

The Economics of Sovereign Debt, Bailouts and the Eurozone Crisis

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- **Motivation**

- ▶ how to deal with sovereign debt crises in a monetary union?

- **Two big themes**

- ▶ effects of intra-union transfers: ex ante and ex post
- ▶ effects of debt monetization: ex ante and ex post
- ▶ two bailouts technologies: how should they be used/combined

Model: ingredients

- Two-period model
- Three countries, with representative consumer and government
 - ▶ Italy and Germany: union
 - ▶ ROW
- All countries have initial debt b_0 and receive endowments y_1, y_2
- Asset market: sovereign debt
 - ▶ At $t = 0$, issued by governments
 - ★ bought by consumers of country j

$$U^j = c_0^j + \beta E \left[c_1^j \right] + \omega^j \lambda^s \ln b_1^{s,j} + \omega^j \lambda^{i,j} \ln b_1^{i,j}$$

- ▶ At $t = 1$, governments decide whether to repay or default

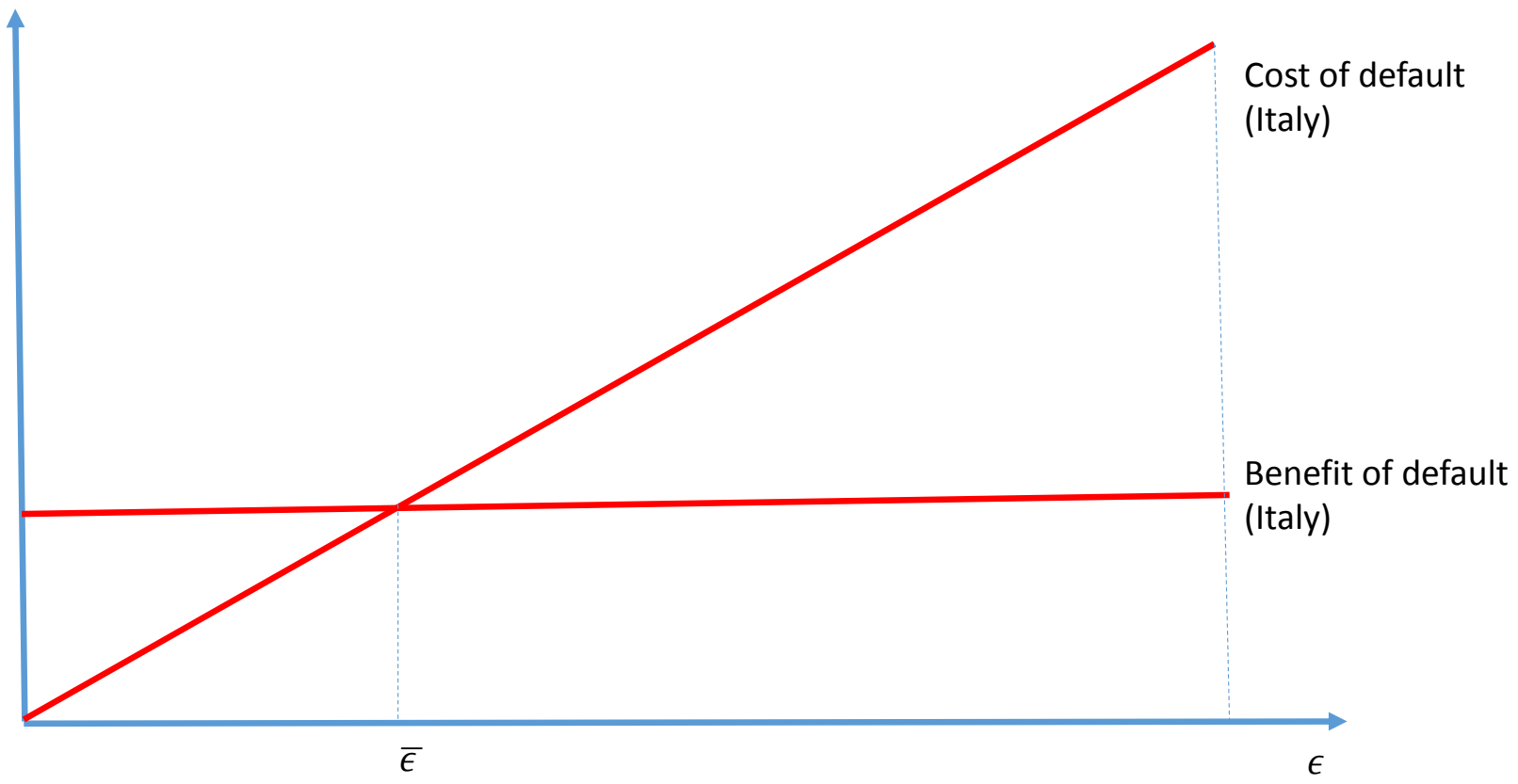
Debito a la Italiana

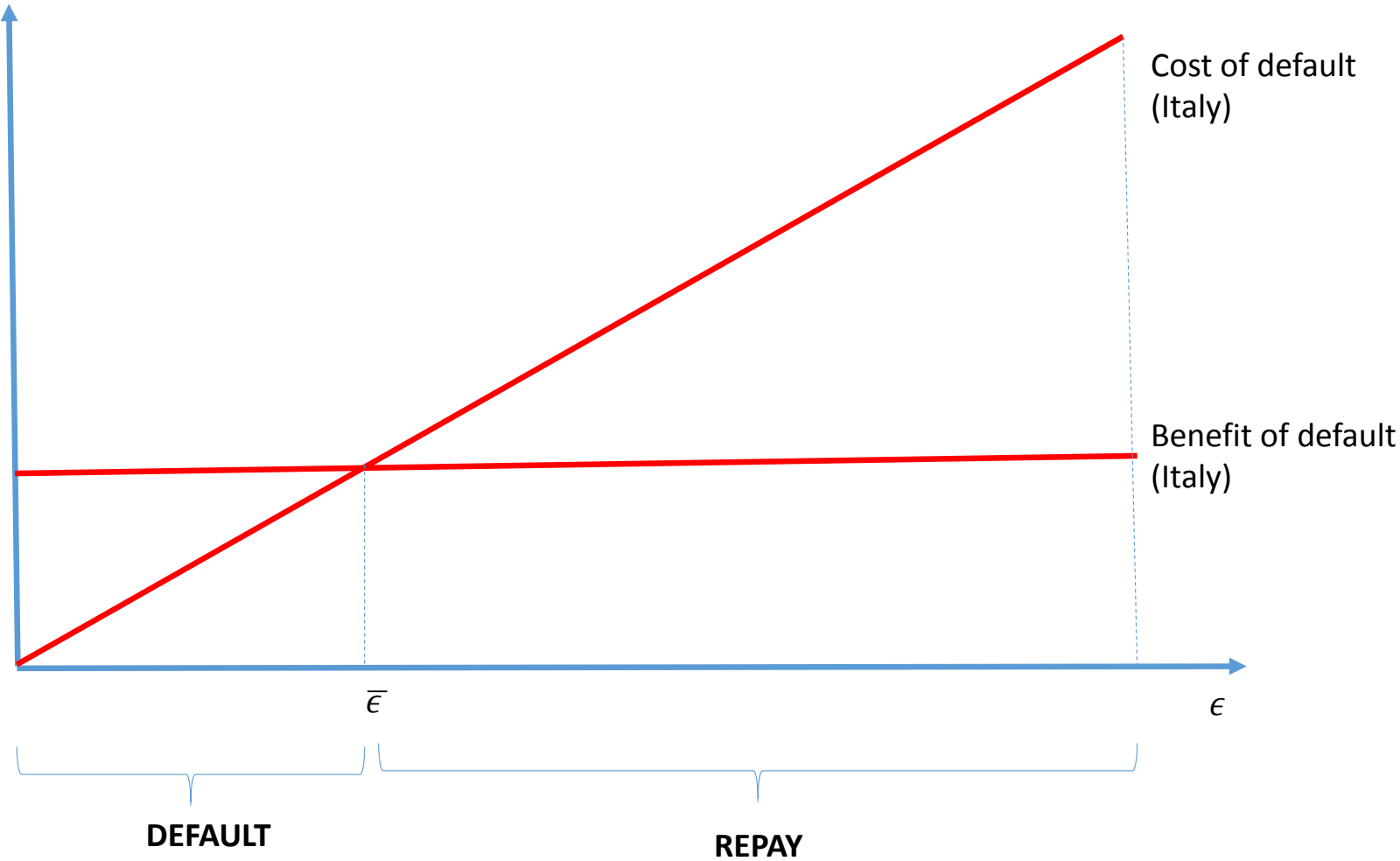
- Italy is the driving force of the model
 - ▶ high b_0
 - ▶ stochastic y_1
 - ★ may give rise to high b_1 and default
- Implications of default:
 - ▶ Italy loses fraction Φ of output
 - ▶ Germany loses fraction κ of output

