Debt and Macroeconomic Stabilization
Monetary backstop and aggregate macroeconomic stance

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“A common misconception about the European Union – and the euro area – is that they are economic unions without an underlying political union. This reflects a deep misunderstanding of what economic union means: it is by nature political. […] If our union has proved more resilient over the past years than many thought, it is only because those who doubted it misjudged this political dimension. They underestimated the political underpinnings of our union, the ties between its members, and the amount of political capital that has been invested in it. Yet it is clear that, for all its resilience, our union is still incomplete.”

Stability and Prosperity in Monetary Union, Speech by Mario Draghi, President of the European Central Bank, at the University of Helsinki, Helsinki, 27 November 2014
Policies and institutions to rule out self-fulfilling crises

• In the first lecture we have studied the conditions under which a country may suffer the disruptive effects of self-validating sovereign crisis. We have also studied how an official lender may eliminate the bad equilibrium without carrying out ex-post interventions—almost a free lunch: there are no ex-post transfers, no ex-post costs for the taxpayers.

• In this second lecture we discuss issues in policy implementation, first in general, then applied to specific forms that a backstop can take. In particular, we will study the role of central bank and monetary authorities and the recent experience of the euro area. We will conclude with a discussion of open issues.
General issues in the institutional design of backstops
Issues in the institutional design of an OL

1. **Analytical limitations in assessing sustainability**: in practice, it is very difficult to tell whether a sovereign risk crisis is driven by arbitrary beliefs, as opposed to an assessment of fundamentals.
   
   - Because of disagreement in the assessment, the OL may end up intervening ex post, with the risk of supporting countries with unsustainable debt.
   - This raises the need for “conditionality” and “sustainability analysis,” to “protect the resources of the OL” but also to enhance the success of interventions.
2. **Residual risk**: Eliminating crises driven by arbitrary beliefs does not necessarily rule out default for fundamental reasons. Our model economy can only be in normal times or in a recession. Suppose there is a third (low probability) possibility: a disaster. In the unique “good” equilibrium, the bond price include a (small) premium. If the OL intervenes, it may put “tax payers” money at stake.

- If the possibility of losses hampers the willingness of the OL to intervene, it may undermine the credibility of the backstop.
- Avoiding this raises the need for guarantees on the balance sheet of the OL.
Issues in the institutional design of the OL

3. **Moral Hazard**: Eliminating self-fulfilling debt crises may weaken the incentives for a country to implement good but costly policies and reforms.

- This is highly controversial. Actually, the literature has shown that the opposite may be true.
- Shielding the economy from runs on debt enhances the expected benefits from good policies and reforms (which would be dissipated in a self-fulfilling crisis). If anything, a backstop strengthens the incentives to implement them.
- Recall that, as long as the OL affect the equilibrium selection without purchasing debt, there is no bailout hence no transfer of resource. If it intervenes and restore the good equilibrium, the OL actually makes money—the transfer is negative!

“Moral hazard” concerns are nonetheless voiced in reference to dynamic institutional distortions.
**Issues in the institutional design of the OL**

4. **Dynamic vulnerability to fundamental crises**: With an OL in place, countries/governments have no incentive to keep their debt and financing need in the region where the equilibrium is fundamentally unique and default-free. Instead, they may keep borrowing up to the upper edge of the multiple equilibrium range. Dynamically, high debt may then create vulnerability to adverse fundamental shocks (such as large and persistent recessions).
   - This motivates rules or ‘pacts’ limiting debt accumulation.

5. **Political economy distortions**: Once an OL is in place, countries/governments will exert political pressure for it to buy bonds and finance their deficit, well beyond the objective of ruling out belief-driven crises.
   - Objectives and budget of the OL must be well defined.
Monetary Backstop
Can the central bank be the OL?

