Whither r^*

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# Financial determinants of r^*

I will address:

Suppose we knew the flex-price equilibrium neutral rate in 2015

- For example, pure macroeconomic considerations meant that this rate was 2%
- The convenience yield on safe and liquid assets was **1.5%**
- So, the Fed targets a rate on its safe/liquid monetary liabilities of 0.5%
- See, e.g., Del Negro, Giannone, Giannone, Tambalotti (2017)

Suppose factors governing the equilibrium in the market for safe and liquid assets have changed in the last decade

- For example, a greater supply of Treasurys
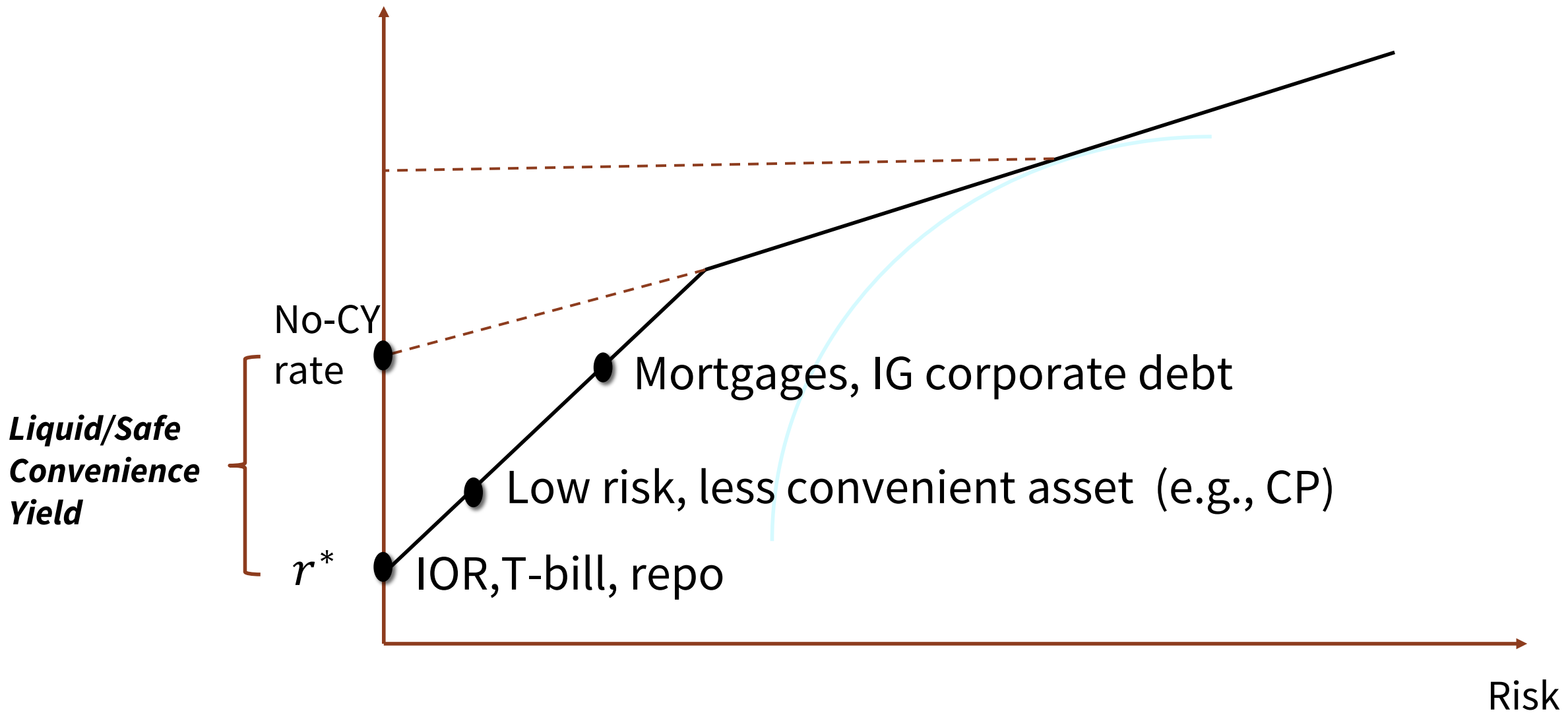- And changes in demand for liquid assets

