ICMA
International Capital Market Association

Professional Repo Market and Collateral Management Course

repo instrument

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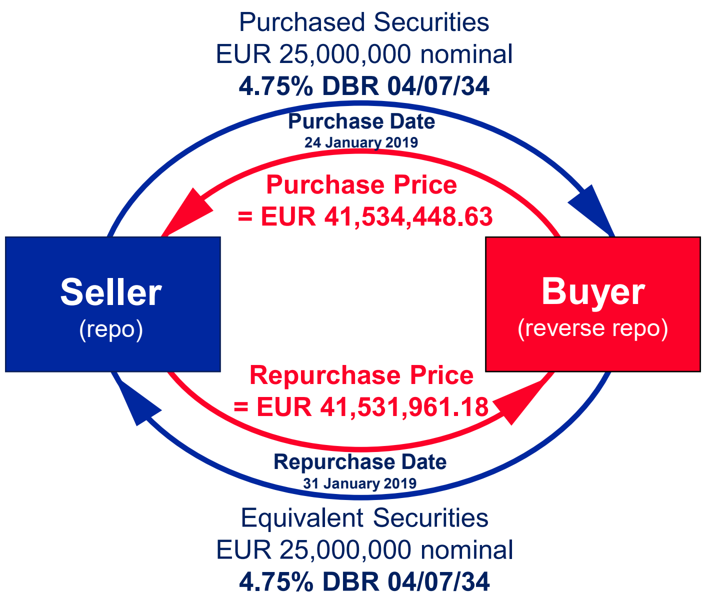
repo instrument

topics

- name
- example, terminology
- legal structure
- economic operation
- do you really understand repo?
- basic accounting for repo
- buy/sell-back
- core uses

example



example

term	1 week	
collateral	4.75% DBR 04/07/34 (annual A/A)	
nominal value	25,000,000	
clean price	163.483	
accrued interest	204 days	
repo rate	-0.308% (A/360)	
Market Value	41,534,448.63	
Purchase Price	41,534,448.63	no haircut/initial margin
repo interest	-2,487.45	
Repurchase Price	41,531,961.18	

- haircut/initial margin is difference between Purchase Price and initial market value of collateral
- relative difference has to be maintained during life of repo by variation margin or re-pricing
- haircut is percentage discount to collateral market value (eg 2%)
- initial margin is percentage premium to cash (eg 105%)

example

bond valuation method 1

nominal value x clean price = clean value

$$25{,}000{,}000 \times \frac{163.483}{100} = 40{,}870{,}750.00$$

nominal value x coupon =accrued interest

$$25{,}000{,}000 \times \frac{4.75 \times 204}{100 \times 365} = 663{,}698.63$$

clean value + accrued interest = Market Value

40,870,750 + 663,698.63 = 41,534,448.63

NB coupon calculation uses bond market basis

example

bond valuation method 2

clean price + accrued interest = dirty price (all-in price)

$$163.483 + \frac{4.75 \times 204}{365} = 166.137795$$

nominal value x dirty price = Market Value

$$25{,}000{,}000 \times \frac{166.137795}{100} = 41{,}534{,}448.63$$

example

repo interest calculation

- assuming no initial margin or haircut

Purchase Price — repo interest

$$41{,}534{,}448.63 \; \frac{-0.308 \times 7}{100 \times 360} = -2{,}487.45$$

Purchase Price — repo interest — Repurchase Price

$$41{,}534{,}448.63 + -2{,}487.45 = 41{,}531{,}961.18$$

NB repo return calculation uses money market basis

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example

screen RRRA

collateral

T

repo rate

clean price

dirty price
initial margin

nominal value
purchase price

repurchase date
term

purchase price
repo interest
repurchase price

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legal structure

definition of a repo

repo is a sale of a quantity of an asset
and a simultaneous agreement to repurchase
the same quantity of an equivalent asset
at a later date or on demand
for the original value
plus a return on the use of cash