• The answer is far from obvious: from the perspective of a country, the CB is not an external lender with access to external resources.
  • Consolidating the budget of the CB and the general government clarifies that, ultimately, both rely on the same pool of resources—the residents tax revenue.
• We will see that a positive answer rests on what Krugman dubs: the “mystery of the printing press”.
  • In a regime of fiat currency, the liabilities issued by the CB are claim on themselves.
  • Even if investors coordinate on an equilibrium with sovereign risk, liabilities of the central banks are still traded as risk free in nominal terms.
  • Given certain conditions, this risk differential enables the CB to stabilize own country’s debt market.
Can the central bank be the OL?
The mystery of the printing press
Monetary backstop: how and why does it work?

Let the central bank takes on the role of a OL. It stands ready to buy government bonds at $Q_{t}^{CB} \geq Q_{t+1}^{market}$. Write:

$$FN_{t} = G_{t} - T_{t} + B_{t} = Q_{t}^{market} B_{t+1}^{market} + Q_{t}^{CB} B_{t+1}^{CB}$$

With large enough purchases $B_{t+1}^{CB}$, monetary authorities can prevent the overall stock of debt from rising above $B^{Max}$ even if investors were willing to pay only $Q_{t}^{risky}$. The condition is

$$B_{t+1}^{market} + B_{t+1}^{CB} = \frac{FN_{t} - Q_{t}^{CB} B_{t+1}^{CB}}{Q_{t}^{market}} + B_{t+1}^{CB} < B^{Max}$$

Sufficiently large interventions by central bank in the debt market ‘eliminates the bad equilibrium’ with non-fundamental default. The equilibrium bond price is unique:

$$Q_{t+1}^{market} = Q_{t}^{CB} = 1$$
The conditions for an effective backstop

We have seen that, for a lender of last resort to be effective, (a) it needs to have access to enough resources and (b) it must be expected to intervene ex post were market to run on debt. Let’s see how these two conditions play out for a central bank.

• When the central bank buys debt, it finances its purchases by issuing monetary liabilities $M_{t+1}^CB$. The CB balance sheet grows accordingly:

$$\uparrow (Q_t^CB B_{t+1}^CB) = \uparrow (M_{t+1}^CB)$$

For the backstop to be effective, the central bank needs to be able to expand its balance sheet as much as needed to prevent self-fulfilling run on a country’s debt, without compromising the default-risk free status of its liabilities. Given $B_{t+1}$, private investors end up holding debt directly $B_{t+1}^{market}$ and indirectly, by holding $M_{t+1}^CB$. 
The conditions for an effective backstop

The Mystery of the Printing Press

- Even if investors anticipate the possibility of a government default and consider paying $Q_t^{market} < 1$ to purchase public debt, they are still willing to pay the nominal risk-free price ($=1$ in our example) when purchasing $M$.

  - The liabilities issued by the central bank are mostly “bank reserves.” Key to the backstop is that investors consider these liabilities to be default-risk free in nominal terms.

  - Bank reserves are liability of the Central Bank and assets of the Banks. Consider what happens when the CB buys risky government bonds financing the purchase with bank reserves. From the public sector (consolidating the government and the central bank budget), the purchase substitutes “risky” borrowing with “riskless” borrowing.

- Both $B_{t+1}$ and $M_{t+1}$ are exposed to inflation risk, but only the former is exposed to default risk.
Backstop in a liquidity trap vs. ‘normal times’

Now, after the global crisis, advanced countries entered a ‘liquidity trap’. Policy rates have long been close to their ‘zero lower bound’.

- In a liquidity trap, as long as they remain free of default risk, government bonds pay the same interest rate (zero) as money. Money and debt are close substitutes (as long as the economy stays in the good equilibrium). The central bank can finance large purchases of debt issuing cash, which is hoarded by investors, without raising current prices.

What if the economy is not at the zero lower bound—bonds pay a positive nominal rate?

- Although currency (a central bank liability) pays no interest, the bulk of the “monetary base” consists of bank reserves. Modern central banks have the option to remunerate these reserves—setting positive interest rate. By doing so, the central bank will be able to expand its balance sheet without necessarily impacting current prices and inflation.
Monetary backstop: is it inflationary?