How much has the **1.5%** number changed? Holding the pure macro drivers fixed
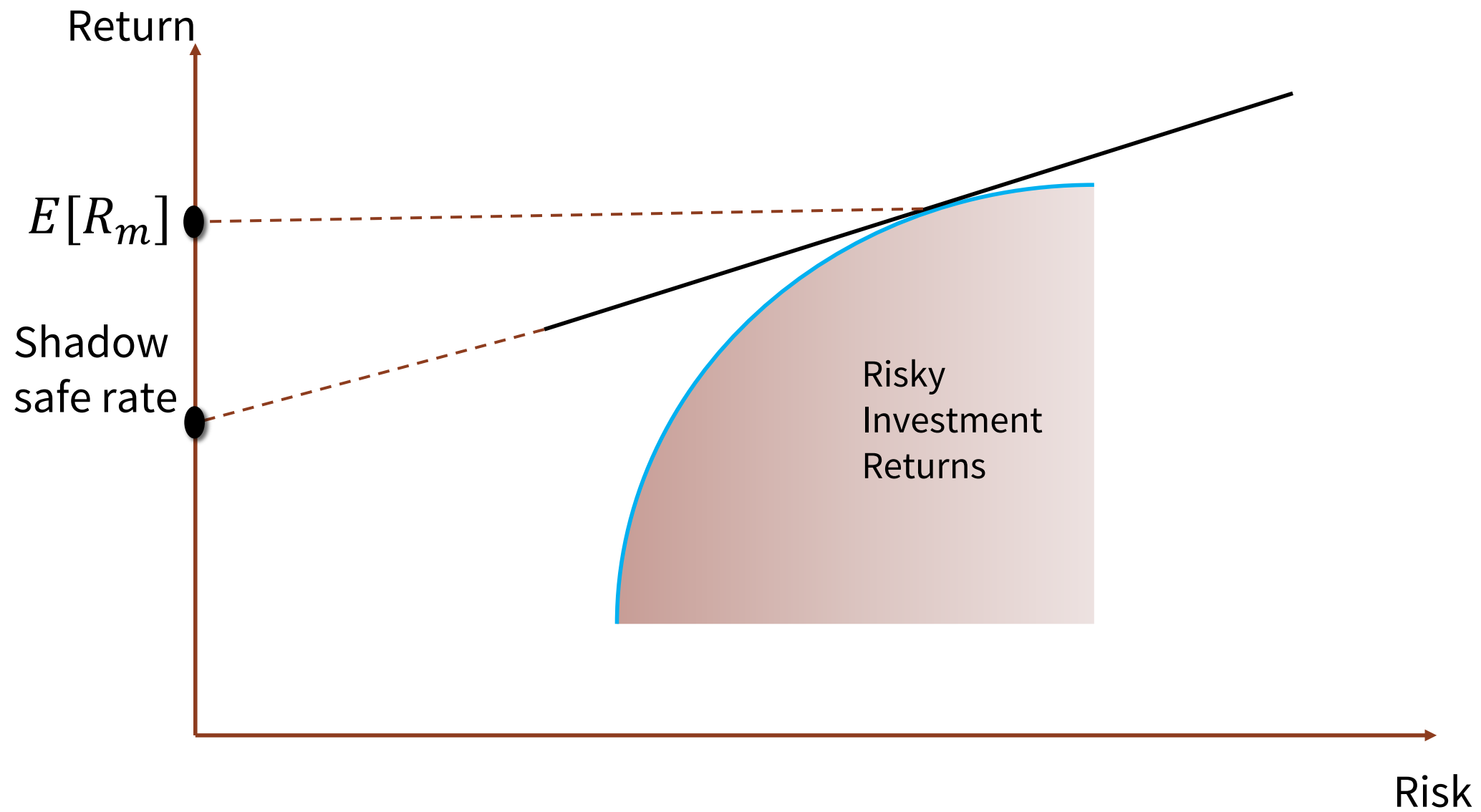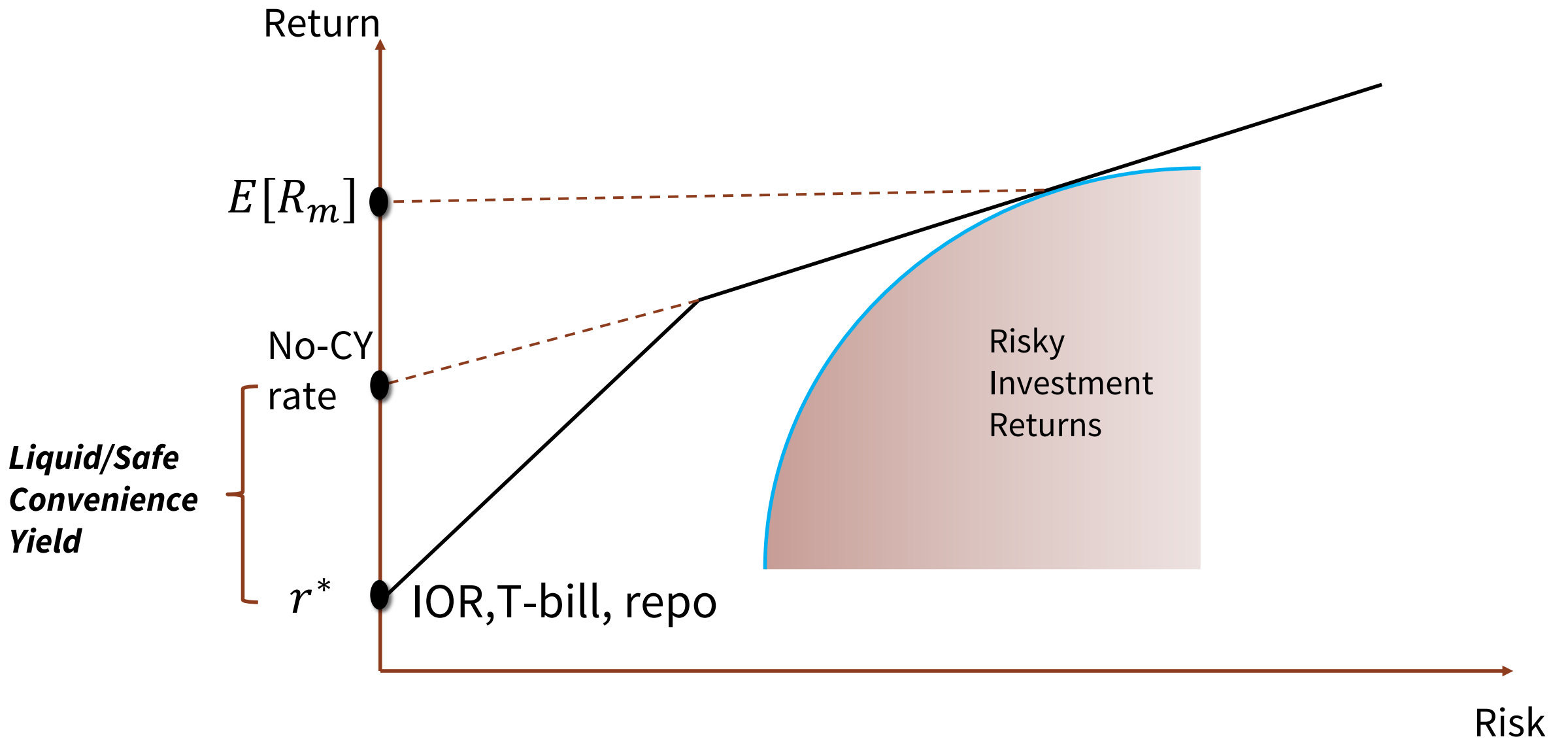
See Diamond , Figure 3 (2020); DiTella, Hebert, Kurlat, Wang (2024)

