2024-03 Consolidated Business Notes
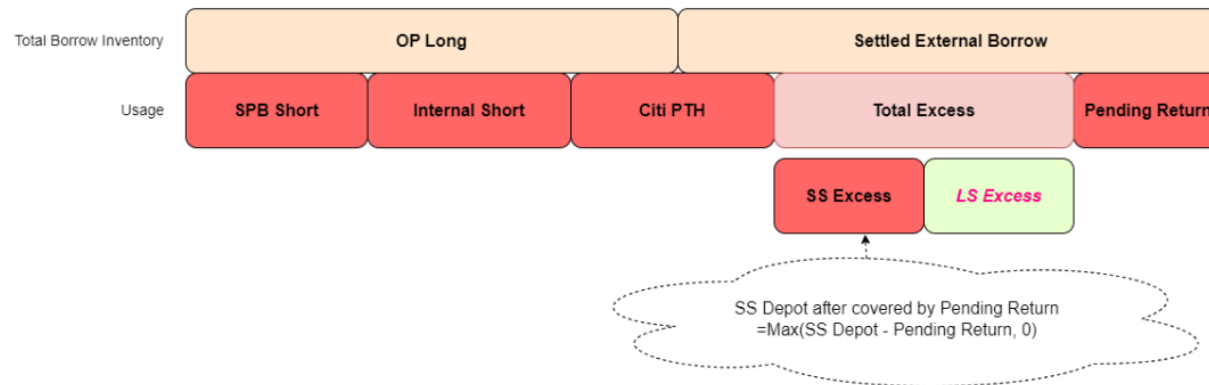
TW Colo

LS Excess Top Down

Depot Holding	SOD Citi Long Depot	Collateral Pledge	Bilateral Pledge	External Loan
Break Down	SPB Long	Non OP Long	Pending Return From LS Depot	LS Excess

= Pending Return exc CITI PTH - SS Depot

LS Excess Bottom Up

Total Borrow Inventory	OP Long		Settled External Borrow		
Usage	SPB Short	Internal Short	Citi PTH	Total Excess	Pending Return

SS Excess	LS Excess

SS Depot after covered by Pending Return
=Max(SS Depot - Pending Return, 0)

TW have two depots

- Long depot
  - settle on T+2
- short depot/ borrow depot
  - settle on T+0
  - need to borrow from lenders

SOD Depot Excess Calculation

- Two approaches to calculate LS excess

- top down and bottom up
- top down
  - Depot holding - what is under our depot
    - Citi long depot (extract HD rows from citi file)
    - collateral pledge
      - onshore TW collateral pledge
    - bilateral pledge
      - collateral pledged for bilateral funding
    - external loan
      - loan lent out to external onshore or offshore lender
  - break down of depot
    - SPB long - client long
      - we cannot use client long as inventory
      - we currently only using it as collateral
    - non-OP long
      - OP (outperformance) long book XTWA901, D1 stable outperformance stock for SBL
      - non-OP long is house long minus OP long
        - derivatives or D1 non-OP book
        - they cannot be used as inventory
    - pending return from LS Depot
      - Pending borrow return is something cannot be used since it will be settled soon
- bottom up
  - Borrow inventory
    - OP Long
      - stable D1 desk inventory for SBL
    - settled external borrow
  - usage
    - SPB short
      - client short
    - internal short
      - short position in other desks
    - Citi PTH
      - borrow on hold in Citi but not taken down
    - pending borrow return
    - SS excess
      - Citi SS depot number - pending return
      - Rule: Pending return must always return from short depot first before Long depot
- detect if difference between the LS excess calculated by two approaches
  - can due to upstream source data problem
- Aggressive LS excess
  - Default/Conservative LS Excess only consider book **XTWA901** for OP Long

  Aggressive LS Excess will include two extra books **IJAP901, IATW901** from D1 desk for OP long

  [EQF-prod] TW Colo Redo Depot Excess 20240319

  LS excess Top Down VS Bottom Up Breaks

BBG	LS excess (Top Down)	LS excess (Bottom Up)	Aggressive LS excess (Top Down)	Aggressive LS excess (Bottom Up)	Min LS excess	Aggressive Min LS excess	SS excess	Total excess	Uncovered Total PTH	LS excess Top Down VS Bottom Up Difference	Aggressive LS excess Top Down VS Bottom Up Difference	Notes	DT Allowed	Sell First Buy Later DT Allowed
2454 TT	720020	740020	2371467	2391467	720020	2371467	0	720020	0	20000	20000		Allow	Allow
2341 TT	3	0	3	0	0	0	0	0	0	3	3	Minor odd lot issue.	Not Allow	Not Allow

Master File Generation

- PTH coverage
  - rules
    - LS PTH covered by LS excess first
    - SS PTH covered by SS depot excess and Citi PTH first
    - Remaining LS PTH will try to be covered by remaining SS depot excess and Citi PTH
      - Red alert, desk need to action
    - Remaining SS PTH will try to be covered by LS excess