Even if the central bank can purchase debt in a crisis without raising current prices, would these purchases (the rise in the size of the CB balance sheet) create inflation risk in the future? If default is only due to self-fulfilling beliefs, once the monetary backstop eliminates the bad equilibrium, debt is safe.

- In the good equilibrium, the government repays all bond holders, including the central bank, in all circumstances. Hence, even if the central bank actually buy government debt in period 0, it will not suffer any ‘loss’ on these in period 1.
- Once the CB receive full payments on its holding of government debt, it can use these financial resources to ‘buy back’ its liabilities, reducing the outstanding stock of ‘reserves’ without any need to ‘print money’.
- Changes in its balance sheet (expansion and contraction) do not interfere at all with the central bank’s ability to pursue its preferred inflation (and unemployment) policy.
Monetary backstop: is it inflationary?

The analysis is more complex if, when the central bank buys debt, it exposes its balance sheet to the risk of losses. This may be the case if the country may still default for fundamental reasons once self-fulfilling crises are eliminated. Here is the problem.

• With a shortfall of payments from the government, the CB can still make good on its liabilities to the banks—by printing money!

• But running the printing press against balance sheet losses must be inflationary. Hence, buying government debt raises the possibility that the CB will have to deviate from its preferred inflation target.

• The prospect of deviating from its inflation objectives ex post may make the CB reluctant to intervene ex ante. In other words, investors may start to doubt that, if they run on debt, the CB will actually step in and purchase debt.
Monetary backstops require “fiscal backing”

Monetary backstops belong to “unconventional” balance sheet policies of a central bank.

- If prospective balance sheet losses erode the credibility of the monetary backstop, the policy is no longer effective.

- A possible solution is for the government to stipulate that, in case of default, it will still pay in full the debt held by the CB (the CB is *de facto* or *de iure* a senior creditor).

- Equivalently, the government can commit to ‘recapitalize’ the central bank, making up for its losses.

- One could also observe that, in the absence of recapitalization, a large inflationary consequences of a default may make default itself less appealing as a policy option.
Backstop and monetary regimes

- In advanced countries, monetary backstop is effectively implemented with little or no explicit formalization—as part of the general central bank objective of contributing to financial and macroeconomic stability.
- It implicitly requires the CB to be able and willing to expand its balance sheet.
- But for a backstop to work, it is crucial that the five general issues in institutional design at the beginning of this lecture are addressed in an effective way.
- A backstop is problematic in a regime where monetary policy is run by the Treasury. This regime approximates a model of “bailout”: the CB is required to finance whatever FN is there. It has no credibility.
- One can show that in this regime there can be multiple equilibria in the rate of inflation, driven by investors expectation of inflationary debasement of gov’t liabilities.
The seminal paper by Calvo (1988) was indeed written with the problem of multiple equilibria in (Brazilian) inflation in mind.

A solution to the institutional problems in setting up a monetary backstop consists of making the central bank independent (monetary policy is not run by the treasury) with a mandate including price stability, excluding inflationary financing of fiscal imbalances (at least outside Great Recession).

The treasury remains responsible for maintaining a sustainable fiscal outlook consistent with full employment and, in a Great Recession with policy rates at their zero lower bound, inflation at target.

A successful backstop nonetheless requires an understanding that the treasury will address potential CB losses.
The practice of monetary backstops

“Public debt is in aggregate not higher in the euro area than in the US or Japan... The central bank in those countries could act and has acted as a backstop for government funding. This is an important reason why markets spared their fiscal authorities the loss of confidence that constrained many euro area governments’ market access.”
Mario Draghi, Jackson Hole Speech, August 22, 2014.

- Recall: a backstop does not require any actual purchase of bonds.