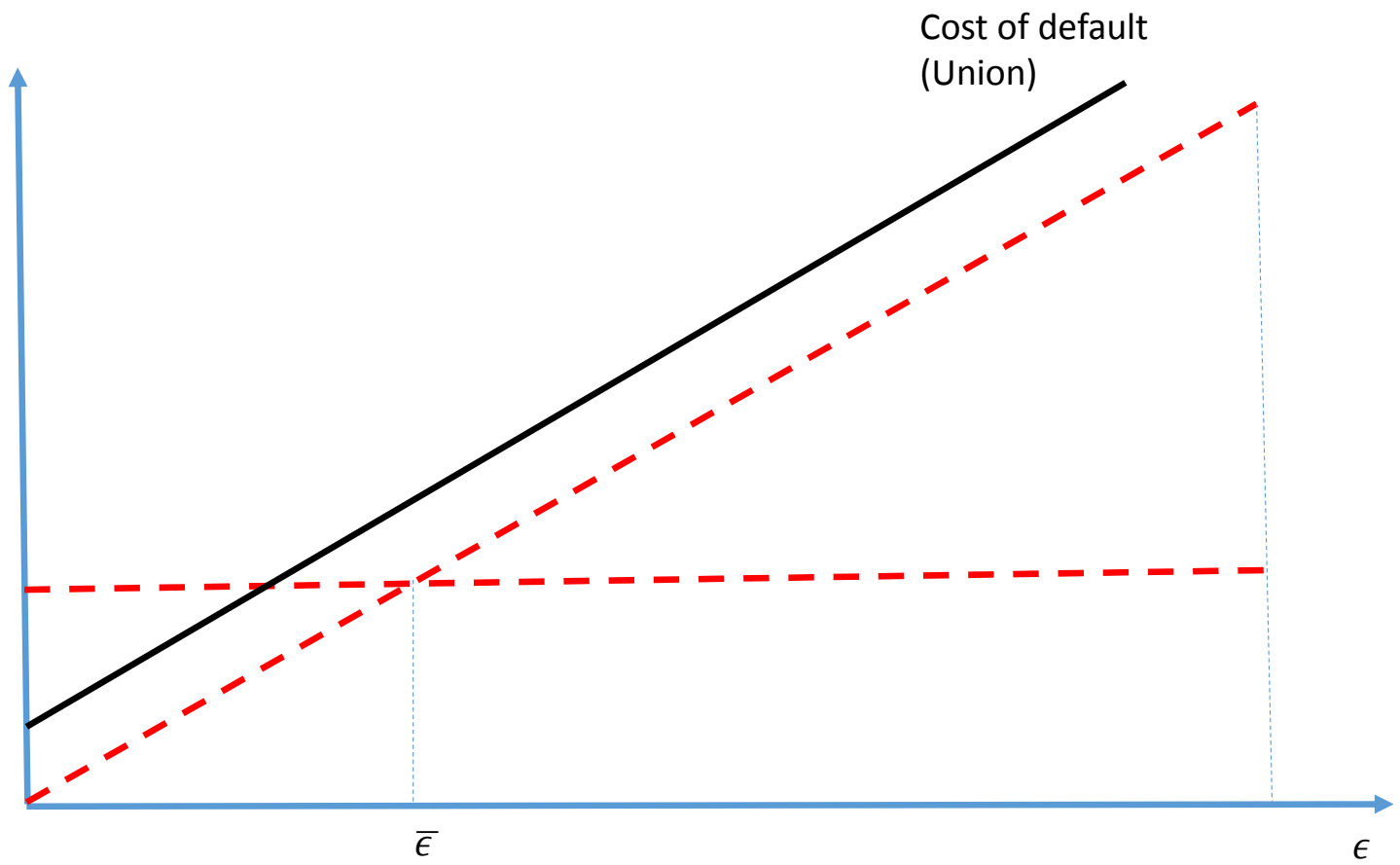
Role of transfers

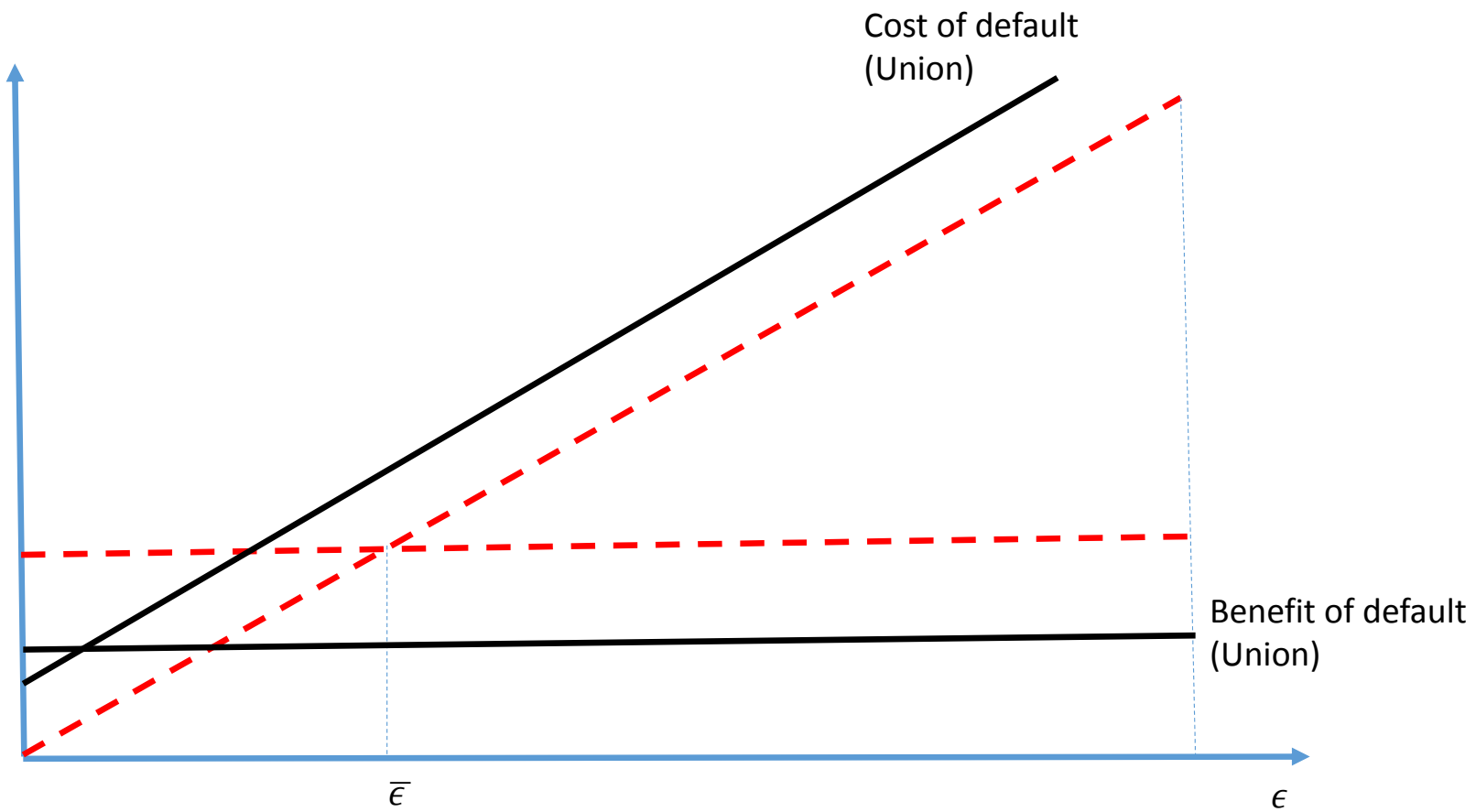
- **Ex post**

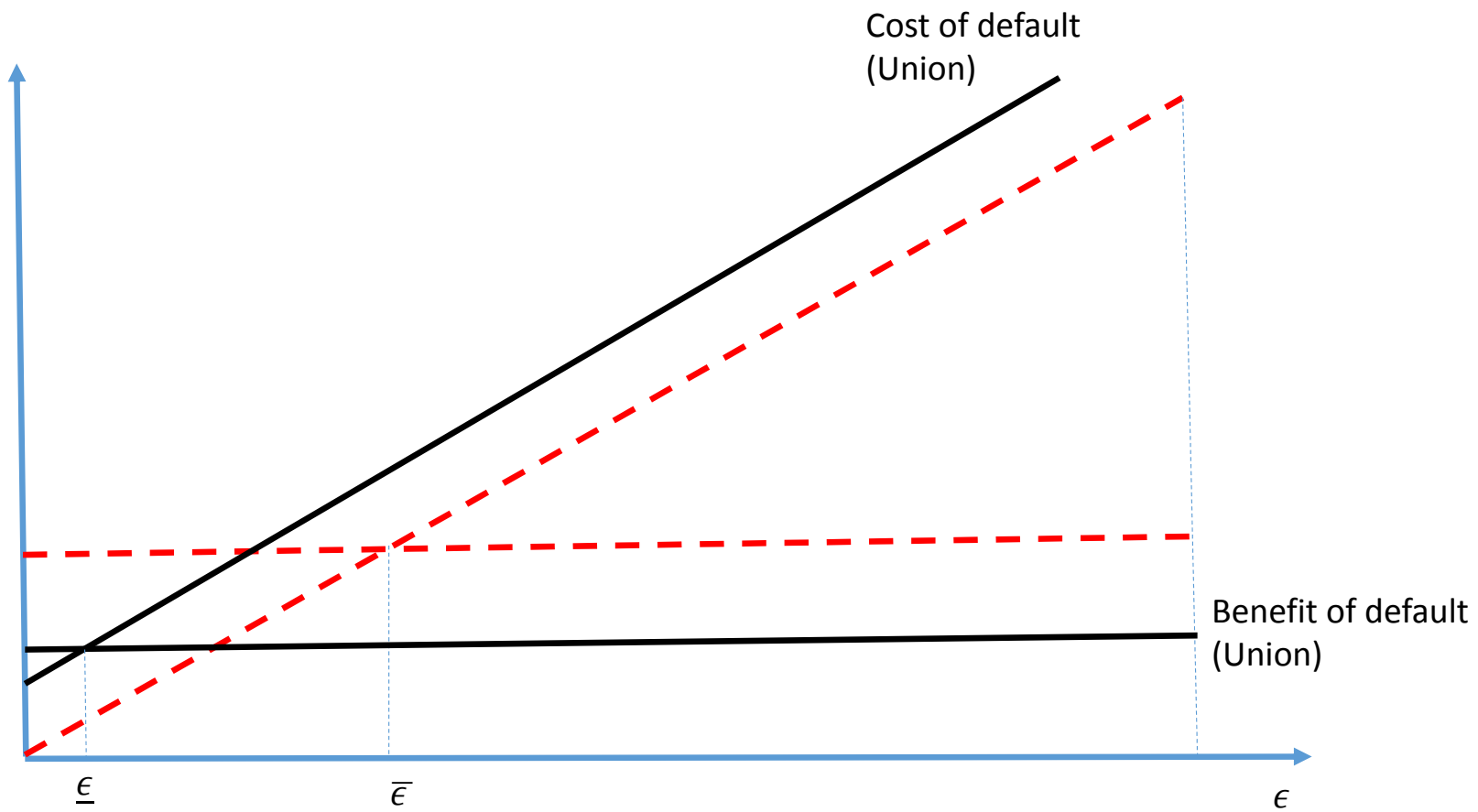
- ▶ Italy does not fully internalize costs of default
- ▶ efficient for Germany to provide transfer
 - ★ Germany captures ex post surplus