Need to know the relative convenience of safe assets

No-CY rate

Liquid/Safe Convenience Yield

Mortgages, IG corporate debt

Low risk, less convenient asset (e.g., CP)

r^* IOR, T-bill, repo

Risk

See Diamond (2020); DiTella, Hebert, Kurlat, Wang (2024)

Short-term vs long-term bonds

- We are after long-run r_{LR}^* and long-run CY_{LR}

- We can infer long-run CY_{LR} from long-term bonds under further assumptions:

  - 10-year Treasury bonds are heavily used as collateral in repo markets

    - Conv yield on repo pushes y_0 down
    - High return on buying a Treasury bond and financing it at low y_0 pushes y_{10Y} down

  - Under frictionless collateral arbitrage:

$$y_{10Y} = E\left[\frac{1}{10}\int_0^{10Y} y_t\, dt\right] + term - premium$$

- Compare 10-year Treasury to a 10-year bond that is not used to create short-term convenience asset (like repo, bank deposits, …) to measure CY_{LR}
  - *note: term premium cancels when constructing same maturity spread*

Short-term vs long-term bonds with constraints

- 10-year Treasury bonds are heavily used as collateral in repo markets

  - Conv yield on repo pushes y_0 down
  - High return on buying a Treasury bond and financing it at low y_0 pushes y_{10Y} down

- Under frictionless collateral arbitrage:

$$y_{10Y} = E[\frac{1}{10} \int_0^{10Y} y_t \, dt] + term - premium$$

- If arbitrageurs (dealer banks) own bonds financed by repo and face balance sheet costs of λ_t:

$$y_{10Y} = E[\frac{1}{10} \int_0^{10Y} (y_t + \lambda_t) \, dt] + term - premium$$

See He, Nagel, Song (2022); Du, Hebert, Li (2023)
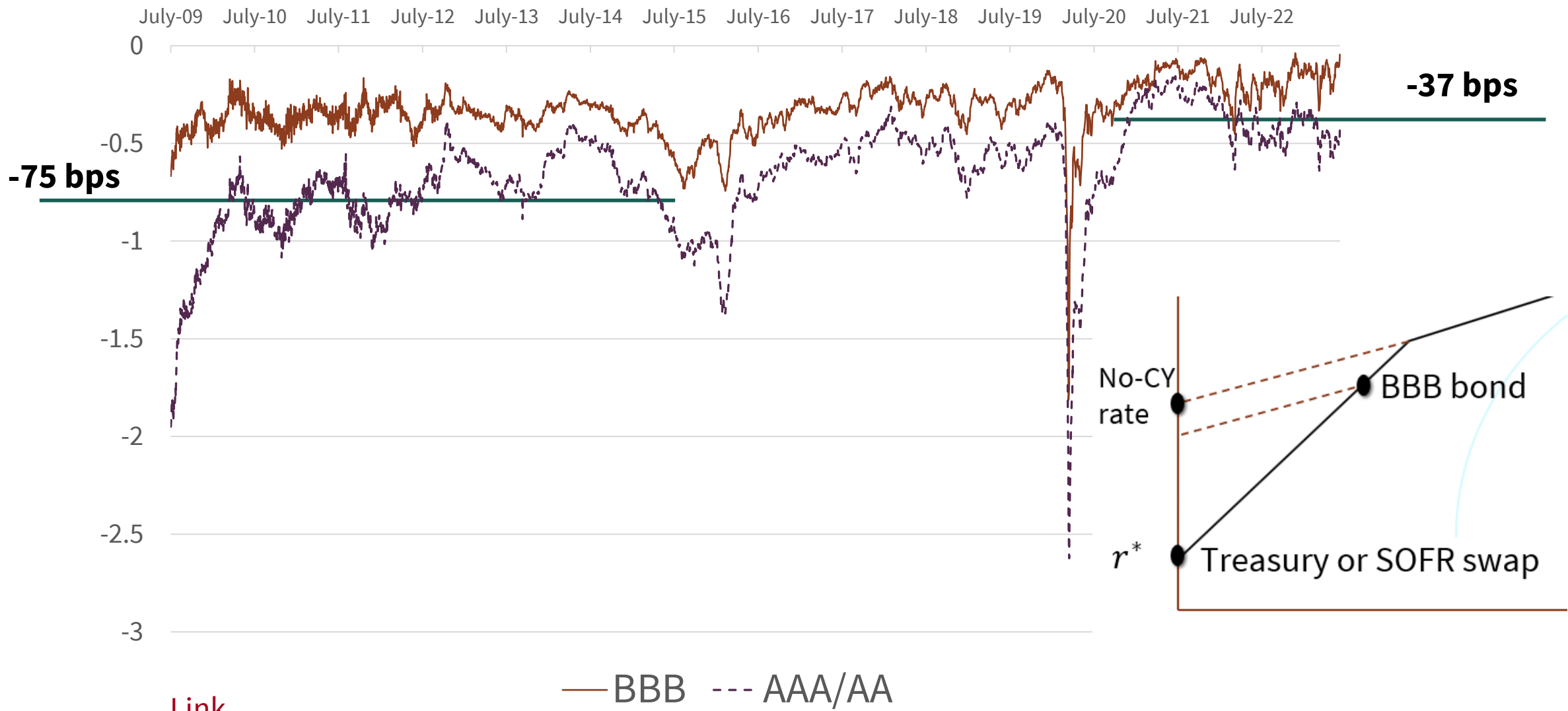
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Short-term vs long-term swaps