- Now, during the crisis, many countries engaged in Quantitative Easing (QE) on a massive scale. Can one argue that QE strengthened the backstop?
Evidence from the UK
Gov’t bond purchases by the Bank of England
Asset Purchase Facility gilt holdings (at nominal value, million pounds)

https://www.bankofengland.co.uk/asset-purchase-facility/2019/2019-q3
“Quantitative Easing” and backstops

In his Per Jacobsson lecture, 2013, the former ECB president Jean-Claude Trichet wrote:

“I think we have to reflect more on the reason why the purchases of Treasuries appeared appropriate in the aftermath of the crisis despite the paradox that they seem to have a modest effect on the economy as a whole ... Such purchases might have played the role of an insurance policy against any start of materialization of the ultimate tail risk: the challenge to sovereign signatures (not only the weakest European ones).

The counterfactual is naturally impossible to figure out. But it is illegitimate to wonder what could have happened, in the past three years, if a number of central banks had not purchased any Treasuries, at a moment when investors and savers, losing confidence, were starting to put into question all signatures, including the traditionally unchallengeable risk-free?”
Monetary backstop in different monetary regimes

• The key effects of a successful backstop is that of ensuring that government bonds are “non-defaultable” in most circumstances, meaning that the central bank ensures that maturing bonds are convertible into currency at par, analogously to maturing reserve deposits at the central bank.
  • Their value may fall with inflation (if any), but there is no appreciable risk of haircut.

• A backstop is problematic in countries the monetary and fiscal regimes do not address the problem of multiplicity of equilibria in inflation rates (see Corsetti and Dedola 2016). This is most likely to be the case if monetary policy is run by the Treasury and thus there are no credible monetary or inflation targets.
  • An important and large subset of these countries are constrained in their ability to issue debt denominated in own currency. The CB has limited power to guarantee the face value of bonds issued in, say, dollars. The CB is not powerless, but their effectiveness is ultimately constrained by their access to international reserves.
Monetary backstop in different monetary regimes

• What about a monetary union where the monetary regime is well defined and the CB targets are sufficiently credible, but member states with fiscal independence do not internalize the effects of their decisions in the direction of either excessive expansion or excessive contraction on aggregate economic activity and inflation and may have advantages in acting non-cooperatively?

• In the urgency of creating the euro after the currency turmoil in the early 1990s, at the 1995 Madrid Summit European governments decided to ignore the problem and push it off to the “next crisis”.

• The temporary solution was to make clear that the central bank is forbidden to finance fiscal deficits, and thus cannot make national debt issued by different countries “non-defaultable”.
The incomplete monetary union

Recall that, for many reasons, at its start the euro rested on a ‘three legged’ economic constitution:

1. ECB law—price stability and central bank independence.
   - ...excluding monetary financing of government deficits.
   - The ECB monetary framework was initially designed not to rely on open market operations consisting on buying government debt markets, but on refinancing banks against collateral.

2. Growth and stability pact (GSP)
   - ...stipulating that public deficits and debt are to be kept low enough that there is minimal risk of sovereign risk crises.
   - But we have seen that, without a backstop, debt markets are inherently exposed to instability.

3. No bailout clause.
   - ...stipulating that member states are not supposed to either receive, or offer, external transfers in case of crisis.
   - But we have seen that the rule is inconsistent with self-interested solidarity.
The euro area monetary backstop
Monetary backstop by the ECB

- We have seen that providing a monetary backstop is an essential function of modern central banks. Failing in this dimensions can (and did) have very large consequences on economic prosperity, as it opens the door to disruptive instability.

- In the case of a monetary union, the size of the ECB relative to a member state makes a backstop easier to implement in practice: say, if the country in trouble is small, the ECB could actually sterilize interventions, without necessarily changing the size of its balance sheet.