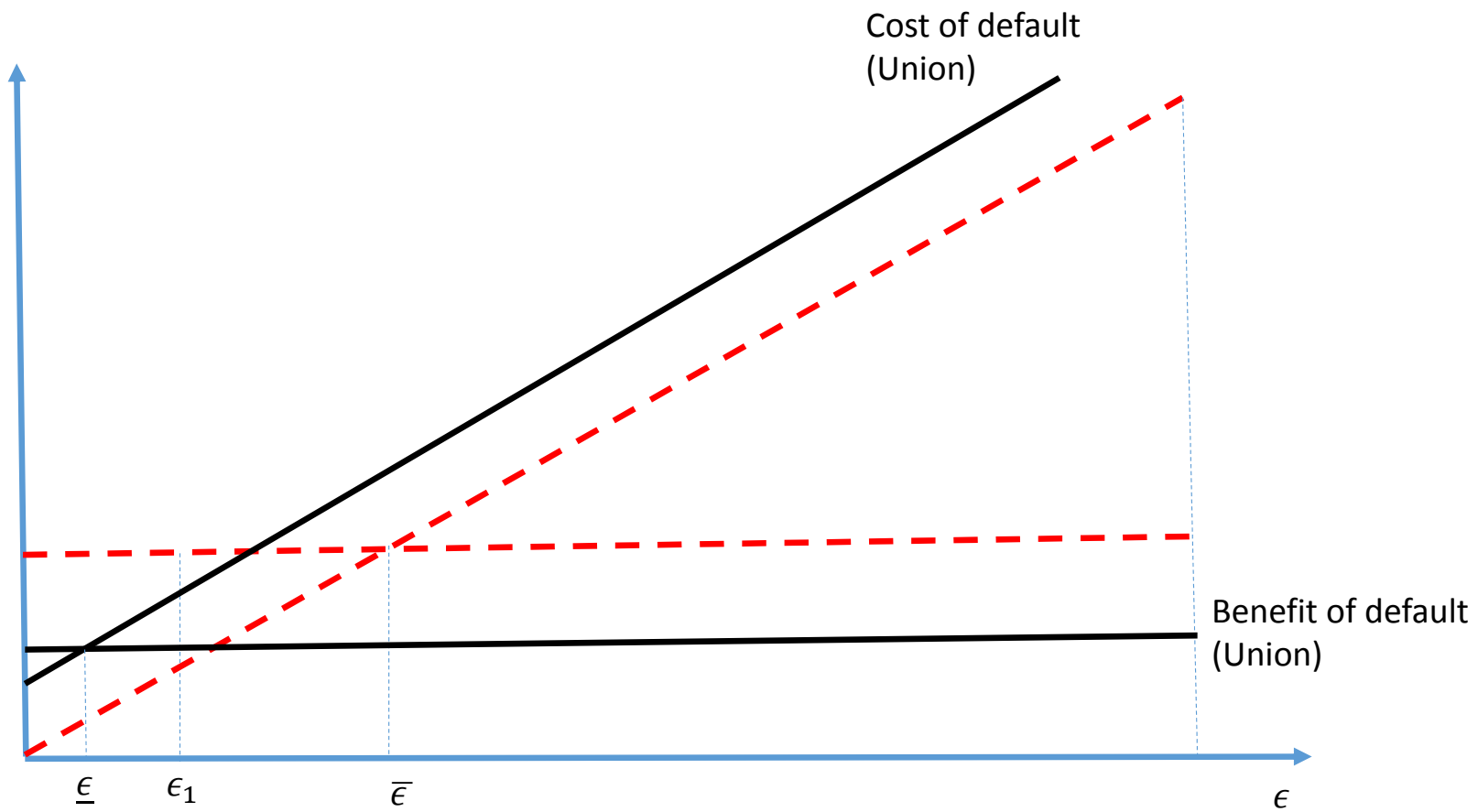


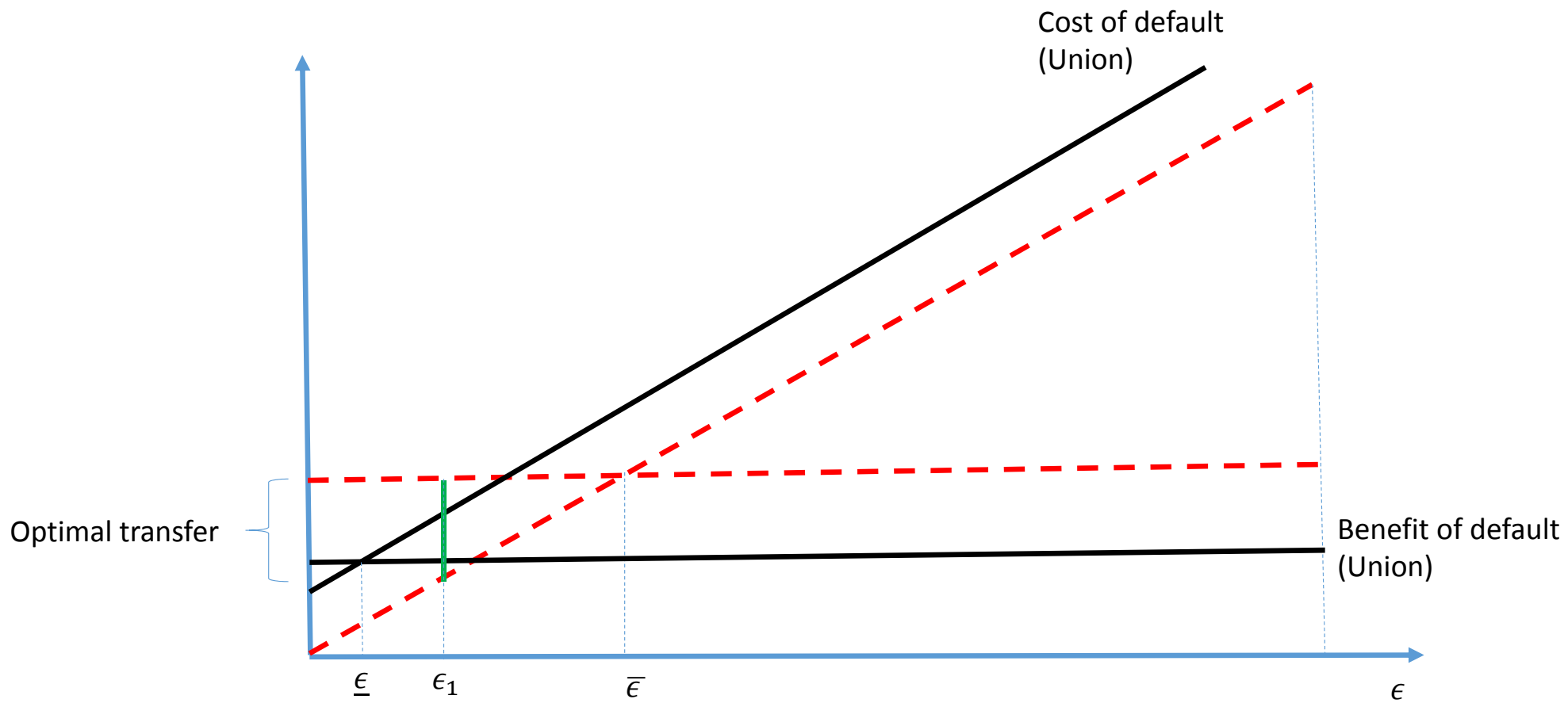




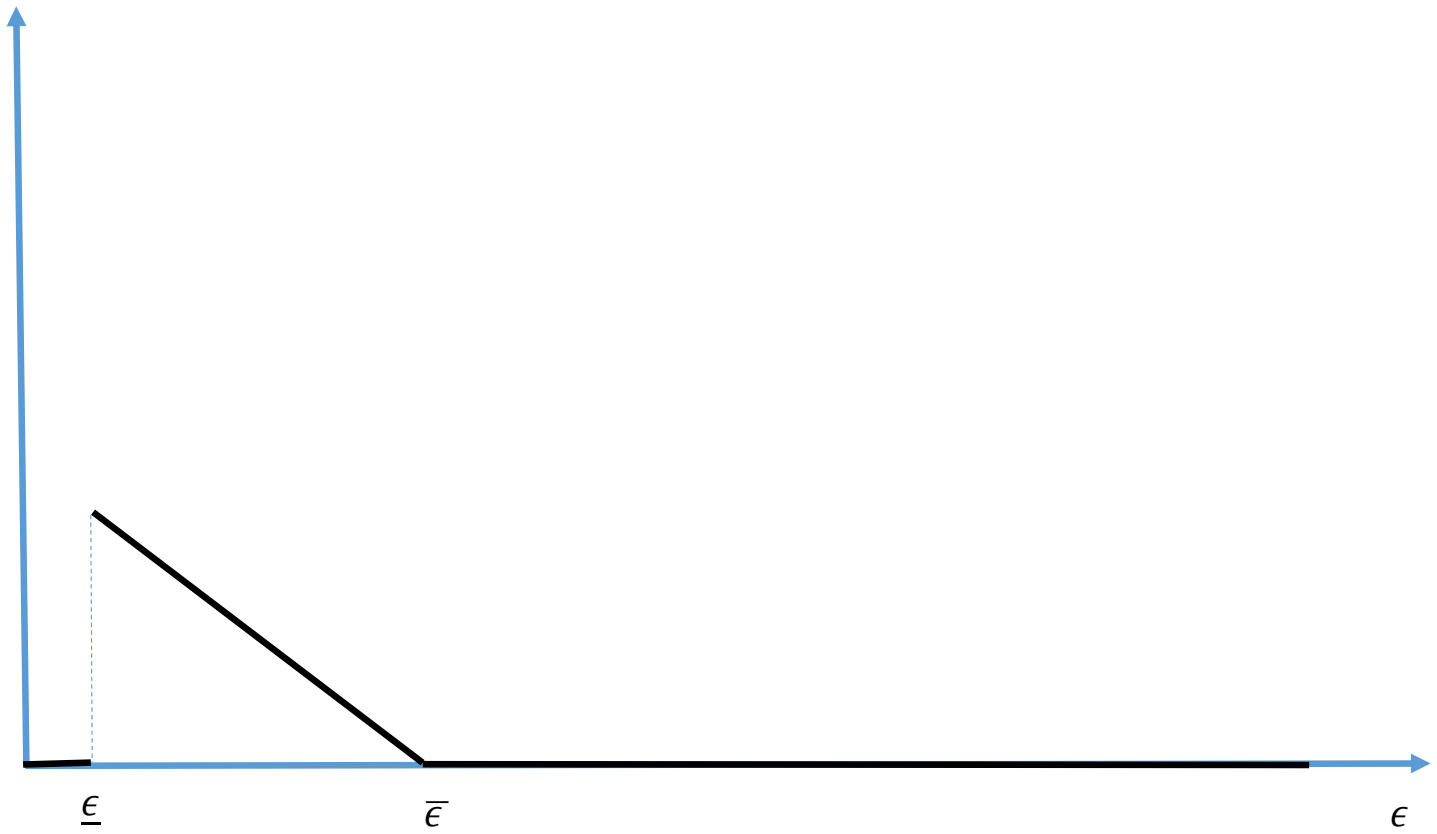








Optimal transfer



Role of transfers

- **Ex post**

- ▶ Italy does not fully internalize costs of default
- ▶ efficient for Germany to provide transfer
 - ★ Germany captures ex post surplus

