawling growth that started in the second half of 2013. Risk of deflation emerged; and
- “Large Asset Purchases Phase” or “QE Phase” that started in January 2015.

- Monetary policy was not the only response: there were fiscal responses, structural reforms, the building of a crisis management framework with financial backstops, the launch of a Single Supervisory Mechanism (SSM), and adjustment programs in several euro area countries.

- Thus, there has been a change in governance and more institutional reforms at EU/euro area level are envisaged in the 4-Unions/5Presidents report.

- There are also headwinds such as:
  - The heavy legacy of the crisis in several economies
  - Growing scepticism toward the EU, ECB's policies and resistance to additional non-standard measures ➔ resistance to reforms.
During the mutating crisis, all available monetary policy instruments have been used by the ECB, and new ones have been added.

- **Problem nr. 1. financial fragmentation of the euro area and impaired monetary transmission (next 3 slides)**

- **Problem nr. 2. lowering interest rates became less-and-less effective**

- Between mid-2008 and today, the rate for main refinancing operations (MRO) was reduced by cumulative 4.75%, while both the deposit facility rate (DFR) and the lending facility rate (LFR) were reduced by 5.2%.

- When in June 2014 the ECB lowered the DFR rate to -0.1, it became the first major central bank to lower one of its key policy rates to negative territory, a phenomena described as Negative Interest Rate Policy (NIRP).

- Once at the Zero Lower Bound, standard monetary policy and further interest rate reductions lost in part their potency.

- **Therefore, standard monetary policy had to be supported by a wide and growing range of non-standard measures.**
Money market spreads in the euro area, United Kingdom and United States

Sources: Thomson Reuters, ECB
Note: Weekly averages in basis points. Spread between the offered interbank interest rate (EUR-/LIBOR) and the corresponding overnight interest swap rate for a 3-month maturity.
Fragmentation and impaired transmission (II)

10-year government bond spreads

Source: Datastream, Latest observation: 20 April 2017
ECB lesson: the lower bound (LB) is actually below zero

- We were unprepared and underestimated ZLB.
- The lower bound is actually not at zero but in negative territory.
- Experience in the euro area, shows that at **effective/perceived lower bound**, monetary policy has remained effective via non-standard MP measures.
- Lower bound given by reversal rate at which accommodative policy becomes contractionary.
  - Banks asset holdings with fixed interest rates.
  - Degree of interest pass through to loan & deposit rates.
  - Length of negative interest rate period.

**ZLB/LB has posed a huge challenge on research, policy discussion and communication.**
ECB lesson: explain market premia and non-standard monetary policies

\[ r_{lt} = \frac{1}{L} (i_{MP_t} + E_t i_{MP_{t+1}} + \ldots + E_t i_{MP_{t+L-1}}) + \frac{1}{L} \left( \pi^e_t + \text{irp} \right) \]

- Real long-term rate
- Nominal long-term rate

- Expectations on future monetary policy rates
- ECB: Forward guidance
- ECB: APP
- ECB (T)LTRO
- ECB: OMT

- Term premium
- Liquidity premium
- Default risk
- Redenomination risk
Why?
➢ as policy rates declined, the ability to steer expectations and provide further MP accommodation declined, and
➢ ECB had to influence expectations directly by communicating likely path of future policy rates.

Key elements of FG:
➢ Element (I): Preserve monetary accommodation
“Our monetary policy stance is geared towards maintaining the degree of monetary accommodation warranted by the outlook for price stability and promoting stable money market conditions.”
➢ Element (II): Conditional expectation of monetary policy stance going forward
“Looking ahead, our monetary policy stance will remain accommodative for as long as necessary. The Governing Council expects the key ECB interest rates to remain at present or lower levels for an extended period of time. This expectation is based on the overall subdued outlook for inflation extending into the medium term, given the broad-based weakness in the real economy and subdued monetary dynamics.”
➢ Element (III): display readiness to act
“In the period ahead, we will monitor all incoming information on economic and monetary developments and assess any impact on the outlook for price stability.”
ECB lesson: calibrating and explaining Forward Guidance

2 interlinked components via which economic actors anticipate future policy:

- Interpretation by economic agents of the MP strategy governing CBs’ actions in response to economic conditions.
- Perceptions about the central bank’s present assessment of current and future economic and financial conditions.

**Odyssean element:**
Central bank communicates parameters of reaction function and policy goals. Odyssean, as reaction function, or strategy, reflects mandate and statutes.

**Delphic element:**
Information about central bank’s perceptions of macroeconomic fundamentals, revealing expectations of future events, given current state of knowledge.
The non-standard MP measures undertaken by the ECB between August-2007 and December 2016 can be organized in four main clusters.

