

Introduction to Sovereign Debt & Restructuring

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Brain Teaser

Question: You have **15 balls** that are **randomly distributed** in **10 boxes**.

What is the **expected number of empty boxes** once you distribute the 15 balls?



Solution: Brain Teaser

Answer: The expected number of empty boxes is ~ 2.06 .

Let us denote x_i for box i as indicator variables such that $x_i = 1$ if box i is empty and $x_i = 0$ if box i has balls within. Thus:

$$X = x_1 + x_2 + \dots + x_{10}$$

As such, given **linearity of expectations** (X is the expected number of empty boxes):

$$E(X) = E(x_1) + E(x_2) + \dots + E(x_{10})$$

For any given x_i , we must have $E(x_i) = \left(1 - \frac{1}{10}\right)^{15}$

Thus, the **expected number of empty boxes** is $10 \cdot \frac{9^{15}}{10^{15}} = \sim 2.06$.





Agenda

- ❖ Debt & Covenants
- ❖ Bankruptcy & Restructuring
- ❖ Credit Derivatives
- ❖ Case Studies





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Debt & Covenants



Secured vs. Unsecured Debt

❖ Debt with a collateral interested is called **secured debt**.

Secured	Unsecured
<ul style="list-style-type: none">• Backed by collateral• Based on quality of collateral and creditworthiness• Often floating rate (SOFR + spread)• Mandatory Amortization• Lower interest rate• Often banks are lenders	<ul style="list-style-type: none">• No collateral• Based only on creditworthiness of borrower• Often fixed rate• Can be bullet payment or paid in kind• Higher interest rate

Covenants

Covenants:

- ❖ **Promises agreed to by the borrower**
- ❖ If they **do not abide**, lender can place borrower in **default**
- ❖ Meant to **protect the lender**

In theory, the **more covenants**, the **lower** the **interest rate** because the lender has **less risk**:

- ❖ Maintenance vs. Incurrence

Maintenance Covenants

Definition: **Tested regularly, and the borrower must be compliant.**

Examples:

- ❖ Debt/EBITDA ratio below certain number
- ❖ Interest Coverage ratio higher than certain number

If they are **not in compliance**, the firm can be **placed in technical default**.

Incurrence Covenants

Definition: Only **comes into effect** if the **borrower** is trying to do a **specific action**.

Examples:

- ❖ If the borrower wants to take on new debt, debt/EBITDA must be below 5.0x after taking on the new debt.
- ❖ This **does not mean** they **cannot** have a **debt/EBITDA of 6.0x**.
- ❖ The firm must be below 5.0x **after taking on new debt**.

Covenant Breach / Distress

- ❖ The borrower is **placed in technical default**.
- ❖ Depending on credit documents, **lender can accelerate default** if there is a provision allowing this
- ❖ In general, lenders will look to **work with borrower to cure technical default** as acceleration is rarely the best method
- ❖ The **lenders are focused on preserving their return**

Consequences:

- ❖ Rating Downgrade
- ❖ Equity trades close to 0, debt trading at discount
- ❖ Poor Financials (e.g., Cash Flow, AP, Margins, Revenue, etc.)



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Bankruptcy & Restructuring



Sovereign Debt: FX vs. Local Debt

FX Debt:

- ❖ **Non-local currency** debt – usually cheaper by **reducing currency risk**.
- ❖ Helps sovereigns **pay for imports or mitigate CA imbalances**.

However, when borrowing in FX, sovereigns have to pay in FX:

- ❖ Method I: Exports – sell goods to the rest of the world in dollars.
- ❖ Method II: Use FX Reserves – Central banks can accumulate reserves of other currencies to meet debt payments.
- ❖ Method III: Bailout – Approach the IMF for a bailout package.

Local Debt:

- ❖ **Debt** denominated in **local currency**.

Bankrupt Sovereigns

A **bankrupt sovereign** is one that has **run out of FX** to meet obligations:

Balance of Payments Crisis:

- ❖ A country **imports more than it exports**, running down its **FX reserves** to pay for imports.