- Amber alert, not efficient
  - Uncovered PTH
    - Red alert, desk need to action
- Total PTH - split into LS or SS PTH based on booking counterparty code
  - find out uncovered LS PTH and uncovered SS PTH
    - using conservative LS excess and aggressive LS excess

[EQF-prod] TW Colo Redo Master File 20240320

Uncovered PTH

BBG	Uncovered Total PTH	Aggressive Uncovered Total PTH	Uncovered LS PTH	Aggressive Uncovered LS PTH	Uncovered SS PTH	Aggressive Uncovered SS PTH	Total PTH
00878 TT	1399000	1399000	0	0	1399000	1399000	3500000
1582 TT	74000	74000	0	0	74000	74000	74000
2327 TT	6000	0	6000	0	0	0	6000
2329 TT	506000	506000	0	0	506000	506000	1570000
2344 TT	187345	0	33345	0	154000	0	1500000
2387 TT	4000	4000	0	0	4000	4000	4000
2888 TT	5413677	2057430	2593677	0	2820000	2057430	18500000
3034 TT	64629	0	0	0	64629	0	138296
3036 TT	96000	96000	96000	96000	0	0	3481000

- Pending Return
  - pending return from LS depot
  - pending return from SS depot
- LS excess SOD after colo
  - LS excess SOD - Colo approved LS
    - LS excess SOD is LS excess after cover PTH using the PTH rules
- SS excess SOD after colo
  - SS excess SOD - Colo approved SS
    - SS excess SOD is SS excess after cover PTH using the PTH rules

	Date	BBG Input	USD	DT Allowed	Sell First Buy Later DT	Onshore ABR	Offshore ABR	LS excess SOD after Colo	LS excess SOD after Colo US$	Aggressive LS excess SOD after Colo	Aggressive LS excess SOD after Colo US$	SS excess SOD after Colo	SS excess SOD after Colo US$	Pending Return From LS	Aggressive Pending Return	Pending Return From SS	Total PTH	Uncovered Total PTH	Aggressive Uncovered Total PTH	Uncovered Total PTH US$	Uncovered LS PTH	Aggressive Uncovered LS PTH
2	20-Mar-24	1101 tt	0.97	Allow	Not Allow	0.50	0.50	0	0	578,039	560,340	-990,000	-959,688	-500,000	-500,000	0	0	0	0	0	0	0
3	20-Mar-24	1227 tt	1.17	Allow	Allow	2.60	0.00	0	0	0	0	-34,000	-39,785	0	0	0	0	0	0	0	0	0
4	20-Mar-24	1229 tt	2.11	Allow	Allow	2.00	0.00	9,000	19,002	9,000	19,002	-131,000	-276,581	-22,000	-22,000	0	0	0	0	0	0	0
5	20-Mar-24	1504 tt	1.76	Allow	Not Allow	1.50	1.40	40,000	70,272	301,494	529,667	0	0	0	0	0	0	0	0	0	0	0
6	20-Mar-24	1101 tt	0.97	Allow	Not Allow	0.50	0.50	0	0	578,039	560,340	-990,000	-959,688	-500,000	-500,000	0	0	0	0	0	0	0
7	20-Mar-24	1227 tt	1.17	Allow	Allow	2.60	0.00	0	0	0	0	-34,000	-39,785	0	0	0	0	0	0	0	0	0
8	20-Mar-24	1227 tt	1.17	Allow	Allow	2.60	0.00	0	0	0	0	-34,000	-39,785	0	0	0	0	0	0	0	0	0
9	20-Mar-24	1504 TT	1.76	Allow	Not Allow	1.50	1.40	40,000	70,272	301,494	529,667	0	0	0	0	0	0	0	0	0	0	0

AA	AB	AC	AD	AE	AF	AG
Uncovered SS PTH	SS PTH covered by LS excess	LS PTH covered by SS excess and Citi PTH	Citi T+1 Long Depot	Citi T+1 Short Depot	Colo LS Approved Qty	Colo SS Approved Qty
0	0	0	392,039	0	0	990,000
0	0	0	0	6,000	0	40,000
0	0	0	1,000	0	0	131,000
0	0	0	31,494	0	45,000	0
0	0	0	392,039	0	0	990,000
0	0	0	0	6,000	0	40,000
0	0	0	0	6,000	0	40,000
0	0	0	31,494	0	45,000	0
0	0	0	4,000	0	16,000	44,000
0	0	0	94,661	0	30,000	390,000
64,629	73,276	0	42,677	0	0	62,000