- A monetary union however makes the backstop more controversial, as any balance sheet policy targeted to buy government debt raises the risk that the ECB ends up financing government deficits breaching the economic constitution of the euro.
The ECB assessment

“The assessment of the Governing Council is that we are in [...] a “bad equilibrium”, namely an equilibrium where you may have self-fulfilling expectations that feed upon themselves and generate very adverse scenarios. So, there is a case for intervening, in a sense, to “break” these expectations, which, by the way, do not concern only the specific countries, but the euro area as a whole. And this would justify the intervention of the central bank.”

ECB Press Conference, Transcript from the Q&A, September 6 2012

- In the assessment of the ECB, a backstop was necessary to ensure the integrity of the economic/financial space (hence the resilience) of the union (non-fundamental ‘break up risk’).
Sovereign risk in the European Union
The Outright Monetary Transactions (OMTs) program

- Launched in September 2012, the program introduced the option for the ECB to buy sovereign debt with residual maturity one-to-three years, provided a country requests help by entering a program with the European Stability Mechanism (ESM), which entails conditionality (the country has to agree to domestic measures to implement budgetary and structural reforms). The bond purchases are to be sterilized.

- Note that the program was effective without any OMTs purchase to date.

“When we all look back at what OMT has produced, frankly when you look at the data, it’s really very hard not to state that OMT has been probably the most successful monetary policy measure undertaken in recent time.”
Draghi at the ECB Press Conference, Q&A, June 6 2013
Assessing the success of the OMTs

- The introduction of the program was met with strong criticisms, stressing the five issues discussed at the beginning of these slides—especially the first. The case was made that high interest differentials reflected relative weak fundamentals.

- The successful implementation of the OMTs however shows that the political process sustaining the EA is (eventually) able to produce solutions to problems and come to terms with the requirement of a well functioning union.

- The OMTs are not the only game in town. As the downturn of the EA economy persisted, the ECB has also engaged in substantial QE buying government debt.
  - The ECB purchases of gov’t debt target a basket of all national debt instruments, with pre-specified weights. This reduces the level of interest rates, helps containing the spreads—without however eliminating them.
Central Bank Balance Sheet: A Comparison

Central Bank balance sheet as a percentage of outstanding govt’ debt
The OMTs and the euro area reform

- The current debate is how to reform the euro-area institutions, to ensure liquidity assistance to countries facing a loss of confidence (including the monetary backstop) and some solidarity, while at the same time containing possible ‘moral hazard’ consequences of prospective bailouts.

- The OMTs are an important building block of the monetary union. Their effectiveness should not be undermined in the process.

- But now let’s ask the question: what if in a few months there is again a large global shock? With monetary policy rates already negative and QE already large, aggregate stabilization will rest on fiscal policy. Will the EA countries be in the conditions to sustain a sufficiently strong expansion at EA level?
Addressing tail risk
Tail risk stabilization in the euro area

- The recent experience has shown that following a large shock the lower bound on nominal interest rates can constrain conventional monetary policy for a significant length of time.

- A challenge for policymakers is that when the policy rates are constrained by the lower bound, the economy can follow many trajectories and the central bank may fail to influence which path the economy assumes. Long spells with inflation varying below the central bank’s objective become possible.

- Unconventional monetary policy (forward guidance and balance-sheet) can help stabilize the economy but may prove indecisive.

- Precisely at a time when the central bank’s policy rates are expected to stay at or close to the lower bound for an extended period of time, monetary and fiscal policy together can have a sizable impact on the economy.
Tail risk stabilization in the euro area

- The OMTs program has eliminated or at least reduced the possibility of self-fulfilling creditor runs on a euro area member state, but the program per se falls short of creating the conditions for an accommodative fiscal policy stance.

- The reason is that to qualify for the OMTs, a country’s fiscal policy must be pre-approved by policymakers from the other member states, and this pre-approval is almost certain to require that the country’s fiscal policy be non-accommodative.

- In practice, national fiscal policies appear to have remained effectively non-accommodative after the start of the OMT program, close to the policies that presumably would have been required to activate government bond purchases by the ECB under the OMTs.