legal structure

key terms of the definition

- **quantity** means:
  - same nominal amount of fixed-income securities or
  - same number of equity securities
  - not same market value
- **equivalent** means:
  - definition in GMRA:
    - same issuer; same issue; identical type, description, nominal value, amount
    - usually means the same ISIN
  - definitions in other master agreements:
    - “same or similar” [EMA]
    - “substantially the same” [MRA & IFRS]
  - need concept of equivalence to reinforce legal validity of sale of collateral
- **return on use of cash** is called repo interest in market but legally it is just the difference between purchase & repurchase prices

legal structure

selling collateral – rights and obligations

- immediate sale & future repurchase of collateral means outright transfer of legal & beneficial title to collateral from seller to buyer
- buyer acquires
  - legal title = unencumbered right of use
  - beneficial title = rights to any benefits of ownership such as coupons or dividends, corporate action decisions, voting rights
- seller gives up:
  - all property rights in collateral in exchange for claim against counterparty
  - right to the return of the very same collateral: seller is only entitled to buy back equivalent assets

legal structure

instead of selling collateral, why not give a security interest

- security interest is a traditional way of giving collateral
- security interest in financial markets usually takes the form of a pledge
- if collateral is pledged, the cash borrower retains ownership of the collateral, so has the right to get back exactly the same asset that it pledged
- cash lender usually gets control & possession of pledged collateral but not ownership
- cash lender can only dispose of the collateral if the borrower defaults --- there is no automatic right of re-use

legal structure

instead of selling collateral, why not give a security interest

- because security interests are subject to the statutory insolvency process which usually means:
  - cumbersome formalities to create a legally valid security interest
  - secured creditors cannot liquidate collateral until allowed by the insolvency court
  - secured creditors' rights to collateral will be challenged by liquidator and others

  which means the enforcement of security interests will be delayed, expensive & uncertain --- unsuitable for short-term transactions
- because close-out netting of security interests is impossible
- because there is no automatic right for creditor to re-use collateral under a security interest during transaction

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legal structure

why transfer title --- summary

- as owner of collateral at start of repo, cash lender:
  - is more certain about his ability to liquidate collateral & benefit from close-out netting if the counterparty defaults --- which reduces credit risk more than security interests do
  - has an automatic right to re-sell collateral during the repo --- which reduces liquidity risk & can offer opportunities to trade the collateral for extra profit

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legal structure

US repo is different

- title transfer may be subject to re-characterization risk in US as courts look to the substance of a repo (what happens to risk)
- US Master Repurchase Agreement has a fall-back ---- should a court re-characterize a repo, it will become a pledge but with the problems of pledging solved by:
  - statutory exemption of repo pledges from basic rules of Bankruptcy Code
  - giving buyer a contractual general right of use under MRA
- result is different legal form but same economic effect as title transfer repo
- because of fall-back, US market talks about pledging & re-hypothecation but we should not!

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legal structure

"repos" that are not really repos

- many emerging markets trade instruments called repos but are not
- Chinese pledged repos are not repos
- these are secured loans to which name "repo" has been applied to give (false) comfort to lenders
- such pseudo-repos do not transfer title to collateral & will therefore be caught by the insolvency process in a default
- pseudo-repos also do not allow automatic re-use of collateral by buyer
- use of false repos is often driven by legal obstacles and sometimes by inadequate securities settlement systems

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legal structure

corporate events

- equity & some corporate bonds are subject to corporate events which change the character of the security (eg stock splits, redemptions) and may also offer extra benefits
- question posed by occurrence of corporate event is: what is the equivalent collateral that has to be returned by buyer?

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legal structure

corporate actions

- some corporate events involve the exercise of an option --- these are corporate actions
- question posed by occurrence of corporate action is: who is entitled to exercise the option?

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legal structure

voting rights

- equity carries voting rights
- these rights go to the buyer
- seller can ask buyer to vote in line with his wishes but buyer is under no obligation to do so
- corporate governance codes say buyers should not exercise votes as they are not long-term investors

economic operation

repos behave like secured loans

- economic behaviour of repo is different from its legal character
- obligation to make a future repurchase of collateral for its original value means that the transfer of title to the buyer is only temporary
- temporary transfer of title means a repo is effectively a loan of cash against a loan of collateral
- repo therefore functions like a secured loan
- it is common to talk in economic terms about “borrowing”/”lending” cash and collateral in a repo, even though legally it involves buying/selling --- talk economics to dealers, accountants, tax officials and regulators but not to lawyers or in court