Banking Crisis:

- ❖ If **savers save in FX**, rather than local currency, a **run on the banks** can cripple FX reserves.

Currency Crisis:

- ❖ If a **country pegs its currency**, it **intervene** with **FX** to **support the peg**.

Financial Variables

Example: A bond at \$100 maturing in 5 years pays a 5% interest rate

- ❖ Principal Haircut: **reduces** the **face value** of the obligation
 - ❖ I owe you \$80 instead of \$100 now

- ❖ Coupon Haircut: **reduces** the **interest rate** on the obligation
 - ❖ I pay you 3% interest instead of 5% interest

- ❖ Maturity Extension: **extends** the **payment term** of the obligation
 - ❖ I owe you this money in 10 years instead of 5 years

Legal Variables

There are several legal terms to consider:

- ❖ Collective Action Clause – Specifies **voting thresholds** for a deal to be approved, **preventing** investors from “**holding out.**”
- ❖ Jurisdiction – Covers which **legal jurisdiction governs** the bonds (typically New York / London or “local”).
- ❖ Exit Consents - Legal provisions that **strip bondholders** who **refuse** to **accept** an offer of **legal protections**, **incentivizing cooperation.**



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Credit Derivatives



Credit Default Swap (CDS)

- ❖ Form of credit derivative that **hedges** an **investor's exposure** to credit risk in a bond

Two Parties:

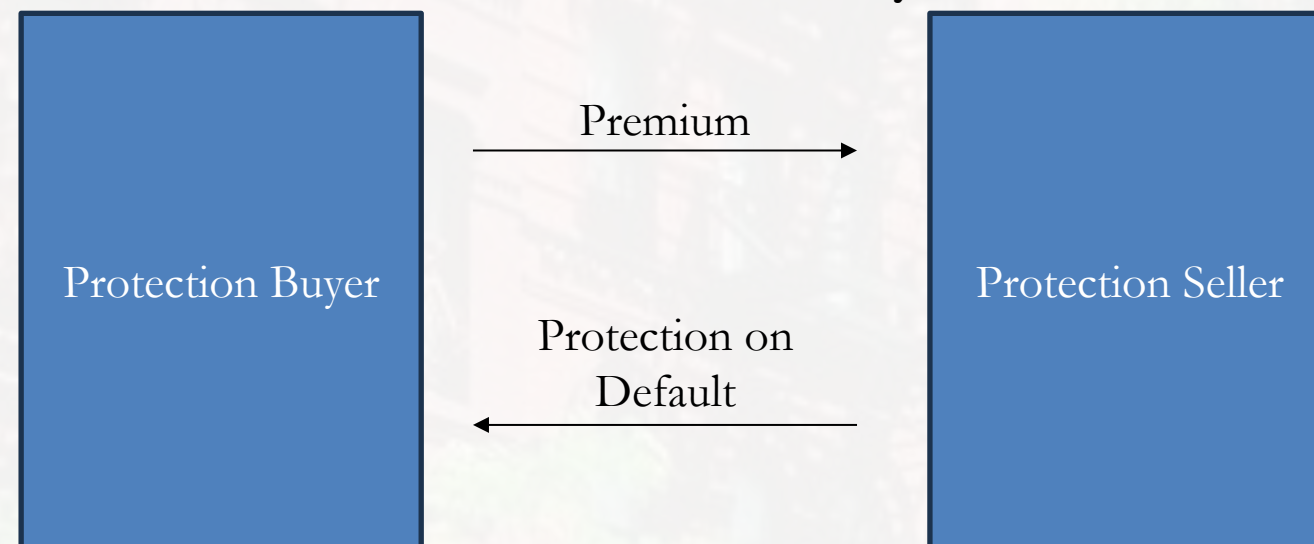
- ❖ Protection Seller: **Sells** the swap, takes a **bullish** view on credit risk
- ❖ Protection Buyer: **Buys** the swap, takes a **bearish** view on credit risk

Mechanics:

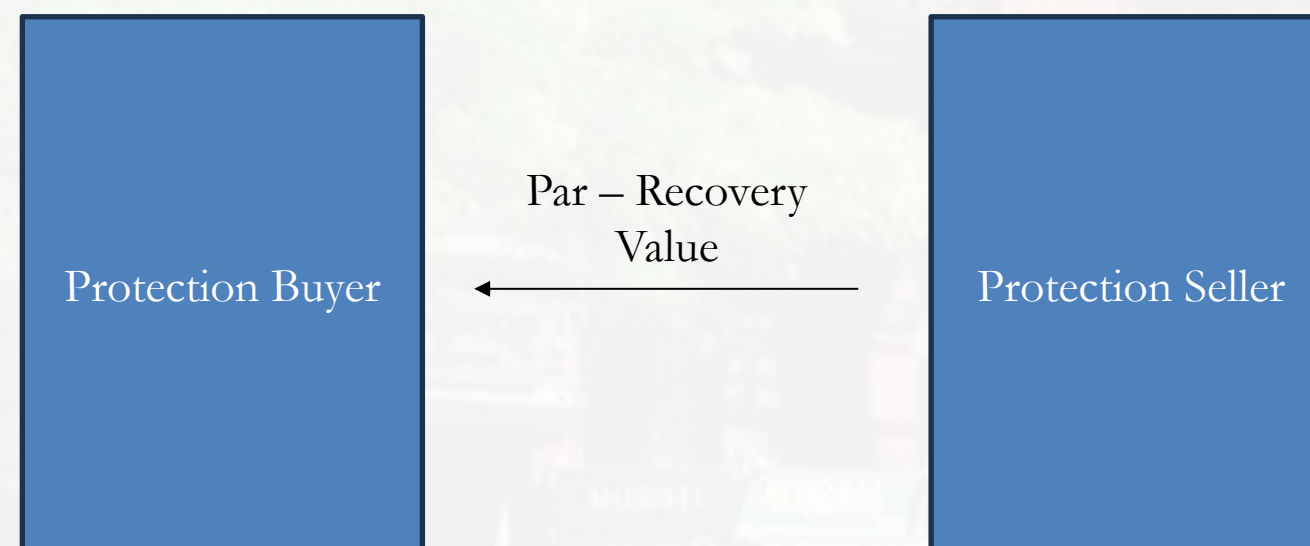
- ❖ **Buyer pays** the **basis** – annualized figure that is **usually paid quarterly**
- ❖ This **spread** is usually **100-bps** or **500-bps** (**difference** between fixed and market spread is **settled upfront**)

CDS Transaction

CDS Cash Flows Before Maturity / Default



Cash Settlement in Case of Default



CDS Triggers

Hard credit events:

- ❖ **Automatically triggers** CDS contracts.
- ❖ E.g., bankruptcy, failure to pay, obligation acceleration and default.

Soft credit events:

- ❖ **No automatic trigger** of CDS.
- ❖ E.g., “restructurings.”

Restructuring credit events must be **binding** on **all holders**, leaving **voluntary restructurings** as a **gray area** under the law:

- ❖ **Basel Laws** and a **lack of Chapter 11** rules in **Europe** leaves **restructurings relevant**.

Physical vs. Cash Settlement

Physically Settled:

- ❖ Involves a **transfer of the physical, underlying good** (think: oil futures)

Cash Settled:

- ❖ Involves a **transfer of cash** between both parties (think: Treasury futures)

Prior to the mid-2000s, CDS contracts were physically settled derivatives:

- ❖ The CDS buyer would have to **enter the market** and **physically purchase the underlying bond** and transfer it to the CDS seller
- ❖ The **rapid growth of CDS markets** as independent of the physical cash bond market **necessitated a shift towards cash settlement to avoid market imbalances** (e.g., a **short squeeze**).