- **Ex ante**

- ▶ risk-shifting: Italy issues too much debt

- **Ex ante, does Germany set prob. of transfer to zero?**

- ▶ not necessarily
- ▶ might push Italy to default at $t = 0$: losses on Germany
- ▶ authors' interpretation:
 - ★ *Germany did not fully eliminate possibility of bailouts to prevent costly defaults of highly indebted union members*

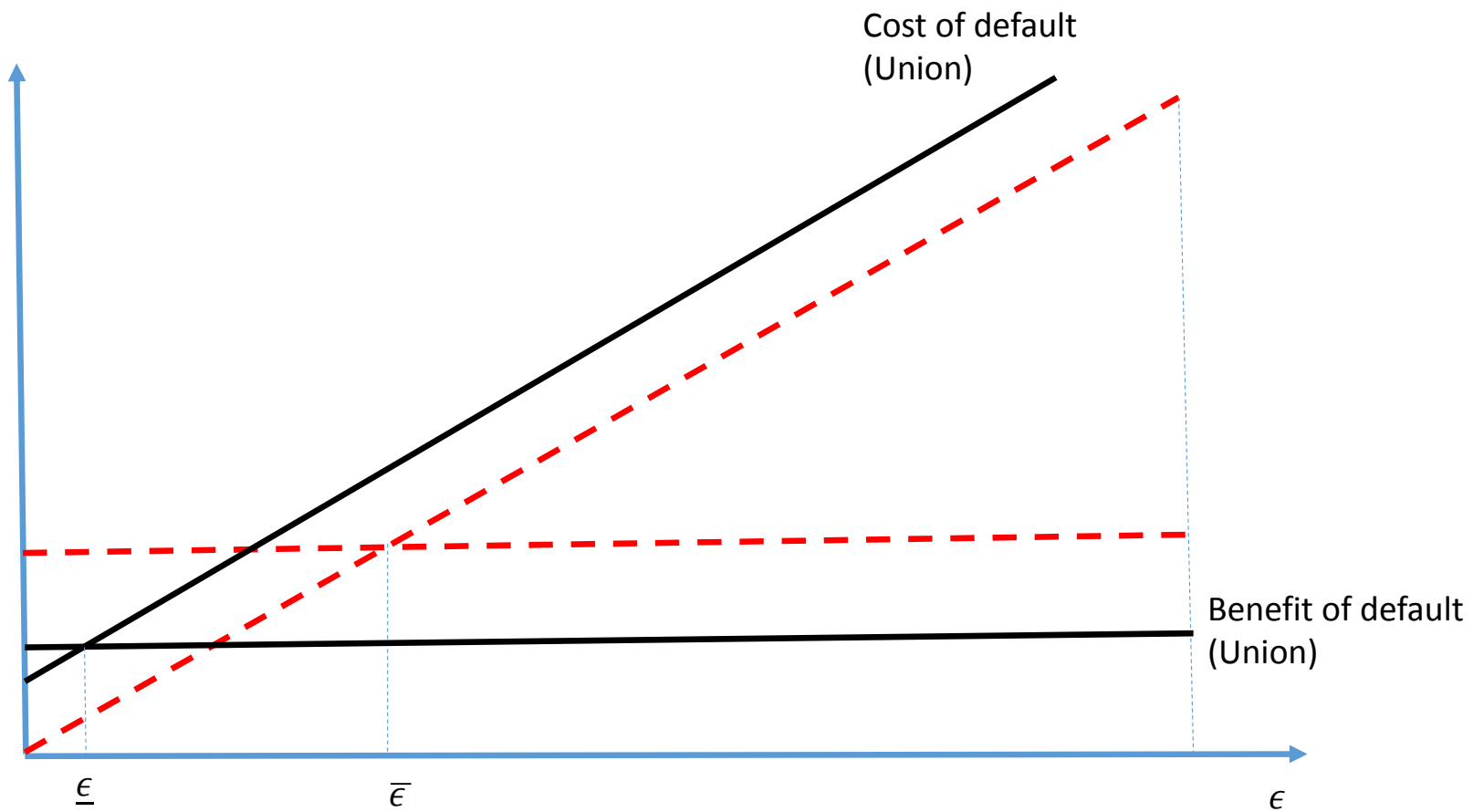
Debt monetization

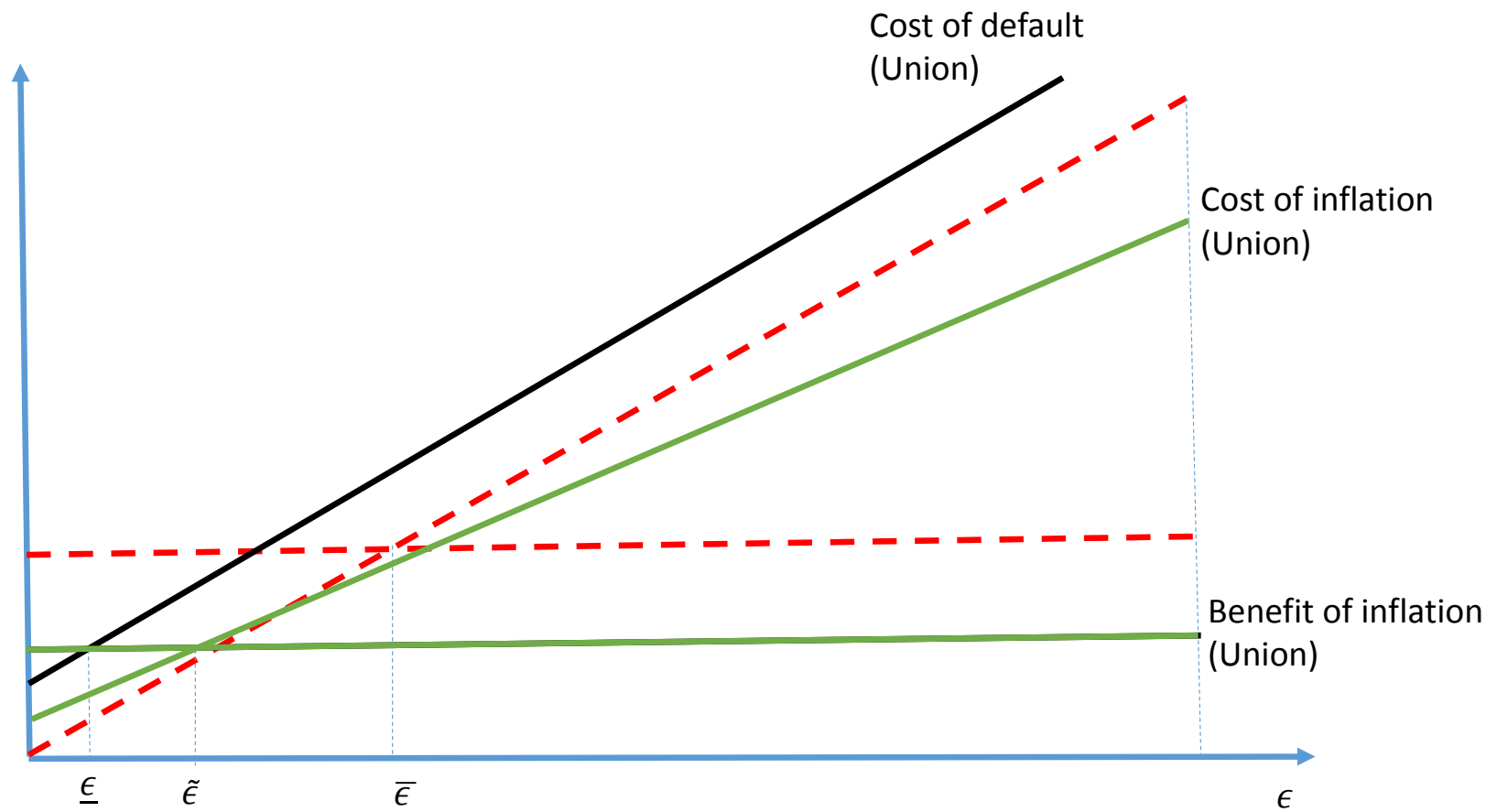
- Tax on debt repayment $t < \bar{t}$: applies to Italy and Germany
 - ▶ reduces debt burden wrt ROW
 - ▶ union-wide loss of output: $\delta \cdot y_1 < \Phi \cdot y_1$
- At $t = 1$:
 - ▶ Germany chooses transfer (contingent on repayment)
 - ▶ ECB chooses inflation (contingent on repayment)
 - ▶ Italy decides whether or not to repay