TW Colo Old flow

SOD borrow requirement 7:30

- Input Locate files
  - Citadel locate file records separated by receive time
    - one is Citadel active batch, another is Citadel risk batch
  - HRT locate file is preprocessed by desk manually every morning
- Allocation and Fill Logic
  - Basic idea
    - get LS inventory from Sphinx
    - fill Citadel active, HRT and Citadel risk by percentage allocation of LS inventory
      - don't support partial split of LS and SS locate now
    - For unfilled locate request, try to fill by SS
    - SS depot from Citi file first used by PTH, if remaining enough to fill, then ok
      - if remaining not enough, check Yuanta hold file if enough to cover
      - if still not ok, then resort to communicate and hold from other lenders
- generate SOD DMA file
  - desk upload the file to Falcon DMA
  - SODDMA is the SS depot after used by colo SS fill
- generate SS order borrow requirement file
  - for Lender =NA in external take down tab
  - ask Yuanta, Citi or other lenders through manual chat and fill in the lender name after hold borrow
  - send the updated file to TW dealing chat for NITB record
  - override the quantity as zero in TWColoSSinventory file for SS order cannot be locate in the NXTC trading file=> inform JP sales no good locate
- Allocation Details
  - Allocation of LS Inv
    - LSInv is the lent_inventory column in TwColoLentInventory excel file from Sphinx in email
    - inv=LSInv
    - If 0.5* Inv > citadel1 request
      - Fill citadel1 request first
      - (Remaining inv)*0.7 > HRT
        - Fill HRT request
          - If 0.3 * remaining inv > Citadel2
            - Fill Citadel2
    - else
      - If inv*0.7 > HRT
        - Fill HRT request
          - if remaining inv > Citadel2
            - Fill Citadel2
      - Else
        - If inv > Citadel2
          - Fill Citadel2
  - Calculate SS fill
    - SSrest= Citadel + HRT+Citadel2 request - filled amount in LS section => SSlocateQty
    - if SSDepot - PTH >=SSLocateQty
      - SSDepot = SSDepot - SSLocateQty
    - else
      - if Yuanta hold > SSLocateQty
        - SSDepot= PTH
        - YTakedown = SSLocateQty - (SSDepot - PTH)
      - else
        - ETakedown = SSLocateQty
    - Idea is SSLocateQty is the amount cannot be filled using LS inventory, then they need to filled using SS depot (BR from citi file)
    - but SSDepot need to used by PTH first, the rest if enough, then use to fill SSLocateQty, if not enough, then consider the rest to be used by Yuanta based on Yauanta hold file
    - the rest need to manual locate from external (ETakedown)
    - SSDepot is BorrowDepot in output file <= quantity of SS depot used to fill this Citadel SS order
    - YTakedown is BorrowFromYuanta
    - ETakeDown is BorrowFromExternal
    - For the external take down suggestion, it will propuate the KGI or YUANTA depends on the KGI or Yuantao hold file have this name or not, if so, will add that to the external take down tab. (but not accurate? because the quantity may already used in SS fill?)

Cindy TDCC check 7:50

- Colo Long sell Check
    - check if HD depot + pledged out share + external loan > SPB long (client long)
        - if yes, all good
        - otherwise, buy to cover client
    - Idea is to check if today SPB unwind all long position (SPB client long position), can we use the Citi Long depot and the pledged collaterals and external loan to cover today trade?
- Colo hold check
    - check if HD depot + pledged out share+ external loan - SPB long > approved locate
        - if yes, all good
        - otherwise locate and hold external borrow
            - override the LS to SS in NXTC trading file
    - Idea is to check if SPB unwind all long position (SPB client long position) and client execute all LS locate, can we use the Citi long depot and the pledged collaterals and external loan to cover it all?
        - If not enough, we may need to locate and hold external borrow

Intraday Take down Batches 10:30 and noon

- based on the execution data, look for how much order executed (locate approved before), we need to take down from Yuanta or other onshore lenders

Final Return at Noon

- it check if after the borrow return, do we have enough borrow quantity to cover SS, if still enough, then approve and execute the borrow return

Citi EOD Check 4pm to 6pm

- check if any late booked borrow to be taken or borrow return to cancel
- check if enough borrow to cover the SS? has borrow been booked?
- check to see if any oversold in long depot
- sent to operation team to book the recall

EOD T+1 locate and approval 6PM

- after 4:30pm, desk download pending locates from Falcon
- desk send files to Yuanta and KGI for hold check
- lenders will reply in email
- Airflow generate the locate response file at 6pm
- Trader will filter the names with partial, x , offshore, copy the reject BBG code and reject them in Falcon,
- and trader approve the names in Falcon

Depot Projection

- Short depot
    - estBR =BR SOD depot + borrow - Colo Short - NP3 SS + Return
        - if estBR >0
            - SS and return is ok
        - need to take down borrow
        - return from HD