CDS Auctions

Purpose:

- ❖ **Two-staged auction** designed to **mimic a physically settled contract**
- ❖ Traders submit physical settlement requests (PSRs)
 - ❖ Long Protection: PSR to sell
 - ❖ Short Protection: PSR to buy

Key Quantities:

1. Initial Market Midpoint (IMM)
2. Net Open Interest (NOI)
3. Adjustment Amounts

Stage I

Characteristics:

- ❖ Traders submit prices to buy / sell defaulted security
- ❖ **Determines the IMM** – places bounds on the final price

Adjustment Amounts:

- ❖ **Penalties levied** for being on the “**wrong**” side of the market
- ❖ Adjustment Amount = $(\text{Quoted Price} - \text{IMM}) \times 0.01 \times \text{Quotation Amount}$

Example: CIT Auction

Dealer	Bid	Offer
Bank of America Securities LLC	69.25	71.25
Barclays Bank PLC	67	69
BNP Paribas	69	71
Citigroup Global Markets Inc.	68.75	70.75
Credit Suisse International	70	72
Deutsche Bank AG	70.25	72.25
Goldman Sachs & Co.	66.5	68.5
HSBC Bank USA, National Association	69	71
J.P. Morgan Securities, Inc.	69.75	71.75
Morgan Stanley & Co. Incorporated	68	70
Nomura International PLC	70	72
The Royal Bank of Scotland PLC	69	71
UBS Securities	70	72

Bid	Offer	Crossing
70.25	68.5	Y
70	69	Y
70	70	Y
70	70.75	N
69.75	71	N
69.25	71	N
69	71	N
69	71.25	N
69	71.75	N
68.75	72	N
68	72	N
67	72	N
66.5	72.25	N

Used to compute IMM

IMM: 70.25

Stage II

Details:

- ❖ Dealers **submit limit orders** to fill the Net-Open Interest
- ❖ Auction Final Price: **price** of the **limit order** that **fills** the **NOI**:
 - ❖ Final Price \leq IMM + Cap Amount (if NOI is to sell)
 - ❖ Final Price \geq IMM – Cap Amount (if NOI is to buy)

Insufficient Limit Orders:

- ❖ Final Price = 0 if **NOI** is to “sell”
- ❖ Final Price = 100 if **NOI** is to “buy”

CDS Trading

CDS Basis Trading:

$$\text{CDS Basis} = \text{CDS Rate} - \text{Spread}$$

- ❖ If the **CDS basis spread** is **lower** than the **bond spread**, one can make a **negative basis trade**:
 - ❖ **Buy the bond and CDS** – receive the delta in **spread without risk**.

Other Trading Structures:

- ❖ Can be utilized as a **leveraged viewpoint** on **credit risk**
- ❖ Traders employ CDS in **correlation trades** (via portfolios of CDS)



Case Studies

- ❖ Fannie Mae / Freddie Mac (2008)
- ❖ Greece (2012)



Fannie Mae / Freddie Mac (2008)

CDS Trigger:

- ❖ **Bankruptcy** served as the **CDS trigger**, and the firms were moved into **conservatorship**.
- ❖ This **implies government support**.

Auction:

- ❖ CDS auctions are **held separately** for senior and subordinated debts.
- ❖ Both the senior and the subordinated paper would **likely** be **made whole by the government**.
- ❖ Fannie and Freddie's **subordinated debt settled higher** than its **senior debt**, despite both having the same conservatorship arrangement.

Senior	Subordinate
Fannie Mae: <ul style="list-style-type: none"> • Final Price: 91.51 Freddie Mac: <ul style="list-style-type: none"> • Final Price: 94 	Fannie Mae: <ul style="list-style-type: none"> • Final Price: 99.9 Freddie Mac: <ul style="list-style-type: none"> • Final Price: 98

Why Did This Happen?

- ❖ **Senior** obligations had **small issues** that made **finding the cheapest-to-deliver bond difficult**; there were **very few subordinate bonds**.
- ❖ **Subordinate** bonds had **higher coupons** – attractive to investors.

The **size** and **novelty** of this auction alongside **varied CDS ownership** also complicated things.