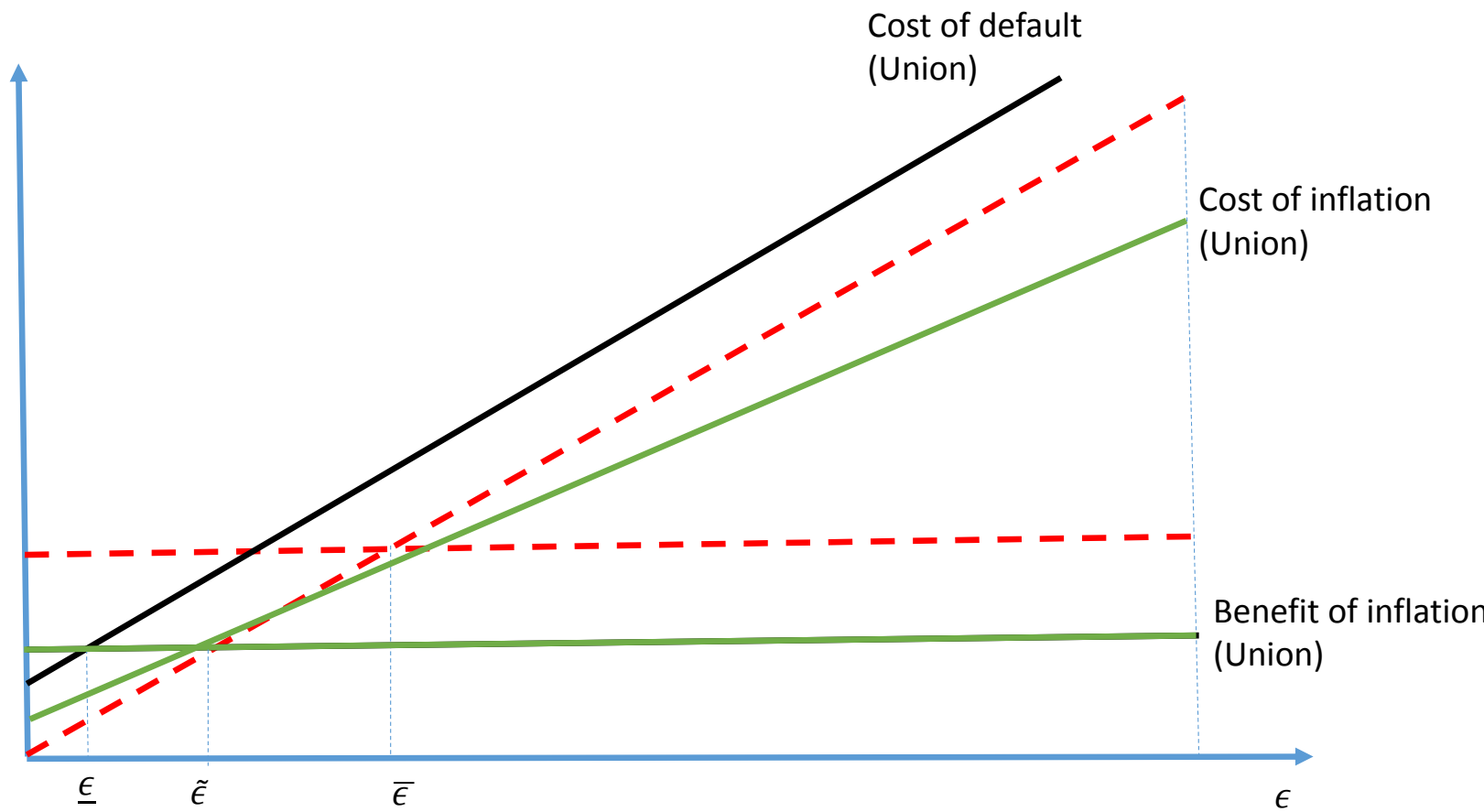
Debt monetization

- **Ex post**

- ▶ With transfers: monetization ex post efficient
 - ★ reduces transfers and instances of default
- ▶ Without transfers: monetization ex post *constrained* efficient
 - ★ although costly, used to avoid default