- **The first cluster** groups reverse lending operations (Repos) of increasing duration and a widening aim; these have been unfolding throughout the crisis. These measures are often referred to as “Credit Easing.” [money market intermediary and “central counterparty of last resort”].

- **The second cluster** of non-standard measures embraces various “Ad-hoc non-standard Operations”.
  - There were some forex repos and swaps with other central banks to lighten funding constraints for European banks with branches abroad.
  - There were also ad-hoc money market interventions to provide or drain extra-liquidity in order to adjust money market conditions.
The **third cluster** is represented by a large array of “Outright Operations”.

- Their aim is to relieve funding constraints for banks, repair strained financial market segments and support monetary policy transmission.
- Thus, they have a “market functioning support role”.
- The Covered Bond Purchases Program started in July 2009 with selective purchases of private sector securities, and was re-proposed twice.
- A second set of outright operations is represented by selective purchases of public sector securities like the Securities Market Program between 2010 and 2012.
- The Outright Monetary Transactions (OMT), that is a “contingent balance sheet policy”, was announced in Summer 2012.
- The scope of outright operations changed in mid-2014, with the start of “Quantitative Easing” policy to provide further monetary stimulus.
• At times of heightened uncertainty, such as during the financial crisis, central bank conditional communication on the path of the policy rate was in effect turned into an additional instrument for crisis management.

• The fourth cluster of non-standard measures thus entailed “Enhanced Communication” which acquired prominence from July 2013 onwards.

• The ECB’s guidance is of a qualitative nature, as it entails a commitment about future path of policy rates contingent on the outlook for price stability.

• Enhanced communication was strengthened especially once beyond the zero-lower-bound (ZLB) and in regime of negative interest rate policy (NIRP).

➢ I apologise for the busy next slide!
### Monetary Policy Instruments

<table>
<thead>
<tr>
<th>Conventional</th>
<th>Unconventional</th>
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<tr>
<td>&quot;Credit easing&quot;</td>
<td>&quot;Market support&quot;</td>
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</table>

#### A. Reverse lending operations:

**A.1 Refinancing Operations**

- MROs at FRFA (Aug 2007 onward) | X |
- LTROs (3 months) at FRFA (Aug 2007 onward) | X |
- LTROs (6 months) at FRFA (March 2008 onward) | X |

**A.2 Supplementary LTROs at 1-year** | X |

**A.3 Very-long LTROs at 3-years (Nov11&Dec12)** | X |

**A.4 TLTROs (June 2014 and max maturity Sep.2018)** | X |

**A.5 TLTRO II: Targeted LTROs (June 2016-March 2017)** | X |

#### B. Ad-hoc non-standard operations:

**B.1 Forex Repos and Swaps (2008-9)** | X |

#### C. Outright operations:

**C.1 Selective purchases of private sector securities**

- CBPP1 (July 2009) | X |
- CBPP2 (November 2011) | X |
- CBPP3 (Sept. 2014) | X |