economic operation

risk on collateral remains with the seller

- obligation to make a future repurchase of collateral for its original value means risk on collateral impacts the seller, not the buyer
  - market risk --- if the collateral value falls, the seller has to repurchase at original value & suffer a loss
  - credit risk --- if the issuer of collateral defaults, the seller has to repurchase at a higher pre-default price & suffer a loss

economic operation

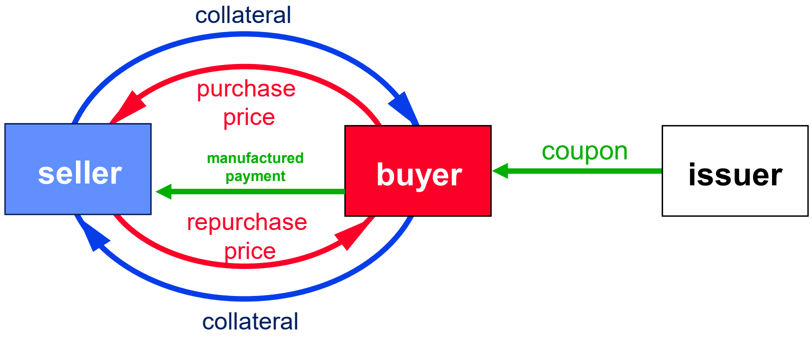
return on collateral must also go to the seller

- obligation to make a future repurchase of collateral for its original value also means that the return on the collateral benefits the seller, not the buyer --- which is appropriate and necessary since the seller is exposed to the risk on the collateral
- in case of fixed-income collateral, returns are:
  - capital gain/loss from changes in the clean price of a bond --- rise in clean price during repo allows the seller to repurchase at a profit
  - income accrued during a repo --- accrued income attached to collateral will increase over life of a repo, adding to the market value of collateral, but the seller only has to repay the original market value to repurchase the collateral so any interest accrued on collateral during a repo is a net return to the seller
  - income paid during a repo --- goes to the buyer (as he is the owner) but the buyer is contractually obliged to compensate the seller

economic operation

income compensation in repurchase transaction

- buyer should compensate the seller by means of a same-day payment, often called a manufactured payment



economic operation

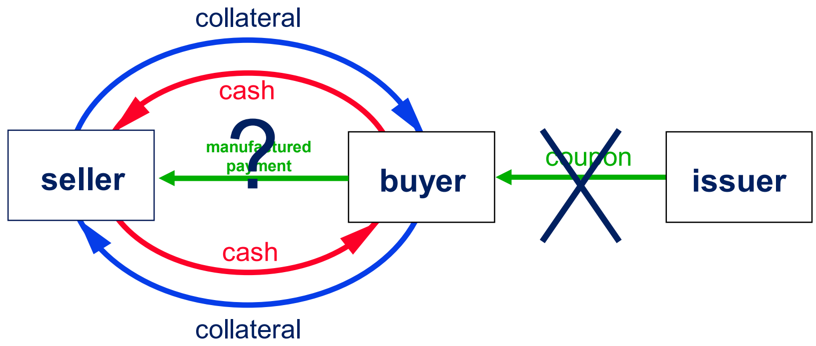
summary

- **purchase** transfers the legal title to collateral to the buyer to:
  - reduce legal risk --- which further credit risk more than a security interest
  - allow the re-use of collateral at any time --- which reduces liquidity risk

  which rewards the seller with more lending at lower rates
- **repurchase** transfers the risk/return on collateral to the seller in order to:
  - allow seller to borrow cash and give a security as collateral but keep the risk/return on the security --- seller can therefore use a repo purely for financing securities
  - allows buyer to lend cash and take a security as collateral but without taking risk/return on the security --- buyer can therefore use repo purely for investing cash