- or SS uncovered
- Long depot

  - HD before return = HD SOD depot + all pledged - Colo LS hold - NP3 LS
  - HD after return = HD before return - return from HD
  - if HD after return >= client long
    - all good, depot enough for client long and return is ok
  - else
    - reduce the return to cover the client long
    - if no return still not enough, then need to handle

General

PTH

- For PTH
  - other banks have two records
    - one is short with 1M notional, with some short spread
    - another is long with 1 M notional, zero spread
    - the net effect is we don't have any shares (netted long and short) and with some short spread paid by client to reserve the stocks
- For Nomura
  - client book PTH for 1M stocks
    - 1M stock borrow from Yuanta with 100% div
    - Nomura short depot will have 1M shares (borrowed and reserved for client)
    - for Div, Nomura is UK entity, we entitled to 90% of TW stock div
      - thus we need to book -10% to the Spear div so that the client will need to pay us 10% div
      - then we can pay 100% div back to Yuanta to make up 100%
    - But normally client won't willing to pay 10% div
      - thus we need to know the record date and may unwind the trade, and rebook again after record date
      - or we can find another lender with lower div rate (<100%) if the stock is not hard to borrow (look at borrow rate)
  - if client book Short order
    - 1M stock borrow from Yuanat for 100% div
    - Nomura short depot have zero, because it is deducted by the client SS order
    - 100% div is paid by client and transfer back to Yuanta (manufactured dividend)
      - if we can find lender with lower div rate, we can earn the difference.

Delta one

- May/Simon desk is prop trading (principle)
  - index arb
  - swap trading
  - EV basket
  - they build some of the book relatively stable stock for the SBL desk to use as inventory
- Frantz desk is prime client facing desk (swap flow)
  - SBL desk also handle swap flow
    - example is TW colo flow is mainly swap
  - Frants team is doing MSCI index trading

Book level

- SP1 firm
- SP2 division
- SP3 trading desk
- SP4 strategy
  - another name is series
  - or call book
  - or call swap shell
  - or call client book
  - PTH is on separate SP4 book vs short book

Prime

- Our team (Equity swaps and financing) is doing these for TW, HK, KR
  - client facing D1 swap flow (locate, swap booking)
  - SBL
  - financing (Laurie)
    - biparty repo
- we are trying to grow AU market
- Frants team is doing MSCI index trading
- May team is doing other index arbitrage

CN pricing

- May team sample the CN index
  - e.g. long all A50 underlying, short index futures
    - CN doesn't allow SS, so must be long underlying
    - if the futures price deviate from the fair index value, then long/short to capture the basis.
      - not meant to take any directional, just arbitrage.
  - this will provide inventory for SBL desk for CN stocks to lend out
  - the inventory will have costs. e.g. 1%
  - SBL desk will try to earn more than the cost to gain
- Two use cases of the rates
  1. we get the underlying from May's team and try to lend it out to earn spread
     a. benchmark rate + premium layering rates
  2. we bid the underlying for client, and want to know what should be the rate for the underlying.

New B2B Booking Suggestion

- Detect order side flip from NP3 orders and suggest internal B2B booking
  - From NP3 parent and child order records
    - match by client, quantity, RIC code
    - show also price, parent side, child side
    - assume parent to child is one to one mapping
      - parent is Client facing order
      - child is the hedge trade execution
      - Currently we only support one to one mapping
  - if parent side is SS and Child is LS
    - e.g. parent is short sell, child side is long sell
      - flip from SS to LS since we can use internal B2B from D1 to do the LS
      - How execution knows it is LS on child level?
        - Kevan manually touch the order in NP3 to flip the order side to LS (Given Rebecca already show LS to the client that it is LS)
        - If forgot to flip manually, will be complained and notified by client very quickly. (price of LS should be better vs SS)

- How about the flip is parent is long sell, child side is SS, is it possible?
  - it is possible, and client will be mad, but the report will ignore this to avoid too much noise. (Confirmed with Flo)
- suggest to book B2B for the order flip
- Next day morning, reconcile the previous day B2B suggestion with the Euclide new record to ensure that the B2B was booked

B2B Unwind Suggestion

- from NP3 order, find all buy order. Reference daily Swap open position report to get the client open position, if the open position is negative, then the buy order is buy close order.
- For every buy close order, if there is an existing B2B trade (reference Euclide daily morning B2B report), if found, then suggest to unwind B2B

Recall

- Borrow
  - Index Arb desk have long position
  - Prime borrow from Index desk
  - Borrow trade
- Loan
  - Prime loan that long position out to other counterparty
  - Financing/Collateral trade
    - bilateral is financing
    - collateral is for borrowing stocks which client want
- After some time
- Index Arb desk sell that long position
- KR EOD report (Clive report) detect from NP3 trades that we are short, thus need to recall collateral from other counterparty
  - ops will book this on T, settle on T+1
- then we book borrow return to return that stock back to Index arb desk book.
  - funding engine will book this on T+1, settle on T+2