Greece (2012)

Causes:

- ❖ **Fiscal Imbalances** were wide throughout the 2000s.
- ❖ **Entry into the Eurozone removed Greece's monetary sovereignty.**
- ❖ The effects of the **2008 Financial Crisis** exacerbated the crisis.
- ❖ Greece faced a de-facto, **'classic' FX debt crisis.**

Domestic Political Volatility:

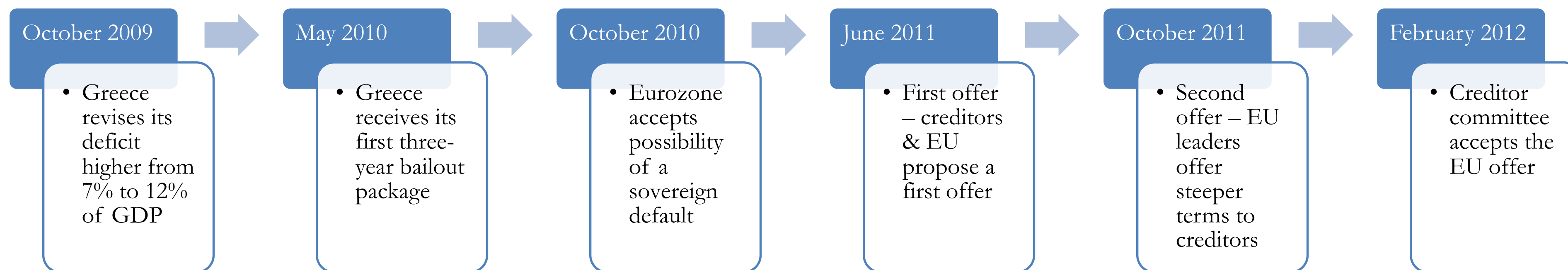
- ❖ Far-left SYRIZA won elections in 2015 – preceded in a **standoff** with the **IMF**
- ❖ Greece finally **exited** its **last IMF program** in 2018

Harsh Treatment of Creditors/Bondholders:

- ❖ Only Iraq, Argentina, and Serbia achieved greater debt relief

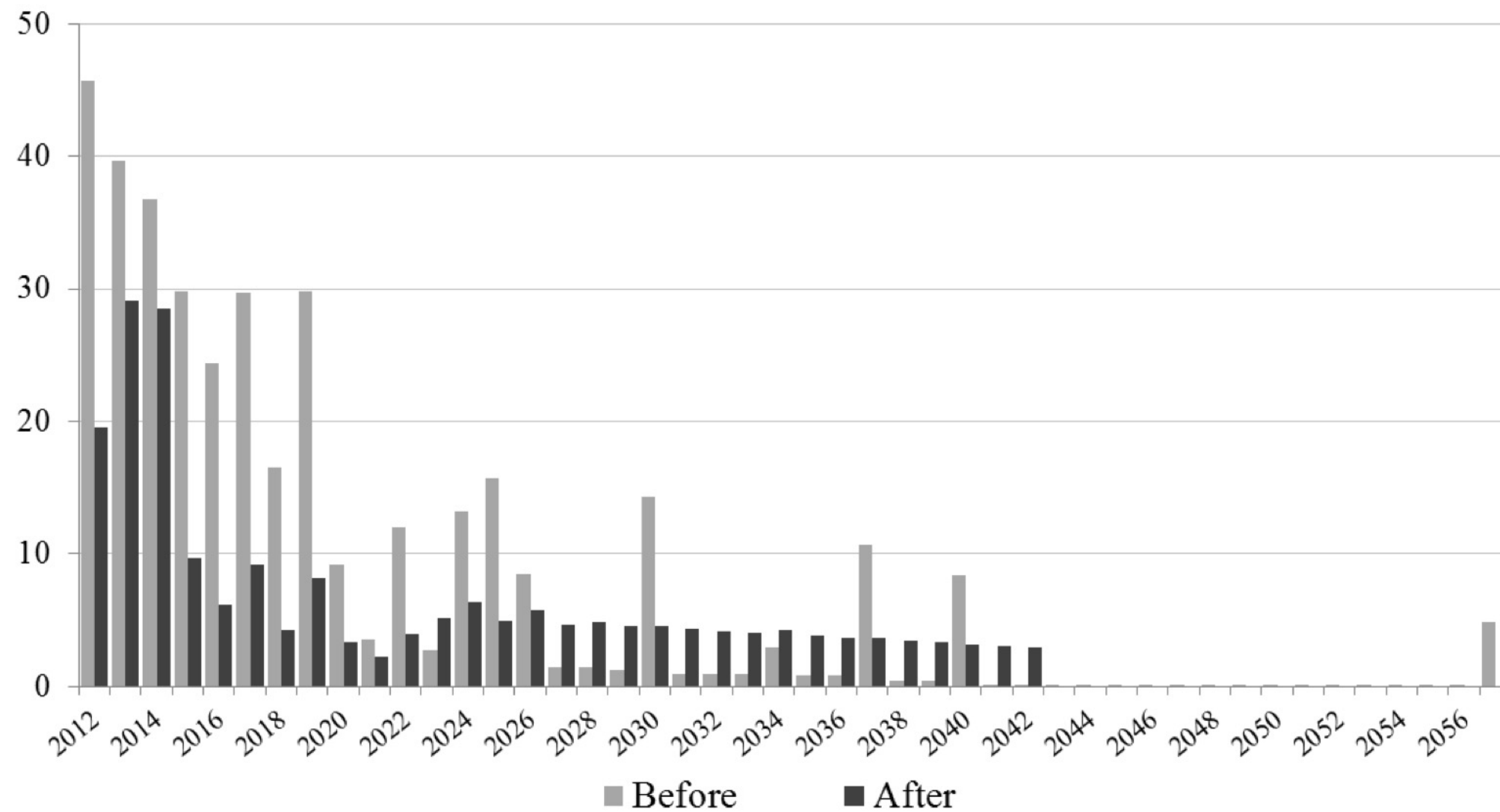
Retrofitted Collective Action Clauses:

- ❖ Largely a function of the Greek domestic law system
- ❖ Power of holdout creditors has greatly increased since this



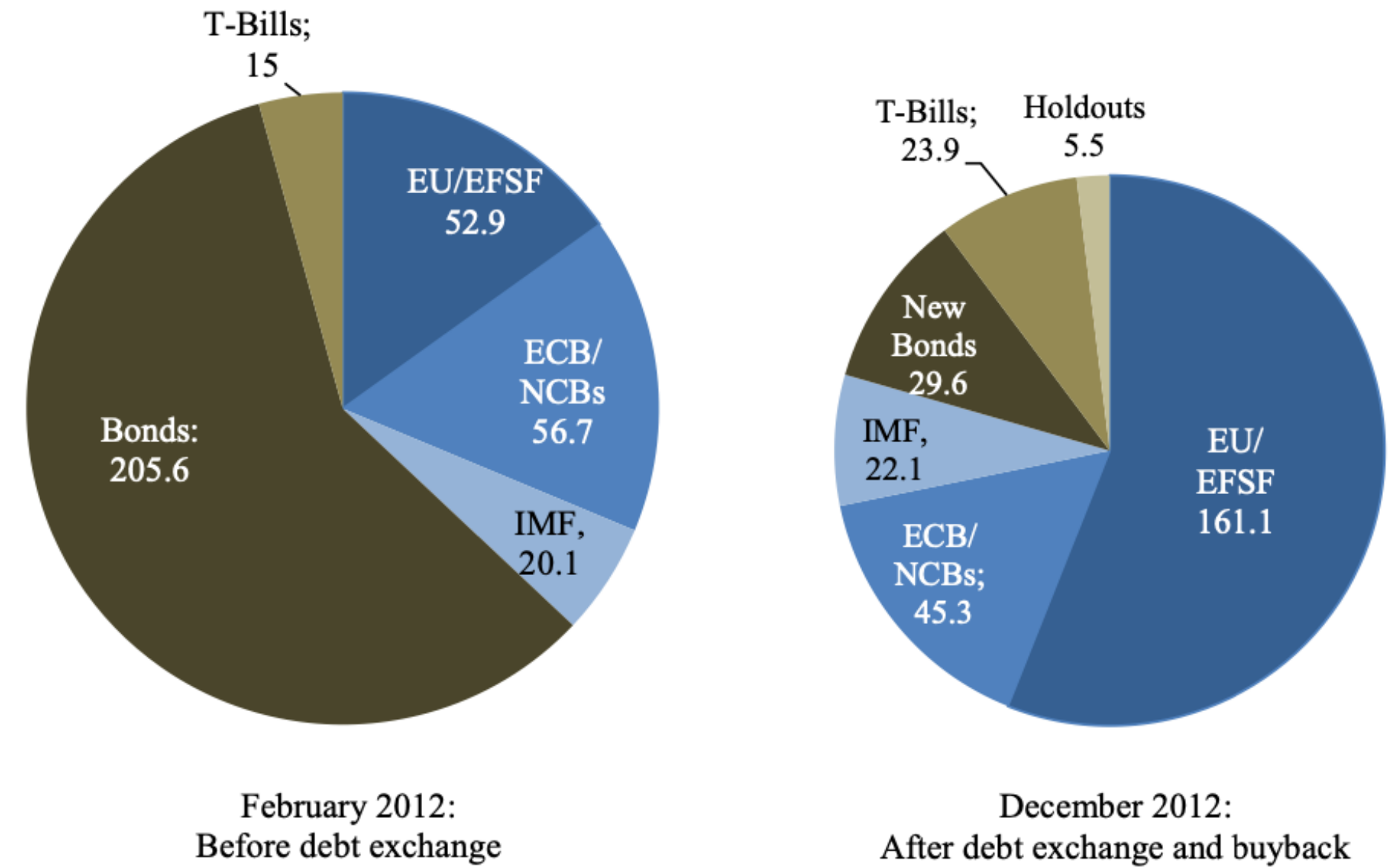
Greece (2012 – cont.)