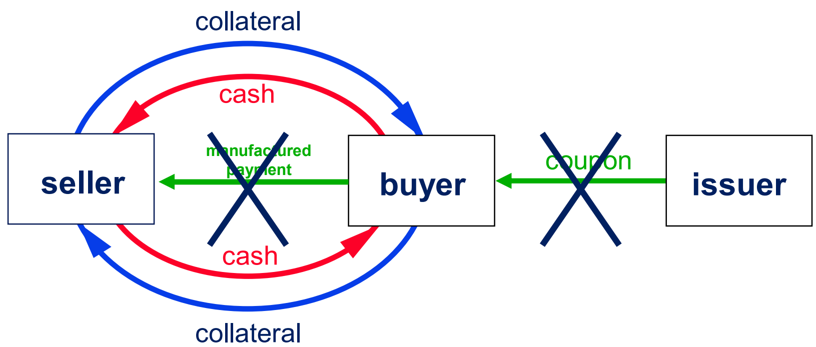
do you really understand repo?

question --- if income is not paid on collateral when due, does the buyer have to pay the manufactured payment?



do you really understand repo?

answer --- no, the seller retains the risk on the collateral so the buyer only passes on what is received



basic accounting for repo

question --- how to account for repo?

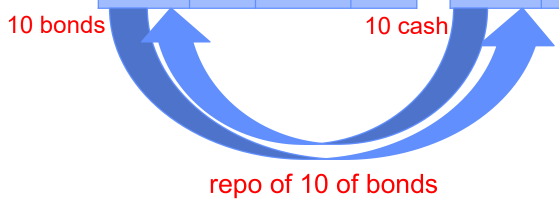
before repo

seller

assets		liabilities	
bonds	100	capital	10
		debt	90
	100		100

buyer

assets		liabilities	
cash	100	capital	10
		debt	90
	100		100



basic accounting for repo

answer --- how to account for repo?

- balance sheets should reflect “economic substance over legal form” --- this means the value & risk of assets & liabilities, <u>not</u> the contractual structure
- because of the commitment of the seller to repurchase collateral at its original value, the risk & return on collateral remains with the seller
- therefore, collateral should <u>not</u> move from the balance sheet of the seller (no “derecognition”) & should not appear on the balance sheet of the buyer (no “recognition”)

basic accounting for repo

answer --- account for repo like an unsecured deposit

before repo

seller

assets		liabilities	
bonds	100	capital	10
		debt	90
	100		100

buyer

assets		liabilities	
cash	100	capital	10
		debt	90
	100		100

during repo

seller

assets		liabilities	
bonds	100	capital	10
cash	10	debt	100
	110		110

buyer

assets		liabilities	
cash	90	capital	10
loan	10	debt	90
	100		100

buy/sell-back

types of repo

- there are in fact, three types of repo
  - repurchase transactions
  - undocumented buy/sell-backs (no written contract)
  - documented buy/sell-backs
- buy/sell-backs are a type of repo!

buy/sell-back

what is different about buy/sell-backs?

- traditionally, buy/sell-backs were undocumented but most are now documented
- no documentation means there is no contractual relationship between the parties between purchase and repurchase dates
- lack of a contractual relationship makes undocumented buy/sell-backs riskier
- lack of a contractual relationship also means that manufactured payments cannot be used to manage coupons/dividends on collateral --- so buy/sell-backs have to use a different mechanism to deal with income payments on collateral

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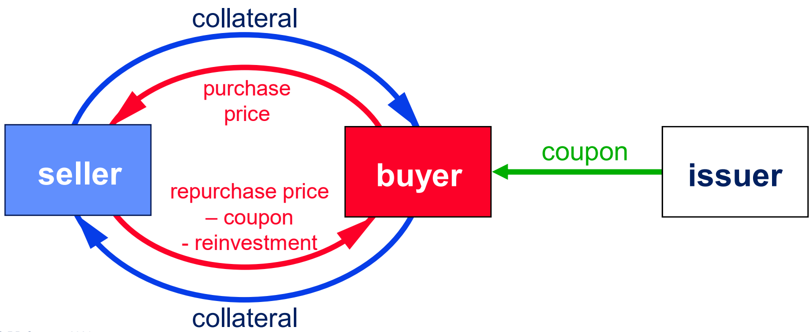
buy/sell-back

income compensation in buy/sell-backs

- if income is paid on the collateral of an undocumented buy/sell-back, it cannot be passed to the seller using a manufactured payment because of the lack of a contract providing for such action during the life of the repo
- instead, the repurchase price is reduced by amount of income plus interest to compensate for the delay until the repurchase date