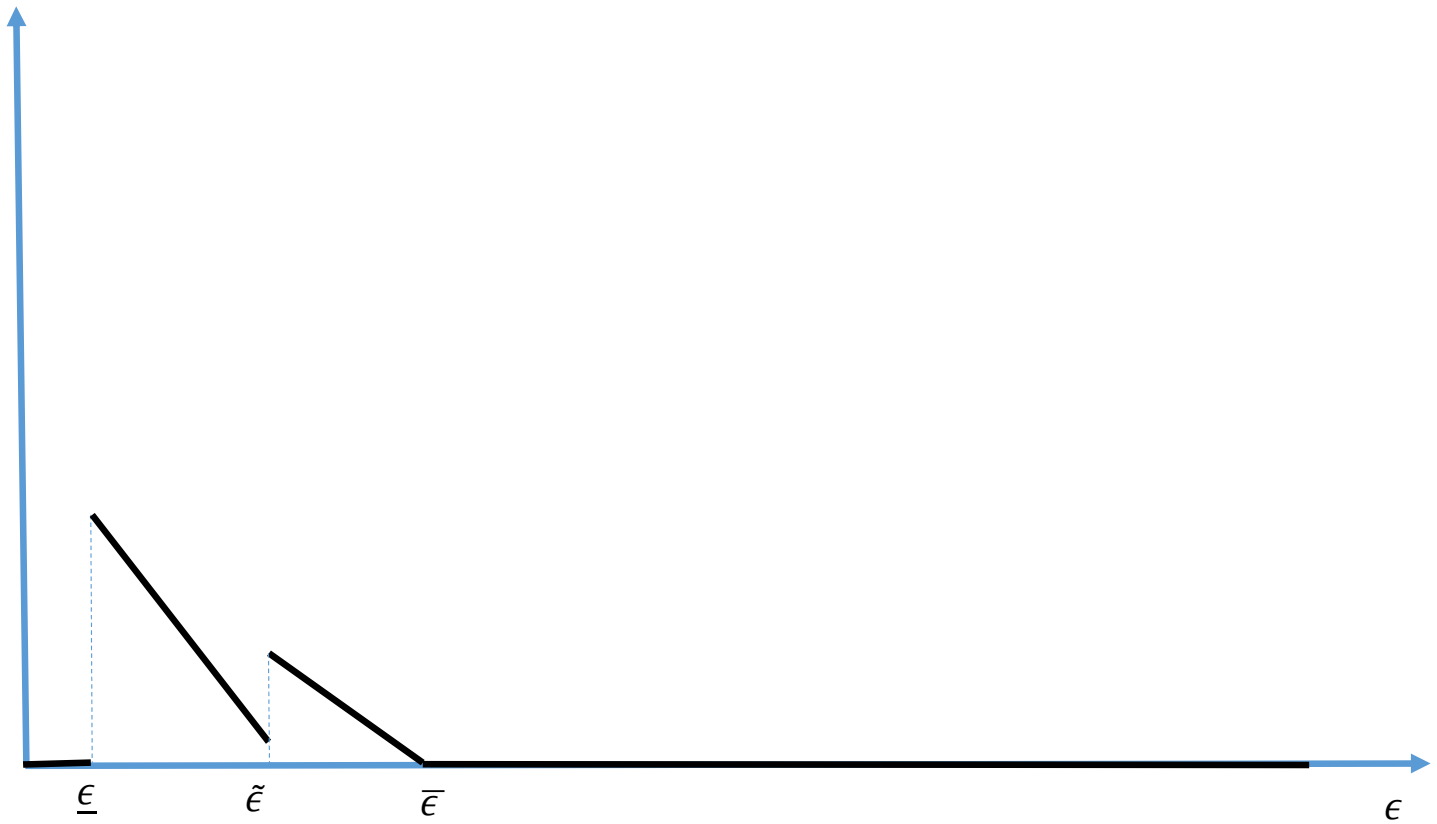


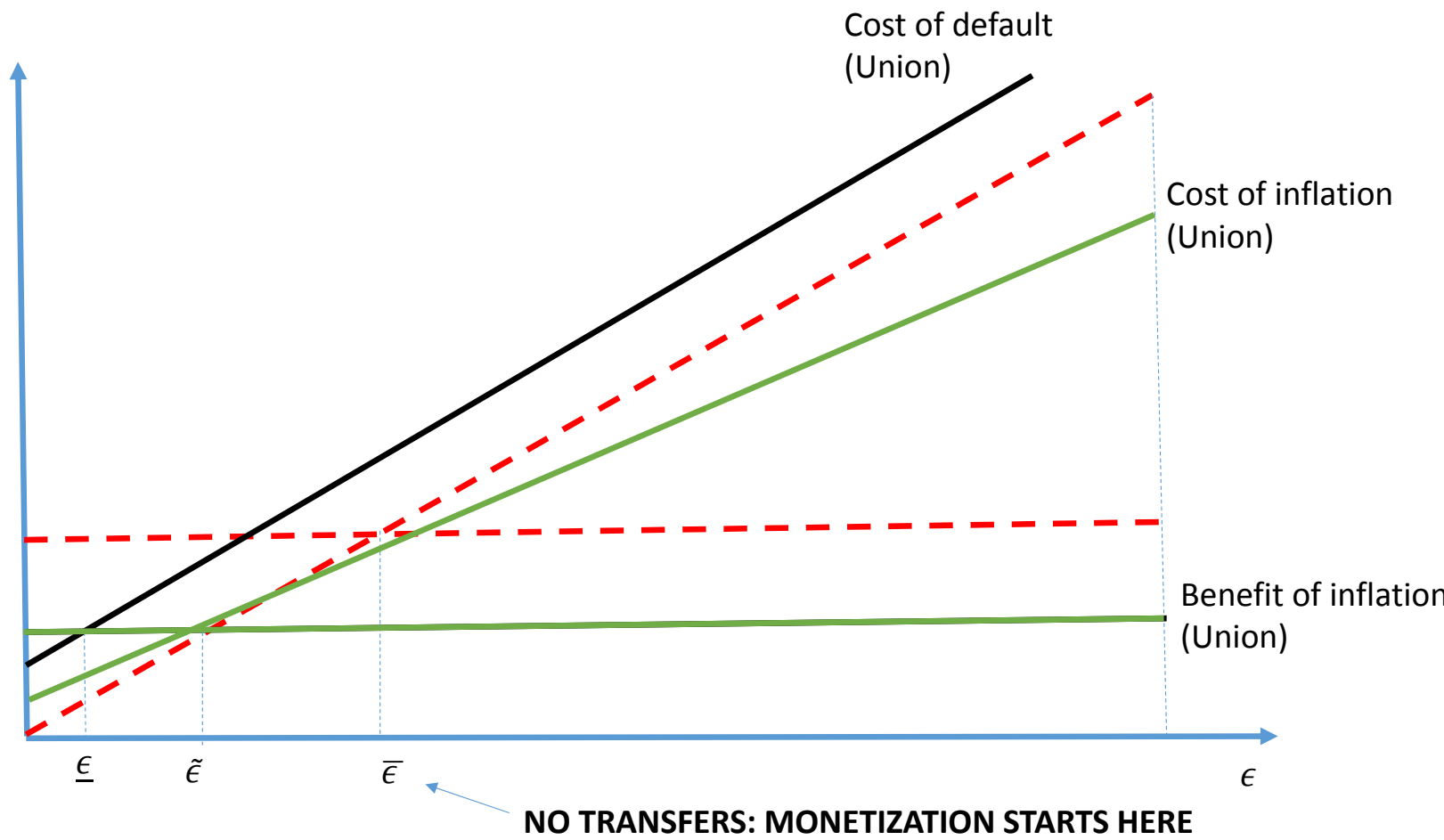


REPAY W/TRANSFERS AND MONETIZATION

REPAY W/TRANSFERS

Optimal transfer





Debt monetization

- **Ex post**

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- **Ex ante (in progress)**

- ▶ monetization \uparrow inflation risk and \downarrow German transfers: \downarrow Italian debt
- ▶ monetization \downarrow default risk and \uparrow German transfers: \uparrow Italian debt