- We are after long-run r_{LR}^* and long-run CY_{LR}

- We can infer long-run CY_{LR} from long-term SOFR swaps

  - 10-year SOFR swaps pay the floating rate of SOFR

  - Conv yield on secured overnight financing pushes y_0 (SOFR) down

  - Under frictionless swap arbitrage, and noting swaps carry small balance sheet charge:

$$y_{10Y} = E\left[\frac{1}{10}\int_0^{10Y} y_t \, dt\right] + term - premium$$
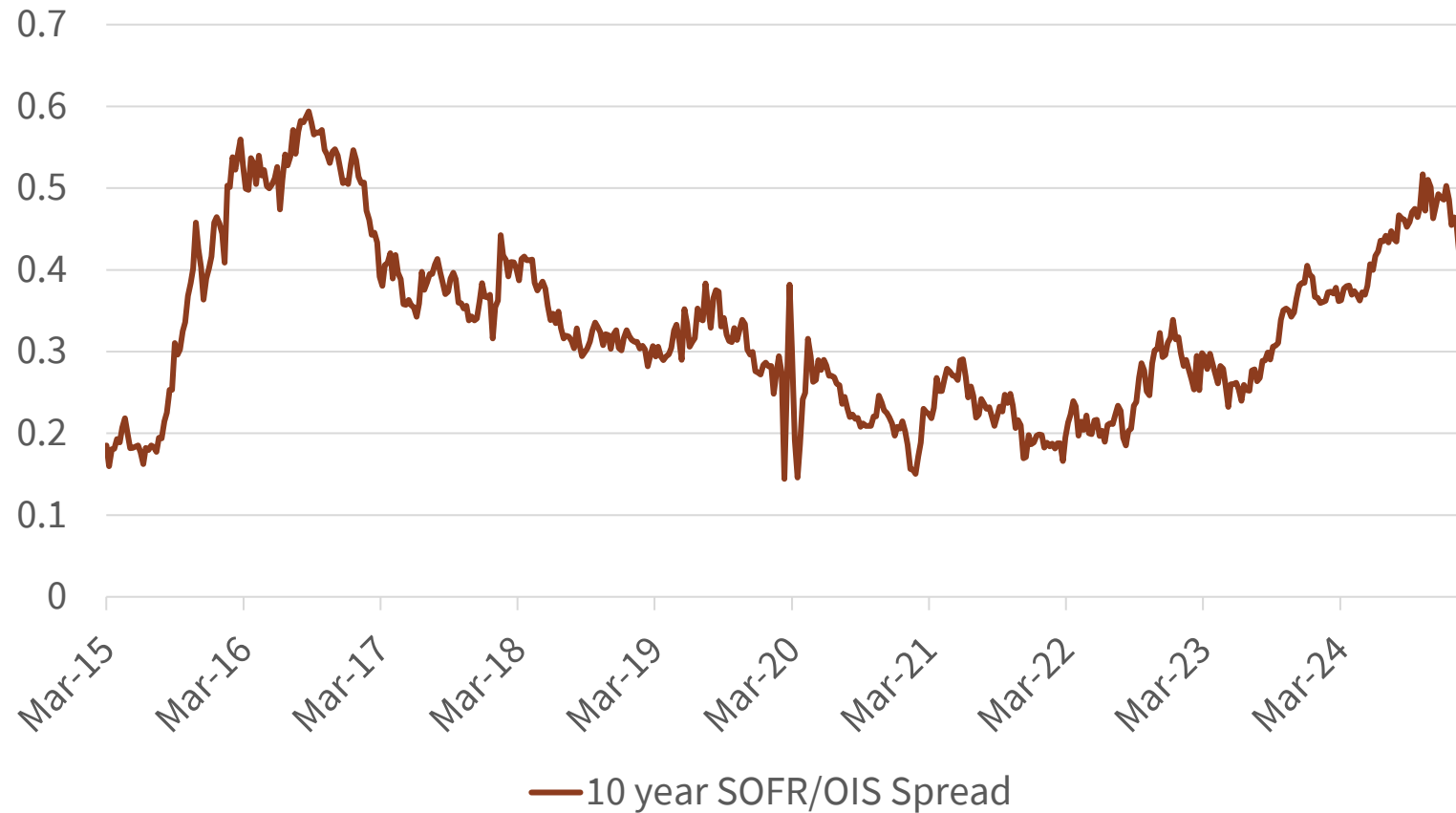
  - Compare 10-year SOFR swap to yield on a 10-year bond that is not used to create short-term convenience asset measure CY_{LR}
    - *note: term premium cancel when constructing same maturity spread*