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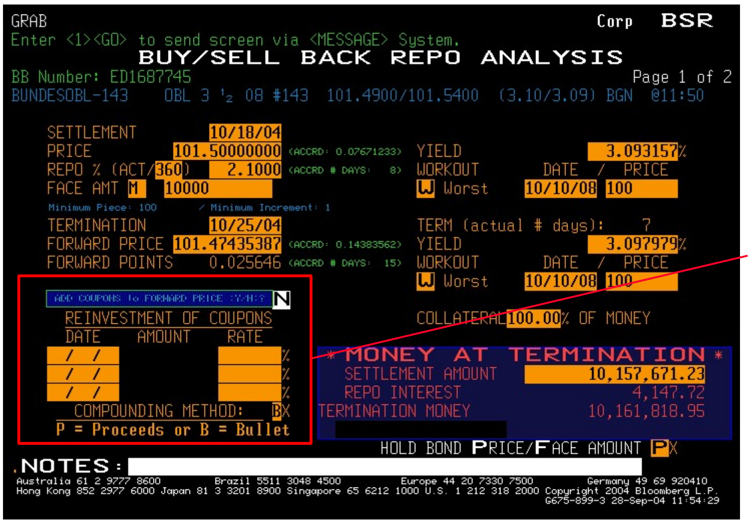
buy/sell-back



NB These fields are parameters for the reinvestment of coupons

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buy/sell-back

documented buy/sell-backs

- recognition of collateral in regulatory capital adequacy calculations is subject to many conditions but in particular:
  - documentation of rights of close-out netting including in insolvency
  - inclusion of variation margin mechanism
- undocumented buy/sell-backs cannot meet these conditions so have higher regulatory costs
- GMRA Buy/Sell-Back Annex provides documentation for buy/sell-backs
- Annex amends GMRA to allow for replacement of manufactured payments by traditional method of reducing repurchase price

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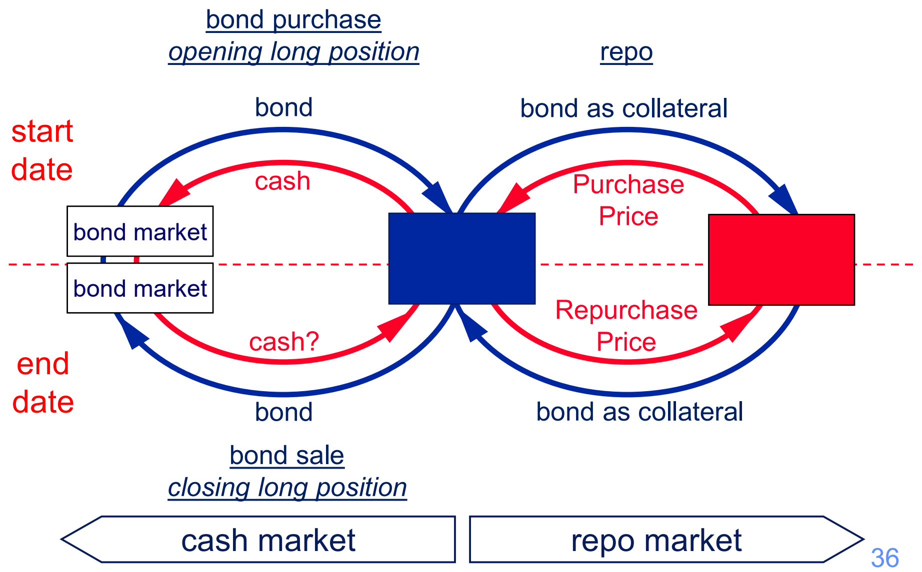
core uses