Figure 2. Impact of Exchange on Greece’s Debt Service to Private Creditors



Note: Coupon plus principal repayments, at face value, in € billion. Sources: Hellenic Republic (Ministry of Finance and Public Debt Management Agency), Bloomberg, and authors’ calculations.

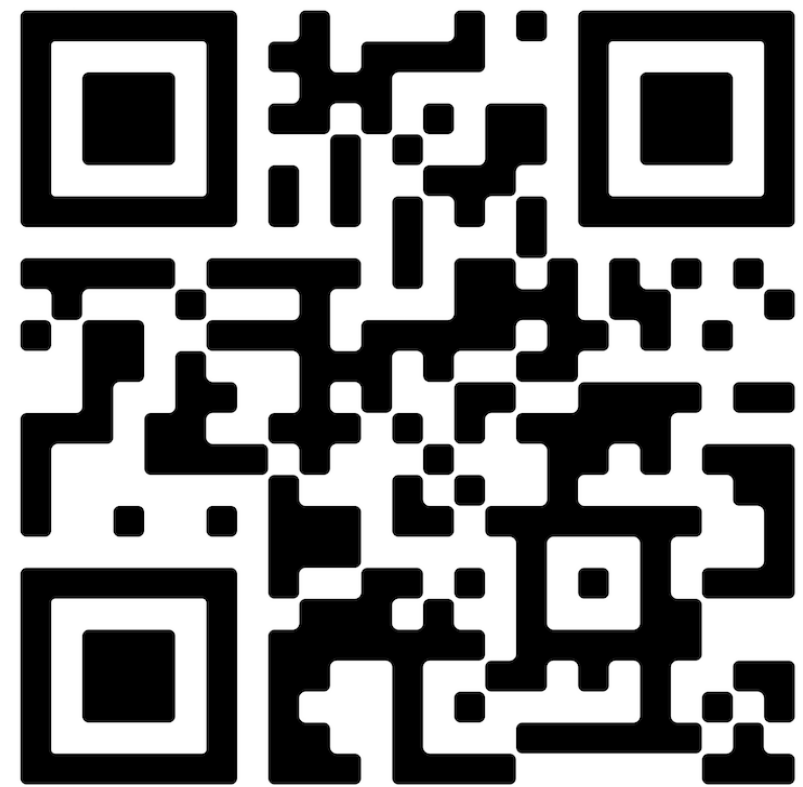
Figure 7: Change in composition of Greek sovereign debt





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