From Mota (2024): 10yr Corporate + CDS vs Treasury

-37 bps

-75 bps

Legend: —— BBB - - - AAA/AA

x-axis labels: July-09, July-10, July-11, July-12, July-13, July-14, July-15, July-16, July-17, July-18, July-19, July-20, July-21, July-22

y-axis: 0, -0.5, -1, -1.5, -2, -2.5, -3

Inset labels: No-CY rate, BBB bond, r^*, Treasury or SOFR swap
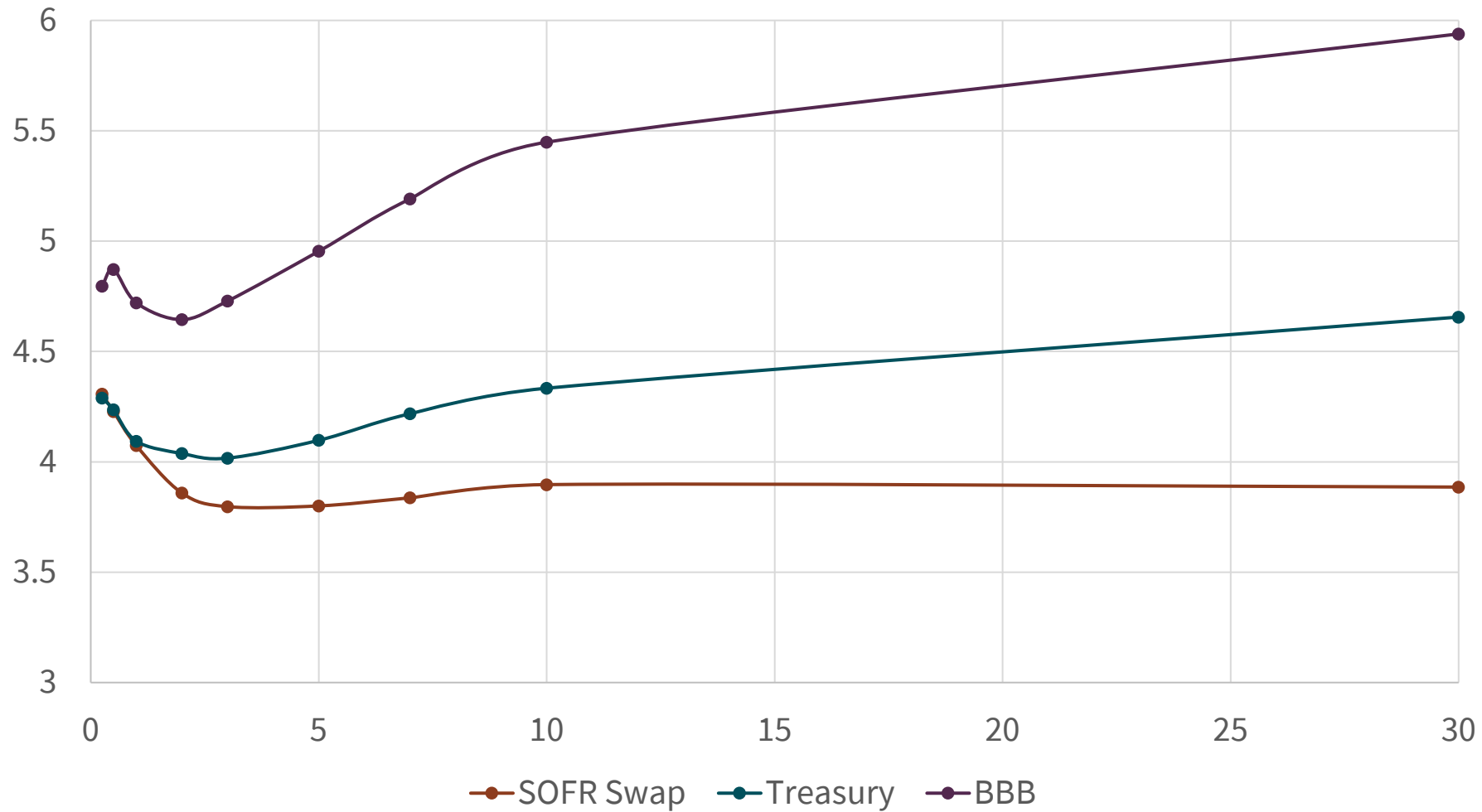
Link

10-year Treasury minus SOFR Spread (OIS before 2020)

Reduced long-term Treasury liquidity, dealer balance sheet costs
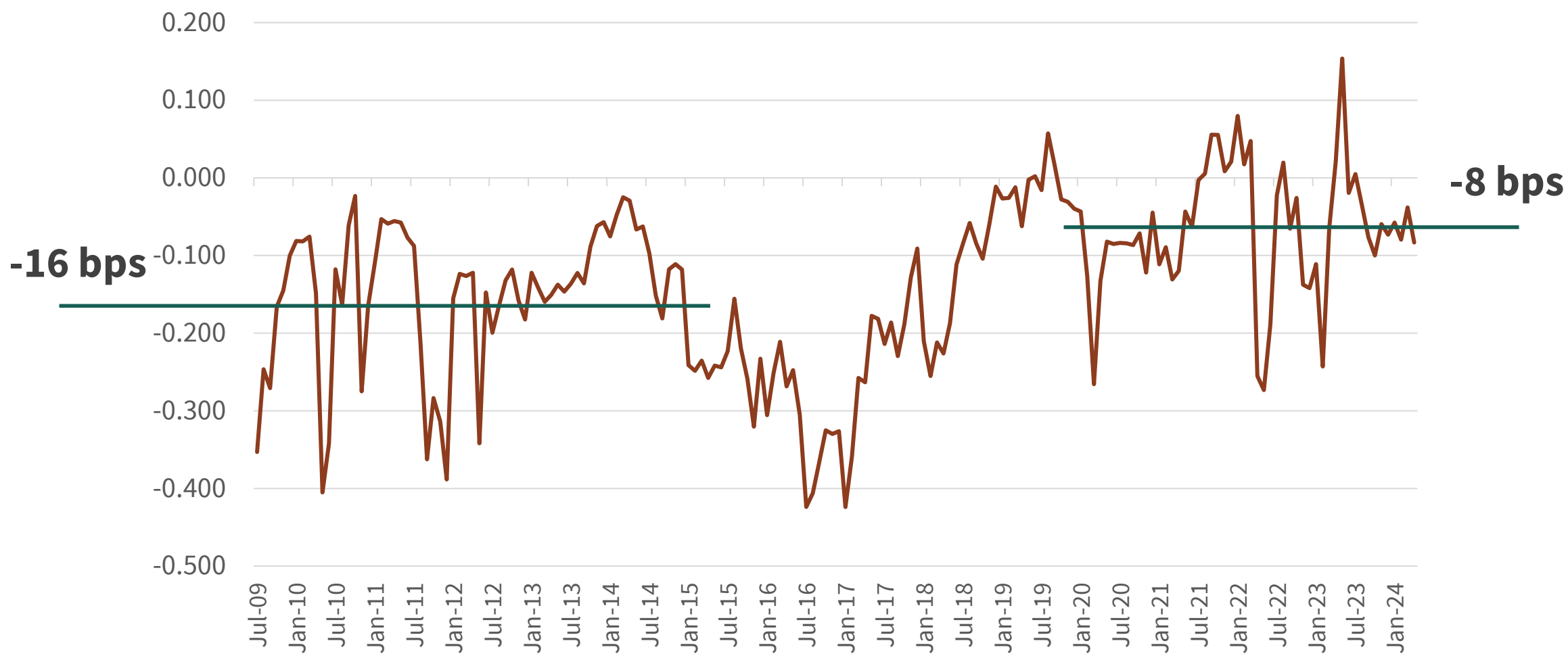(see Duffie, Fleming, Kean, Nelson, Shachar, Van Tassel, 2023)