- sellers can use repo to borrow cash to **finance long positions** & buyers can use reverse repo to lend cash --- cash-driven repo
- buyers can use reverse repo to borrow securities to **cover short positions** & sellers can use repo to lend securities --- securities-driven repo

core uses

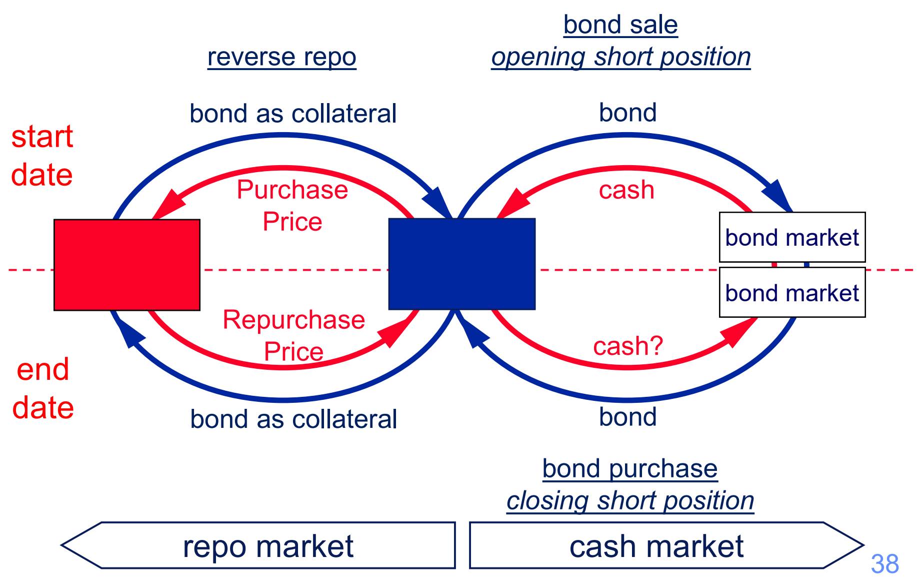


core uses

Note: assume T+2 bond settlement, T+1 repo settlement

date	action	BTAN delivery	cash payment
Tuesday 2 June	buy 10 million nominal of 5Y BTAN in cash market from Citi for delivery on T+2 (Thursday) for 10,550,000 (dirty price 105.50)		
Wednesday 3 June	agree 1-week repo of 10 million nominal of 5Y BTAN to JP Morgan at a repo rate of 0.10% for delivery on T+1 (Thursday) for EUR 10,550,000 (have assumed that bond price has not changed)		
Thursday 4 June	receive 10 million nominal of 5Y BTAN from Citi and pay 10,550,000	+10,000,000 nominal from Citi	-10,550,000 to Citi
	deliver 10 million nominal of 5Y BTAN to JP Morgan and receive 10,550,000	-10,000,000 nominal to JP Morgan	+10,550,000 from JP Morgan
Tuesday 9 June	sell 10 million nominal of 5Y BTAN in cash market to SocGen for delivery on T+2 (Thursday) for 10,100,000 (dirty price 101.00)		
Thursday 11 June	deliver 10 million nominal of 5Y BTAN to SocGen and receive 10,100,000	-10,000,000 nominal to SocGen	+10,100,000 from SocGen
	unwind repo by repurchasing 10 million nominal of 5Y BTAN from JP Morgan and paying 10,550,205 [= 10,550,000 * (1 + ((0.10 * 7)/(100 * 360)))]	+10,000,000 nominal from JP Morgan	-10,550,205 to JP Morgan

core uses



core uses

Note: assume T+2 bond settlement, T+1 repo settlement

date	action	BTAN delivery	cash payment
Tuesday 2 June	sell 10 million nominal of 5Y BTAN in cash market to Citi for delivery on T+2 (Thursday) for 10,550,000 (dirty price 105.50)		
Wednesday 3 June	agree 1-week reverse repo of 10 million nominal of 5Y BTAN from JP Morgan at a repo rate of 0.10% for delivery on T+1 (Thursday) for EUR 10,550,000 (have assumed that bond price has not changed)		
Thursday 4 June	deliver 10 million nominal of 5Y BTAN to Citi and receive 10,550,000	-10,000,000 nominal to Citi	+10,550,000 from Citi
	receive 10 million nominal of 5Y BTAN from JP Morgan and receive 10,550,000	+10,000,000 nominal from JP Morgan	-10,550,000 to JP Morgan
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core uses

remember Short Selling Regulation (SSR)

- to take short positions in sovereign bonds --- except for short hedges --- you must have (1) already borrowed, (2) agreed to borrow or (3) received third-party confirmation of supply or reasonable expectation of supply
- similar ‘locate rule’ in equities