KR Automation

1. Automate check in Airflow
   a. external borrow + OP long > SPB short + house short+ PTH
   b. flag if this check fail
   c. KR Reconcile_BorrowCoversSPBshort.xlsx
      i. in Spear T+0 Intercompany is one part of external borrow, verify in GSR if the same
2. Korea EOD sell trades checks
   a. If comment is not "Enough", flag it in the email body obviously
      i. Borrow or "Recall from collateral"
      ii. If possible, when Borrow keep appear, keep alerting
   b. KR-NP3EODCheck-20231117.csv
   c. **Tasks**
      i. **migrate to use live GSR endpoint instead of start of day snapshot (live transaction views to calculate T+2 projected depot)**
   d. No need to use updated NP3 data, since it won't need to change, the live data need to refresh is GSR data
3. Recall from Delta one desk
   a. Not yet automated from Airflow, need to automate it
   b. similar handling as Korea EOD sell trades checks
   c. Need to check how to include Non-delta one desk sell trades data
4. Execution C&C (Cancel and Correction) with NFIK
   a. current process only show firm position aggregated activities
   b. we need to understand/source SOD position on fund level and source MO allocation on fund level

     c. Given negative position on fund level
          i. if there is sell order =>alert
          ii. if sum of buy order > position => alert

- client level Spear short position
- Np3 buy & sell execution sort by timestamp
- if short position, buy order sum is bigger than short position, then flag

long sell/short sell scenario

1	client want to buy 0005.HK	No need	LONG	credit limit check
				
				restricted stock check
				
				substantial holding check
					No need	1. execute long hedge trade
						2. can fill it with house inventory
						   • should be capable after Nuvo live
						3. can net with other client short position on the same date without execute hedge in exchange (internalization)
						   • currently support
						   • but the volume is not big, so cannot do too much of internalization

2	client want to sell 1K 0005.HK while its position 5K 0005.HK (Unwind trade)	No need	SELL	Have enough position to unwind?	In the future Lima will have firm check to check if the client position have lent out? • if lent out, then may block it • in other bank, if lent out then create a synthetic fill to do a risk fill	1. execute short hedge trade to unwind client position?
3	client want to sell 1K 0005.HK while its position is flat or negative already but we have house inventory to lend (long sell?)	Sell locate, then LS locate approved	SELL	credit limit check	LS locate approved? House inventory enough?	use house inventory to fill the LS order, still need to execute in exchange (because the long trade already settled before)
4	client want to sell 1K 0005.HK while its position is flat or negative already and house inventory is flat (short sell)	SS locate	SELL OPEN	credit limit check	SS locate approved?	borrow from onshore lender/offshore lenders or other firms (external availability)?

Locate request will not indicate LS or SS, but when approve, the locate approval will indicate of LS or SS.

for manual locate, trader will tell the client in chat that it is LS approved or SS approved with the agreed rate.

- During trade booking,

- MOB will feed the trade details to Spear without any rate
  - MOB will migrate to SVS in the future

- Spear will then trigger trade enrichment
  - Spear will call Sphinx to get the rate from the locate approval
  - if nothing there, will fall back to use GC rate.

Normally sell order have two types=> SELL OPEN (short sell), SELL UNWIND (sell to unwind long position)

What is the benefits of Long sell vs Short sell?

- For Client
    - LS no uptil rule, no quota limiation
    - LS no need to queue in exchange execution, SS need to queue in exchange execution
        - that's why SS normally the price is a bit worse than LS
- For Nomura
    - we are selling out the inventory, reducing the balance sheet (off balance sheet) => better balance sheet

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Market practice:

- SBL desk have open trade every day to borrow from the street, they may pre-borrow some hot stock, paying the fee.
    - thus it can lose money here, taking risk
- and they need to return excess stock borrow
- Client send in daily locate file (which may be the same every day) for underlying and locate quality
    - all locate default is short sell locate
    - but the client can have long position on the stock

Long Sell Inventory Tool

- For TW inventory locate
    - Vicky manage it by spreadsheet
    - TW colo batches done on airflow pipelines
    - TW have two depots
        - one for LS depot
        - one for SS depot
    - TW collateral is managed by Nic
- For CN, HK, KR inventory locate
    - for Long sell locate, done on LS inventory tool - Karina to approve - managed by Delta one desk
        - update for intraday trades to avoid over locate
    - For Short sell locate
        - if it is internal locate, done by Falcon
        - if it is external locate, need to done in chat manually

Inventory sources:

- stock Qty: Delta 1 index arb constituent stock inventory
- EV basket: another book
- spearSPB inventory: from client long position

CN doesn't allow short sell, that's why using LS

Agg Unit:

- agg unit is a business unit for all clients

- 1 agg unit for CN
- 2 or 3 agg units for HK

Spear series config

- apply how much percent of a stock from position can be used in the long sell inventory pool
- buffering rule

OP trade

- out performance trade, to allow long stocks be lendable to earn extra return

PTH

- inventory - PTH = amount lendable

Flow:

- client A long some stocks, after apply buffering, 50% of them put in LS inventory pool
- D1 index arb constituents stocks also put in the inventory pool
- client B LS from the inventory, approved by Karina to make sure not oversell. (locate process)
- If client A need to sell the stocks, client B may need to unwind the LS trade to return to client A.
    - that's why we need to make sure inventory is stable stocks.