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March 24, 2025 Yield Curves

5-year Markit IG CDS = 68 bps

10 year BBB (5.45)

10 year SOFR (3.90)

CY ≈87 basis points

Legend: SOFR Swap — Treasury — BBB
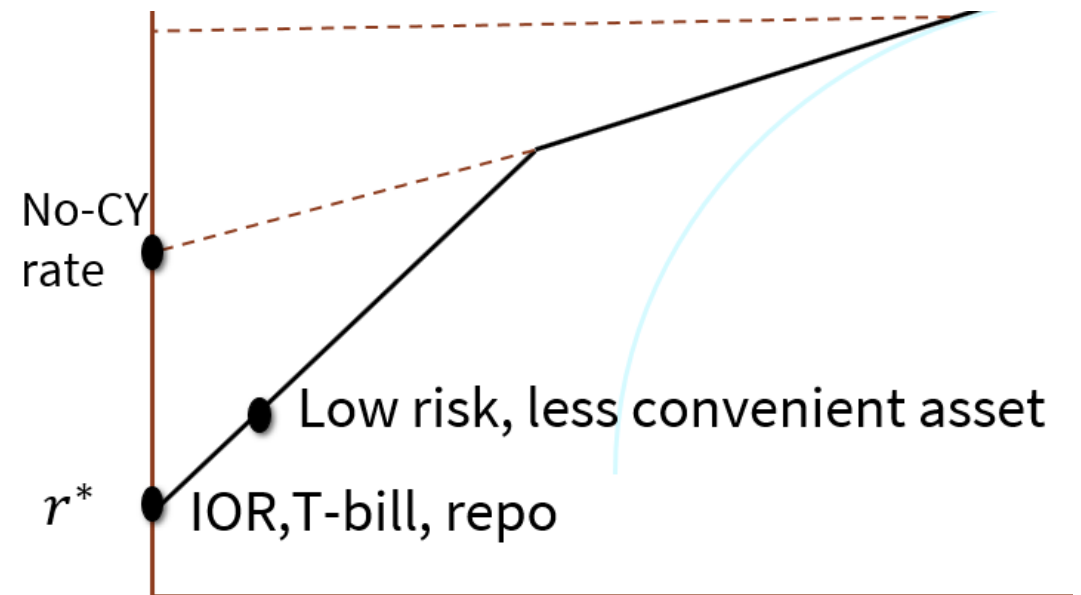
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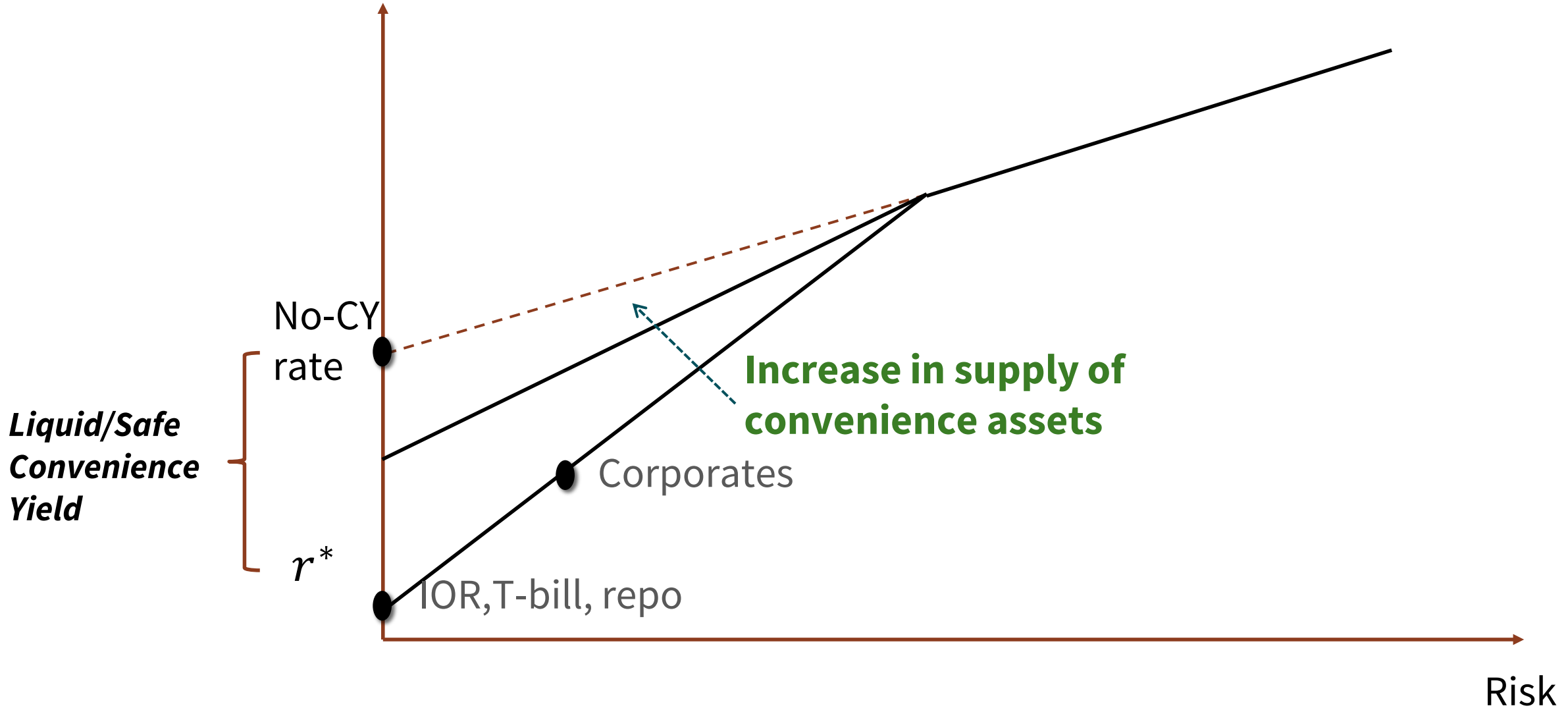# Short bonds:1-year US Treasury Premium vs G10 Sovereigns