- No simple solution: if all national public debt in the euro area were made ‘non defaultable’, member states could engage in excessive fiscal accommodation from a union-wide perspective.
The way forward is not ‘unique’

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<th>Desirable reforms should:</th>
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<td>Ensure macroeconomic stabilization.</td>
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<td>Strengthen fiscal discipline to reduce moral hazard.</td>
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<td>Prevent self-fulfilling runs on members’ sovereign debt.</td>
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<th>Any reform will have to deal with challenges:</th>
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<td>Democratic legitimacy and accountability of any centralized institution.</td>
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<td>Credibility of fiscal discipline mechanisms.</td>
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<td>Sovereign debt restructuring as a last resort without prejudice for stability &amp; participation in EA.</td>
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One way forward: a fund active in tail risk situations

The key stumbling block, at least for the foreseeable future, is the opposition of many member states to debt mutualization via a Eurobond. But issuing bonds that are nominally risk free may be critical when circumstances threaten macroeconomic and financial stability at EA level. Here is an example of an institutional development the euro area could pursue:

- Set up an institution—a fund (or fiscal institute)—with democratic legitimacy and the authority to call for aggregate fiscal accommodation motivated by exceptional circumstances, if needed beyond the limits of the Pact;
- This fund would buy member state government bonds in the primary market and issue non-defaultable bonds, i.e., their face value should be guaranteed by the ECB;
  - the non-defaultable bonds issued by the fund would coexist with national public debt, financing the exceptional deficits.
A fund active in tail risk situations

For the fund to work properly, it should have some power to tax. In addition, it would be necessary to define:

- fiscal criteria for the member states that allow for fiscal accommodation when required by economic conditions, while being consistent with fiscal discipline for each member state (as a pre-condition for access to the fund);

- a framework ensuring that, if and when a country as a last resort decides to restructure national public debt, this can be done without prejudice to full participation in the European Union or the euro—as to preserve the integrity of the EA;

- fiscal support for the Eurosystem at the level of the euro area so that balance sheet considerations do not interfere with the ECB’s policies.

For a discussion, see ECB WP 1988/2016.
A EA and a global problem

- While the reform of the EA institutions is under way, I should stress that the need for rethinking fiscal and monetary interactions in persistent recessions (or according to some, in a secular stagnation) is debated at global level.
  - In this debate, the incomplete EA is seen as a risk factor.
- While the idea sketched above is not the only way forward, it is urgent to identify a feasible roadmap to complete the monetary union ensuring its resilience to large shocks. We have enough evidence that failure to do so create serious and unsustainable damage.
To conclude

- Where all this leave us? It is well understood that the EA is in a process of transition, and in this process the area is still quite exposed to risk—in part because the sequence of reforms implementation is not correct. See the analyses of the ECB and the Bank of Italy.

- Stability will be conquered at the end of the process. But in closing I would like to stress that this process has also an important conceptual dimension.

- We have learnt a lot about monetary unions. Getting the model of the EA right conceptually is of paramount importance to ensure that EA reforms yield the desired benefits.

- Below, I sketch a scheme that articulates the monetary dimensions involved in the process. If any of you is interested in this area of research, there is quite a bit of work to do.
### Assessing the progress to a monetary union

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<td>Even when the country is in a fixed exchange rate, it has the option to switch to floating</td>
<td>Common monetary policy rates aiming at stabilization of the union as a whole</td>
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<td>Monetary Backstop of government debt</td>
<td>Nothing really prevents a Monetary Backstop of government debt of member states by the common central bank. But in the EA none was available before September 2012, when the ECB launched its OMTs programme. This is available to member states that request assistance and official lending of the European Stability Mechanism.</td>
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<td>Lending of last resort to banks with backstop of national banking systems guaranteed by national fiscal budgets</td>
<td>Lending of last resort to banks with backstop of national banking systems primarily guaranteed by national fiscal budgets.</td>
<td>A Banking union is under construction.</td>
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Assessing the progress to a monetary union

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