**C.2 Selective purchases of public sector securities**

- SMP (2010-12) 7/ | X |
- OMT ("contingent balance sheet policy") | X |

**C.3 Large scale purchases of private sector securities**

- ABSPP (June + Sep.2014) | X |
- CSPP (March 2016) | X |

**C.4. Large scale purchases of public sector securities**

- APP/PSPP (January 2015) | X |
- Expanded APP (March 2016) | X |

#### D. Enhanced communication:

**D.1 Forward Guidance (July 2013)** |

**D.3 Signal of Balance Sheet expansion (Nov. 2014)** |
<table>
<thead>
<tr>
<th>Policy Responses</th>
<th>Date Announced</th>
<th>Purpose</th>
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<tbody>
<tr>
<td><strong>1. Direct Intervention Measures</strong></td>
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<tr>
<td><strong>1.1 Fiscal Stimulus</strong></td>
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<tr>
<td>European Recovery Plan</td>
<td>26th Nov 2008</td>
<td>Boost aggregate demand in coordinated manner, support confidence and reinforce long-term competitiveness</td>
</tr>
<tr>
<td>An Investment Plan for Europe</td>
<td>26th Nov 2014</td>
<td>Strengthen competitiveness and stimulate investment for purpose of job creation</td>
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<td><strong>1.2 Rescue Interventions</strong></td>
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<tr>
<td>Capital Injections</td>
<td>from Aug-2008</td>
<td>Address bank vulnerabilities and avoid associated systemic risks</td>
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<tr>
<td>Nationalisation of Banks</td>
<td>from Sep-2008</td>
<td>As above</td>
</tr>
<tr>
<td>Creation of Bad Bank Schemes</td>
<td>from Sep-2008</td>
<td>As above</td>
</tr>
<tr>
<td>Debt Guarantees</td>
<td></td>
<td></td>
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<tr>
<td><strong>1.3 Regulatory interventions</strong></td>
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<tr>
<td>Short sales prohibitions</td>
<td>from Sep-2008</td>
<td>Avoid risk of negative share price spirals that can lead to systemic risk</td>
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<tr>
<td><strong>2. Strengthening the Institutional Framework</strong></td>
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<tr>
<td><strong>2.1 Coordination of Financial Supervision</strong></td>
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<tr>
<td>EBA, ESMA, EIOPA</td>
<td>18th June 2009</td>
<td>Upgrading the quality and consistency of national supervision and strengthening oversight of cross-border groups</td>
</tr>
<tr>
<td>ESRB</td>
<td>18th June 2009</td>
<td>Monitor and assess potential threats to financial stability issuing risk warnings and recommendations</td>
</tr>
<tr>
<td>SSM &amp; SRM</td>
<td>12th Sept 2012</td>
<td>Restore confidence in banking supervision, break doom-loop and orderly resolution</td>
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<tr>
<td><strong>2.2 Financial Back-up for Sovereign Debt Crisis</strong></td>
<td></td>
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<tr>
<td>EFSM &amp; EFSF</td>
<td>10th May 2010</td>
<td>Provide financial assistance to countries under financial stress</td>
</tr>
<tr>
<td>ESM</td>
<td>25th March 2011</td>
<td>As above, but permanent plus mandatory CACs</td>
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<td><strong>2.3 Governance reforms</strong></td>
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<tr>
<td>&quot;Six-Pack&quot;</td>
<td>from Dec-2011</td>
<td>Including: reform SGP, requirements fiscal frameworks, and MIP</td>
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<tr>
<td>Fiscal Compact</td>
<td>Mar-12</td>
<td>Provisions to guarantee prudent fiscal behaviour</td>
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<tr>
<td>&quot;Two-Pack&quot;</td>
<td></td>
<td>Strengthening coordination and surveillance of budgetary processes</td>
</tr>
<tr>
<td>4/5-Presidents Report</td>
<td>From-Dec-2012</td>
<td>Roadmap toward more genuine EMU: fiscal, financial, economic and political union by 2025</td>
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<tr>
<td><strong>3. Regulatory Reforms</strong></td>
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<tr>
<td><strong>3.1 For a robust financial framework</strong></td>
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<tr>
<td>A Single Rulebook (CRR, DGS, BRRD, ...)</td>
<td>18th June 2009</td>
<td>Promote sound financial regulation and guarantee a level playing field and an integrated single market for financial services</td>
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<tr>
<td><strong>3.2 Sovereign Debt Tensions and Restructurings</strong></td>
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<tr>
<td>Ban on Naked Positions on Sovereign CDS</td>
<td>15th Sept 2010</td>
<td>Prevent market fragmentation and ensure smooth functioning of sovereign debt markets</td>
</tr>
<tr>
<td>Introduction of Collective Action Clauses</td>
<td>1st Febr 2012</td>
<td>Facilitate process of debt restructuring when a government faces the possibility of a default</td>
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<td><strong>3.3 Other Regulatory Reforms</strong></td>
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<tr>
<td>Softening EU Framework to Assess State Aid</td>
<td>25th Oct 2008</td>
<td>Enhance soundness and stability of the banking sector</td>
</tr>
<tr>
<td>Short Sales Regulation</td>
<td>2nd June 2010</td>
<td>Increase transparency on short positions held by investors</td>
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</table>
HICP inflation and core-inflation (2007-2016)

HICP: annual rate of change; HICP ex energy and food, HICP energy and HICP food: contributions in pp.
Euro area real GDP and its components

(quarter-on-quarter percentage changes and quarter-on-quarter percentage point contributions)

GDP at market prices
private consumption
government consumption
gross fixed capital formation
net exports
changes in inventories

Source: Eurostat.
Note: The latest observation is for the fourth quarter of 2016 for GDP and its components.
Changes in policy rates and bank lending rates to non-financial corporations (basis points)

Vulnerable countries

Less vulnerable countries

Note: Non-stressed comprise 131 MFIs from DE, AT, FR, BE, NL. Weighted averages, with weights represented by the corresponding loan outstanding amounts. Latest observation: January 2017.