-8 bps

-16 bps

1 year US Treasury – (1 year G10 Sovereign + FX swap to USD)
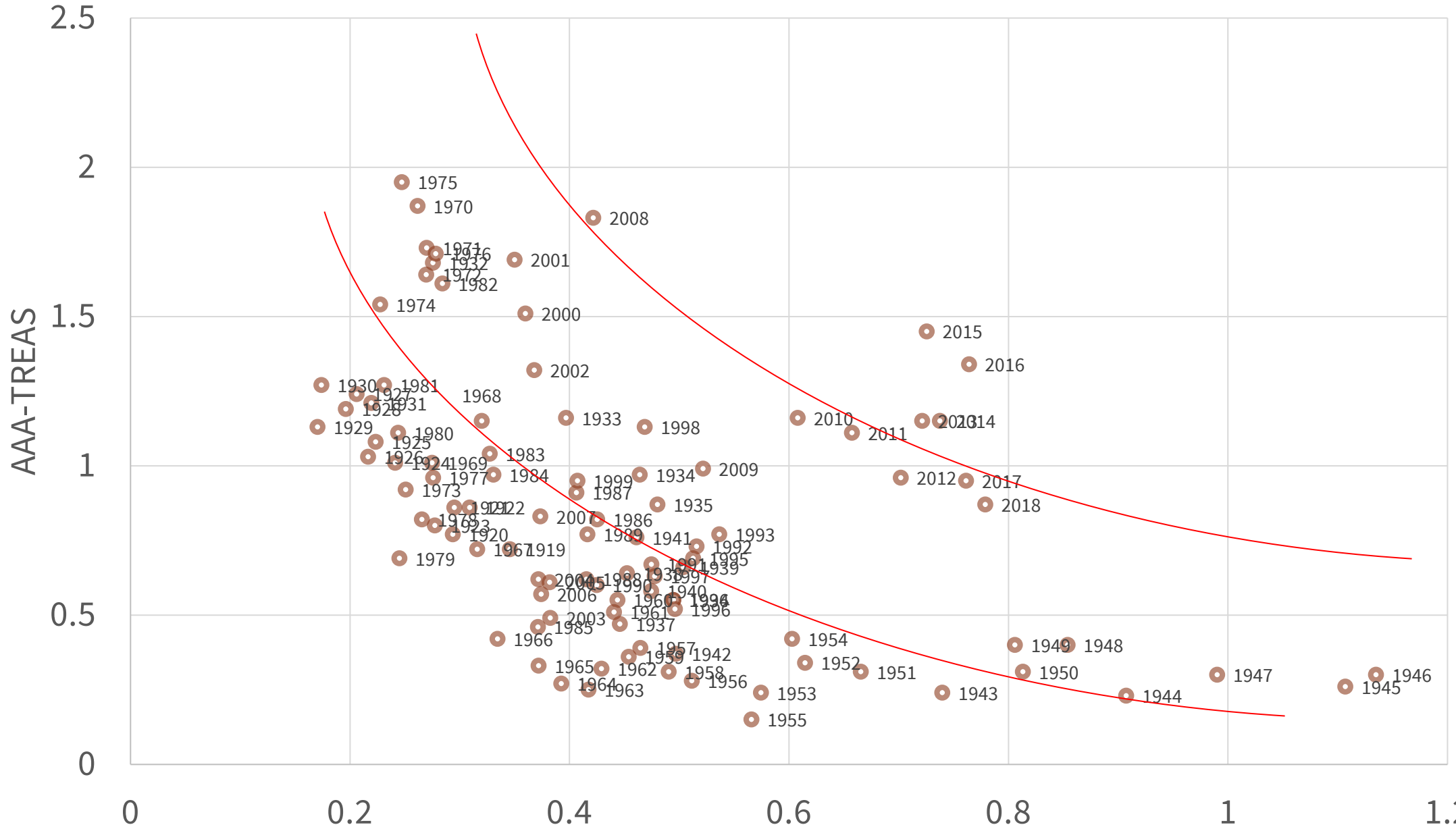
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Estimating full short-term convenience yield