QuantLab: not used any more, the client left

LS tool used mainly for CN and HK. KR market not used any more, KR only use SS trade now.

Workflow:

- stockQty (index arb inventory) + spearSPB inventory (client long position) + EV basket - PTH (trade from Spear) = SOD long sell inventory
- Kevan add to the tool to indicate a client want to request some share from the LS inventory
- type is intraday by default
- Karina approve it, the system make sure that it cannot be approve for negative LS inventory.
- after approval, if Kevan confirm that the inventory will not be used, he can ask Karina to release that approved request. the amount will be added back to the LS inventory.

Spear:

- normally the trade is swap+hedge (one to one), which Nuvo and Lima try to resolve
- swap only trade is for odd lot case or PTH trade.

Ticket Types screen can see the formula defined. (may be stale already)

For some case, when Karina is away from desk, multiple people request the LS request and urgently execute them in parallel, will lead to over-locate or over-sell

For CN market, the oversell will be rejected in exchange directly.

for HK market, the oversell can be sent to exchange, then need to report to SFC for the case (may be penalty by fining)

For KR market, the penalty is higher, that's why stop using the LS inventory for KR.

The breach is LS order should be actually a SS order

By default, Karina want to hide all stocks with short selling eligible = false, not showing to other people

- because foreign ownership restriction rule which will have complication (may failed to trade over the limit)

GDR and PP pipeline => more expensive to borrow

ref rate => static rate Karina update every one or two weeks, may be indicative, mostly link to whether the stock is in the index or not.

My Questions:

- It should be able to warn the user if there is pending locate which may be able to avoid over-locate?

QFII

- qualified foreign intuitional investor
- allow foreign institution to trade in yuen dominated stocks in Shenzhen or shanghai exchange
- QFII license is in Japan (entity NSC)

	Spear AEJ (NIP entity)	Euclid AEJ (NIP entity)	Japan NSC (NSC entity)	
stock			10 CNY	stock book on NSC using CNY
swap internal book 1		10 CNY	-10 CNY	book to book transfer to Euclid using CNY
swap internal book 2	10 USD	-10 USD		book to book transfer to Spear using USD (client swap currency)
swap client	-10 USD			for reporting to client

There are three trades need to book

1. stock on NSC
2. book to book NSC to euclid
3. book to book euclid to spear

Karina maintain 2 central books in Euclid for QFII

- one is allow to add to inventory in LS tool
- another is not allow to add to inventory in LS tool

Requirements from Karina

- from the euclid data feed, filter by these to get the QFII stocks
    - SP4: CNPO901
    - Type: EquitySwap
    - Counterparty: NOMURA SEC TOKYO [NIP]
- add the quantity to Stock Qty column
- add label to indicate this is QFII stock (better with different color)
- if I add a new stock ABC with -100 (negative means adding inventory to LS tool) in adjustment request, Karina expect it to add to the ticker population.
- the above grid and below grid show different color for zero inventory

Flo discussion (19 Sep 2023)

- China Stocks
    - China connect
    - QFII

Sources of stocks

- D1 inventory (May's desk index arb)
- EV basket (May's desk)
- client long position
- B2B (with GTJA and GF external brokers)
    - outsider firms cannot trade with the local small firms, that's why pass through us as the middle man
    - we collect the spread in the middle
    - that two parties are not allowed to trade directly due to regulations

Consumers of stocks

- Short swap (CN not allow to do SS)
- PTH

1. Div Rate Management Page

Search Criterial

Client	[▼]
Market	TW [▼]
Ric Code	
Record Date	from today to 2023-10-31 [▼]

[Search]

Main Table (Weighted Average for All Clients and All Trade Dates)

Ric Code	Weighted Average Div rate on short order (%) ASDR - Spear	TW tax rate (90%) - PTH Div Rate(%)	Average Borrow Div Rate (%) ABDR - Sphinx	ASDR - ABDR	TW tax rate (90%) - PTH rate(%) - ABDR	Record Date - Spear	Record Date - Sphinx	Record Date Matched
2330.TW	85%	94%	90%	-5%	4%	2023-10-01	2023-10-01	Yes
2310.TW	100%	85%	90%	10%	-5%	2023-10-01	2023-10-03	No
2314.TW	100%	92%	90%	10%	2%	2023-10-01	2023-10-03	No