Note: Stressed comprises 80 MFIs from IT, ES, PT, IE, GR. Weighted averages, with weights represented by the corresponding loan outstanding amounts. Latest observation: January 2017.
Composite bank cost of debt financing (composite cost of deposit and non-secured market debt funding; % per annum)

Sources: ECB
Recent recovery in credit

Recent decline in bank lending rates


Final remarks

- The balance sheet of the ECB reflects the varying phases of the crisis and policy responses.
- It has expanded in size: passively in the early years, but actively over the more recent past following the launch of the asset purchases program.
- This raised concerns about spiralling inflation (that has not materialized) and risks to financial stability (that need to be monitored), while the economy is slowly picking up.
- Last, it is increasingly recognised that such a prolonged period of standard and non-standard monetary policy measures may trigger unintended side effects.
Composite indicators of Systemic Stress (CISS) for the euro area (1999-2016)
Composite indicators of Systemic Sovereign Stress (SovCISS) for the euro area (2000-2016)
Prior to crisis monetary transmission worked along following channels:

- "Interest rate channel" through which changes in official policy rates affect short term money market rates, and thereafter other market rates. Changes in interest rates also affect asset prices (and Tobin’s q), and thus have a Wealth Effect and foster portfolio rebalancing (some call it the wealth channel or asset evaluation channel);

- "Balance sheet and bank lending channel" capturing the impact of monetary decisions on the net-worth of firms and their collateral value with an impact on credit and loans supply;

- "Exchange Rates Channel" affecting asset prices as well as import and export prices; and

- "Expectation channel" which has an impact on inflation expectations and wage and price setting and ultimately price developments.
ECB standard and non-standard measures since 2008

- **April 2008:** Introduction of LTROs with maturity of 6 MONTHS
- **September 2008:** Introduction of maintenance period operations
- **October 2008:** Introduction of fixed-rate full allotment (FRFA)
- **2008:** Interest rate changes. Net effect: cut by 150 bps to 2.5% (MRO rate)
- **July 2009:** Start of Covered Bonds Purchase Programme (CBPP)
- **Jun-Sep-Dec 2009:** Allotment of 3 LTROs with maturity of 1 YEAR (with FRFA)
- **2009:** Interest rate changes. Net effect: cut by 150 bps to 1% (MRO rate)
- **May 2010:** Start of Securities Markets Programme (SMP) and relative weekly fine-tuning absorbing operations
- **October 2011:** Allotment of supplementary LTRO with maturity of 1 YEAR (with FRFA)
- **November 2011:** Start of Covered Bonds Purchase Programme 2 (CBPP2)
- **December 2011:** Allotment of first LTRO with maturity of 3 YEARS (with FRFA)
  
  Reduction of reserve ratio from 2% to 1%
  
  Discontinuation of the fine-tuning operations carried out on the last day of each maintenance period
- **2011:** Interest rate changes. Net effect: unchanged at 1% (MRO rate)
ECB standard and non-standard measures since 2008

- **February 2012:** Allotment of second LTRO with maturity of 3 YEARS (with FRFA)
- **August 2012:** OMT announcement (technical features released in September 2012)
- **2012:** Interest rate change. Net effect: cut by 25 bps to 0.75% (MRO rate). Cut of the deposit rate to 0%
- **July 2013:** Introduction of forward guidance
- **2013:** Interest rate changes. Net effect: cut by 50 bps to 0.25% (MRO rate)
- **June 2014:** Announcement of targeted longer-term refinancing operations (TLTROs) to be conducted quarterly from September 2014 to June 2016
- **September 2014:** Announcement of purchases of non-financial private sector assets starting in October 2014 (ABSPP and CBPP3)
- **2014:** Interest rate changes. Net effect: cut by 20 bps to 0.05% (MRO rate). Cut of the deposit rate into negative territory (up to -0.2%)
- **January 2015:** Announcement of expanded asset purchase programme to include bonds issued by euro area central governments, agencies and European institutions

Modification to the interest rate applicable to the six remaining TLTROs, which will become cheaper (-10 bps)
ECB standard and non-standard measures since 2008

- **December 2015:** Announcement of extension of the asset purchase programme until March 2017

- **2015:** Interest rate change. Net effect: cut of the deposit facility rate by 10bps to -0.30%.

- **March 2016:** Announcement of four targeted longer-term refinancing operations (TLTROs) operations starting in June 2016.

  Expansion of monthly asset purchases from 60 to 80 billion. Announcement of purchases of non-financial corporate bonds.

- **2016:** Interest rate change. Net effect: cut by 5 bps to 0.00% (MRO rate). Cut by 5 bps in the MLF rate to 0.25% and by 10 bps in the DF rate to -0.40%.

- **December 2016:** Announcement of the extension of the asset purchase programme until December 2017 with a monthly amount of purchases of 60 billion (from April 2017). Adjustments to the asset purchase programme parameters.