- Jiang, Krishnamurthy, and Lustig (2021) estimate difference in convenience properties between 1-year and G10 sovereign based on comovement of the USD exchange rate and basis

- Estimate ➡ Multiply spread by 8X to 12X

- Spread from 16 to 8 bps

No-CY rate

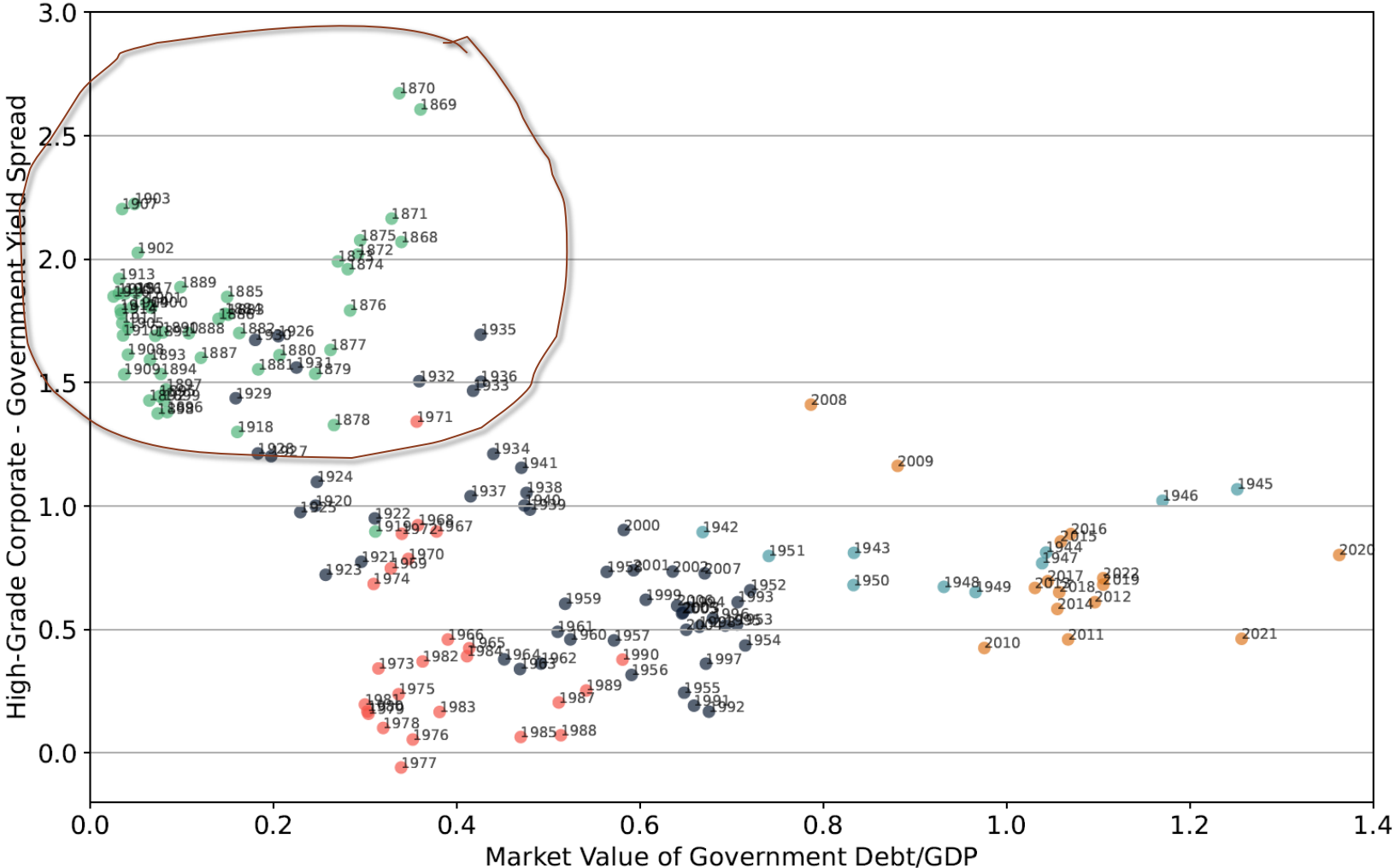Liquid/Safe Convenience Yield

r^*

Corporates

IOR,T-bill, repo

Increase in supply of convenience assets

Risk

20 year Corp-Treasury Spread vs Publicly Held Treasury Debt/GDP

Krishnamurthy-Vissing-Jorgensen (2012) update

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Going back to National Banking Era

Source: Lehner, Payne and Szoke (2025)

Conclusion

- The CY component of the determination of r^* has fallen
  - From around 1.5% to 0.75%

- Further changes in Treasury supply[1], global demand for dollar safe assets [2,9] , and financial regulation can all affect equilibrium[3]

- I have left out of the analysis that changes in convenience yields shift the benchmark neutral rate in the flex-price (no convenience yield) model
  - The fall in convenience yields may lead to a crowding out effect on assets funded by convenience debt (e.g., mortgages)
  - Lowering growth in the medium term

References

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Extra Slides

90 day Commercial Paper - TBills