Selection Breakdown Table by Client and Trade Date

Ric Code	2330.TW
Average Borrow Div Rate for all clients(%) ABDR - Sphinx	90%
Record Date in Sphinx	2023-10-01

Spear Short Orders

Selected	Client	Trade Date	Quantity	weighted average Div rate on short order ASDR - Spear	Record Date - Spear
⊗	Citadel	2023-8-20	1000	88%	2023-10-01
⊗	Citadel	2023-8-21	1000	86%	2023-10-01
◯	Point 72 HK Ltd	2023-8-20	1000	85%	2023-10-01
◯	Point 72 HK Ltd	2023-8-22	1000	85%	2023-10-01
⊗	Polymer Capital	2023-8-22	2000	83%	2023-10-01

Spear PTH

Selected	Client	Trade Date	Quantity	weighted average Div rate on PTH rate	TW tax rate (90%) - PTH Div Rate	Record Date - Spear
⊗	Citadel	2023-8-20	1000	-10%	100%	2023-10-01
⊗	Citadel	2023-8-21	1000	-5%	95%	2023-10-01
◯	Point 72 HK Ltd	2023-8-20	1000	-10%	100%	2023-10-01
◯	Point 72 HK Ltd	2023-8-22	1000	-10%	100%	2023-10-01
⊗	Polymer Capital	2023-8-22	2000	-5%	95%	2023-10-01

[Amend Selected Div]

1.1.1. Work flow

- select client,Market, Ric code or record date range (all are optional)
  - **record date range will filter if either record date in Spear or record date in Sphinx match the filter range**
  - **e.g.**
    - **if search criterial is today to 2023-10-31**
    - **Spear record date is 2023-11-03, Sphinx record date is 2023-10-30**
    - **the record should be showing in Main Table because one of the record date match the filter range**
- click search to find all the relevant records in Main Table
- In Main Table
  - Average Div rate is for all client in both Spear and Sphinx for one RIC code
    - Spear average div rate need to be calculated from Spear record since Spear data is on per client and per trade date level (as shown in breakdown table)
  - **we assume record date is the same for all records in Spear for same RIC code for all clients and all trade dates (Need to confirm/verify)**
  - Will highlight if ASDR - ABDR is negative => Nomura is losing money
    - if Average Spear Div Rate (ASDR)- Average Borrow Div rate (ABDR)<0 need to review, else OK
      - Spear short div rate is the div rate client pay to Nomura
      - Average Borrow Div rate is the div rate Nomura pay to Client
  - Will hightlight if record date in Spear is different from Sphinx
- If user select any row in Main Table, the Selection Breakdown Table will appear to reflect for the selected row
  - support select all or unselect all
  - User can select the rows in the berakdown table to choose to amend Div rate
    - Amend Div rate workflow is for future scope.

1.1.2. Data Lake Integration

- Need to source outstanding short trades in Spear

- we need field
  - client
  - RIC code
  - BBG code
  - trade date
  - quantity
  - div rate on Short order
  - average div rate on PTH
  - record date
- Need to source external borrow weighted average rate in Sphinx/Falcon
  - we need field
    - RIC code
    - BBG code
    - average borrow div rate for all clients
    - record date
- Other technical considerations
  - Will data lake endpoint support customed filtering? or the client API or UI to get all data nd do filtering on client side?
    - would be ideal for data lake endpoint to support filtering for performance reason

2. Borrow Rate Vs Order Spread Difference

Borrow Rate/Short Spread Management Page

Search Criterial

Client	▼
Market	TW ▼
Ric Code	

[Search]

Main Table

Ric Code	Weighted Average Spread on Short and PTH for all clients- Spear ASS (bps)	Average Borrow Rate for all clients- Sphinx ABR (bps)	ASS - ABR (bps)
2330.TW	12	14	-2
2310.TW	15	10	5

Selection Breakdown Table

Ric Code 2330.TW
Average Borrow Rate for all clients- Sphinx ABR (bps) 14

Selected	Client	Trade Date	Quantity	Average Spread on Short order and PTH- Spear ASS (bps)
[X]	Citadel	2023-8-20	1000	14
[X]	Citadel	2023-8-21	1000	10
[ ]	Point 72 HK Ltd	2023-8-20	1000	12
[ ]	Point 72 HK Ltd	2023-8-22	1000	12
[X]	Polymer Capital	2023-8-22	2000	12

[Amend Selected Rate]