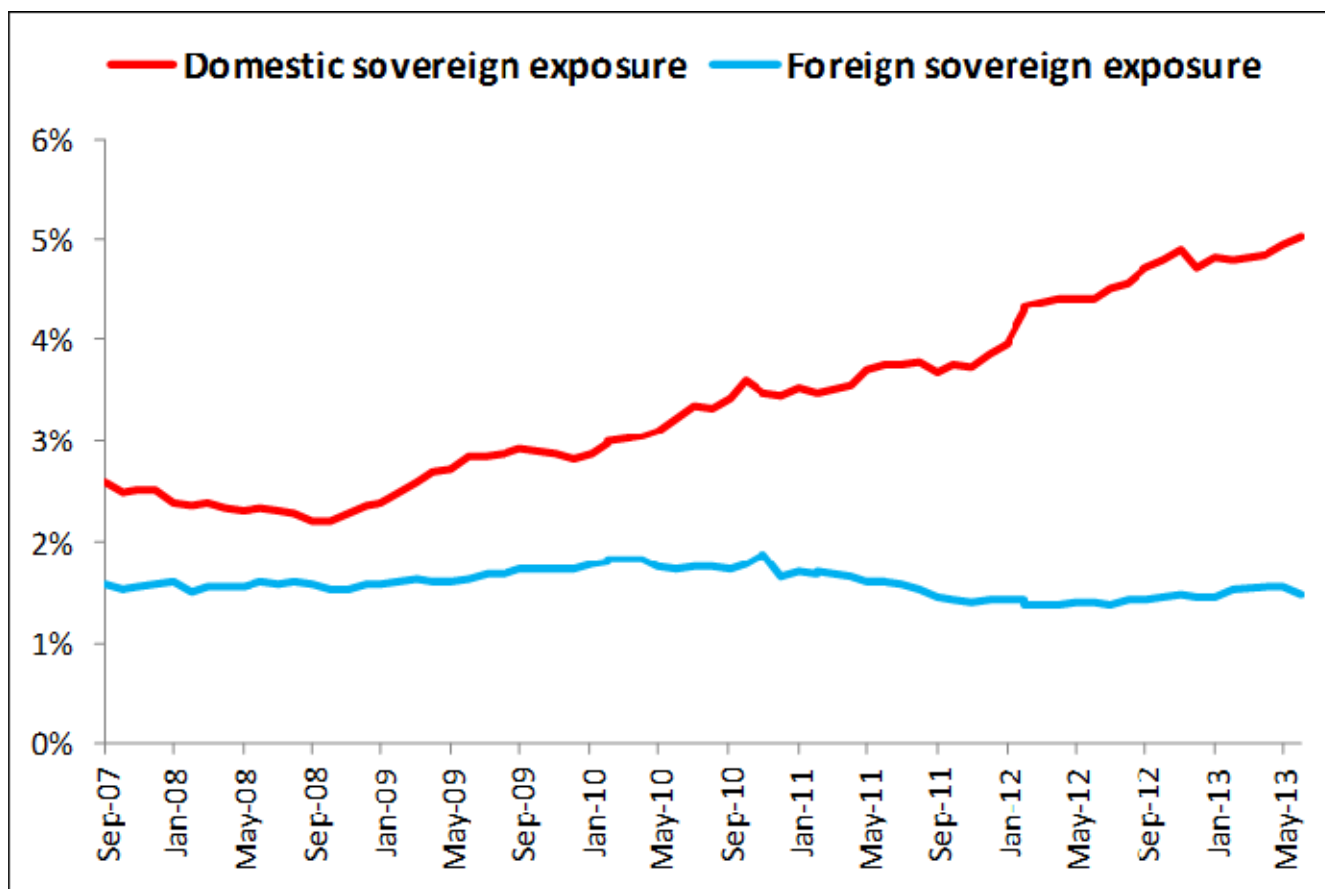
Comment I: environment

- Bonds in the utility function

$$U^j = c_0^j + \beta E \left[c_1^j \right] + \omega^j \lambda^s \ln b_1^{s,j} + \omega^j \lambda^{i,j} \ln b_1^{i,j}$$

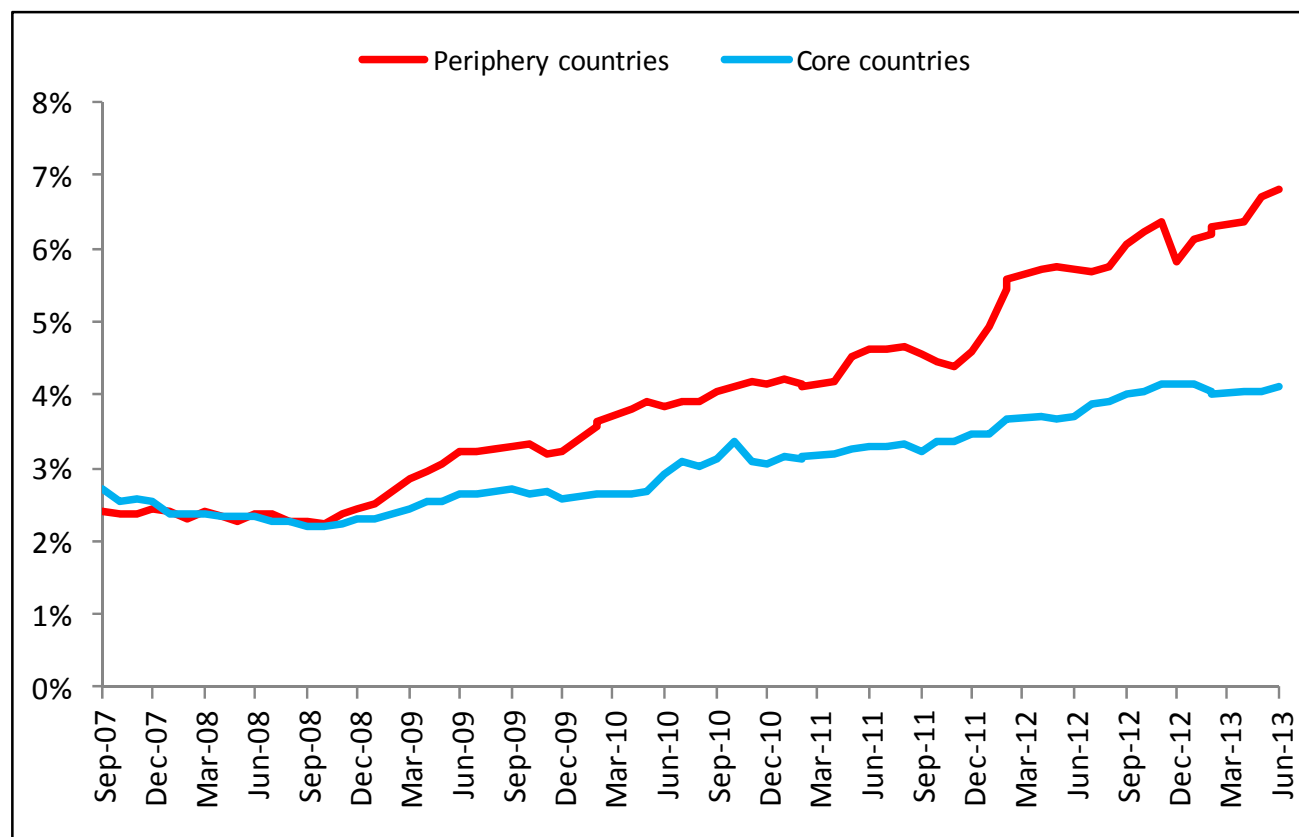
- ▶ liquidity services used to pin down portfolios
- What are these liquidity services?
 - ▶ why are these independent of the bonds' risk of default?
 - ▶ why don't they change with the state of the economy?
- Fluctuations in bond portfolios: major aspect of recent crisis
 - ▶ Broner, Erce, Martin, Ventura (2014), Brutti and Saure (2015)

Figure 2. Domestic and sovereign exposures of Euro area banks



Notes: The sample comprises 247 banks from Eurozone countries. Sovereign exposures are expressed in percent of total bank assets. Sources: ECB Individual MFI Balance Sheet Statistics, Bankscope.

Figure 3. Domestic exposures of banks in Eurozone core vs. periphery countries



Notes: The sample comprises 247 banks from Eurozone countries. Periphery countries include Greece, Italy, Ireland, Portugal, and Spain. Core countries include Austria, Belgium, Finland, France, Germany, Luxembourg, and The Netherlands. Sovereign exposures are in percent of total bank assets. Sources: ECB Individual MFI Balance Sheet Statistics, Bankscope.

Comment I: environment

- Bondholdings driven by
 - ▶ liquidity
 - ▶ risk-taking: correlated risks, bank bailouts, regulation, etc...
 - ▶ financial repression
- Transfers and monetization may have very different effects on portfolios
- Example: collective moral hazard
 - ▶ German holdings of Italian bonds vs. German bailouts

Comment II: costs of default / transfers

- **Main result:** eliminating bailouts may not be optimal ex ante
 - ▶ otherwise, Italy defaults and imposes costs
- But how large are these costs before integration?
 - ▶ let Italy default, then integrate
- Alternatively, isn't it more efficient to provide lump-sum transfer at $t = 0$

Comment III: monetization

- **Main result:**

- ▶ eliminating bailouts ex ante: may lead to inefficient inflation ex post
- ▶ however, inflation does not lead to risk-shifting ex ante

- Unclear net effect

- More general question

- ▶ suppose union has to choose among two bailout technologies
 - ★ differ in ex post efficiency
 - ★ but....most efficient one ex post generates more risk shifting ex ante
- ▶ which one is best?

Conclusion

- Simple but rich model
- Bondholdings are perhaps weakest point
- Interesting interaction between bailouts and monetization
 - ▶ perhaps frame it in terms of bailout technology
- Look forward to reading the next version