Summary

- Nuvo have API to provide SOD position and intra-day trade
- BRACE decode the open/unwind for each trade
- EOD rate calculation before allocation will be approximately correct, rerun the following morning should be accurate (post allocation)
- **Questions: Nuvo support rate carried over to allocation?**
- Buy or Sell unwind can be ignored
- Buy Open waterfall logic
  - Outperformance list
    - mostly China
    - Nomura pay for client to long some stocks
      - we can lend out with higher rate to cover it
  - Long Axe list
    - client and stock level
    - offer cheaper rate to encourage client to long some stocks
      - even zero rate to offload the balance sheet cost to client
      - we may have large house inventory
    - if match, then apply the rate
  - Default long spread
    - client profile
    - may get from SVS on day one
  - Alert
    - alert if nothing match
- Sell Open waterfall logic
  - decide LS/SS on hedge trades
  - apply waterfall logic
    - PTH Axe LocateAlert
  - **Questions: For some client, default is using Locate since PTH is cheap, they only start using PTH if cannot locate**
- Send the calculated weighted average rate to Nuvo

How Nuvo deal with rate:

- GC in client config
- Override rate
  - can be used by BRACE
- Auto-rerate from Falcon

Nuvo provide SOD position, provide intra-trade trade

- BRACE to decode the OPEN UNWIND type for each trade
- EOD calculation before allocation will be approximately correct
- Rerun the following day morning will be accurate (post allocation)

Questions:

- Apply rate then allocation will work? Will the rate carry over to allocation?

- Will apply rate after allocation work?
- Need two sample data set from Nuvo
    - Trade details before allocation
    - Trade details after allocation

Given NP3 trades and assume the trade is already allocated from fund to strategy level, so that we can base on SOD position on each clients (LIMA?), decide for each trade the trade types:

- buy open
- sell open
- buy unwind or sell unwind (ignored)

Buy Open Trade Waterfall

- Outperformance list
- Long Axe list
- Default long spread
- Alert

Sell Open Trade

- Determine if Long Sell or Short Sell
- apply water logic

    - PTH
    - Axe
    - Locate
    - Alert

For buy open and sell open trades, send the calculated weighted average rate to Nuvo

Questions

1. PTH workflow (client specific preference or daily override of using PTH or Locate) => Flo and Gianni to confirm
2. Where to source Fund<=>Strategy mapping?
3. Are all upstream data on the strategy level?
    a. Np3 trade
    b. Falcon
    c. Outperformance list
    d. Axe
    e. PTH
4. Where can we get SOD position on each client on strategy or fund level?
5. How to send weighted average rate to Nuvo?
6. What are the retrigger/override use case?

Trade

- LIMA has SOD position on all clients

- Given we have intraday execution on all clients
  - the order fix message have the strategy tag

- decide the order is open or unwind

buy open

- outperformance list
  - mostly China
  - Nomura pay for client to long some stocks
    - we can lend out with higher rate to cover it
- Long Axe list
  - client and stock level
  - or client level
  - offer cheaper rate to encourage client to long some stocks
    - even zero rate to offload the balance sheet cost to client
    - we may have large house inventory
  - if match, then apply the rate
- default long spread
  - client profile
  - may get from SVS on day one
- better to have configurable list input config

sell open

- decide LS/SS on hedge trades
- apply waterfall logic
  - PTH Axe Locate->Alert

buy unwind or sell unwind

- Ignore, no need to calculate

calculated rate feed to Nuvo

- but how?

Rate Calculation

- For each trade
  - find PTH, Axe, Locate records for that fund, strategy, Long/Short type
  - apply waterfall logic to calculate weighted average rate for each trade
    - PTH Axe Locate->Alert
  - Save the records to deduct the usage on PTH, Axe, Locate for the outstanding amount
  - Trade will always consider outstanding amount in the waterfall logic
    - Need to consider previous day balance or upstream system have new record for PTH, Axe and Locate every day?
  - **For some client, default is using Locate since PTH is cheap, they only start using PTH if cannot get locate**
  - Need to notify downstream the PTH/Axe/Locate/outperformance list is used?
    - how downstream know that it's used and to be updated

- Need to override calculated rate?
- Need to consider cancellation of trade after the batch calculation?
- Need retriggering of the batch?
- What is the cutoff time for the rate calculation need to finish every day?

Input Data

Flo Session 21 Sep 2023

- Long depot is Nomura buy
    - include internal desk buy (e.g. derivatives desk)
    - include swap buy (include prop trade and agency trade for clients)
        - SPB long and short are agency trade for clients
- Short depot is onshore or offshore external lender borrow
    - we seldom borrow from other banks

- examples

    - borrow from citi (borrow settle into short depot, add to short depot amount)
    - client place a short order (sell settle from the short depot, reduce the short depot amount)
    - client buy back short cover (buy share settle into long depot, add to long depot amount)
- example
    - borrow from Citi 300K (short depot =300K)
    - point72 place SS order 300K (short depot =0)
    - SBL desk no excess => nothing to show because long depot and short depot are zero
    - point72 cover short, send buy order 300K, (short depot=0, long depot=300K)
    - SBL desk excess =300K in long depot
    - then can recycle this 300K share excess in long depot show to next client, the client place SS order, we can flag it as LS to use that long depot in the market.

- Long depot
    - prop trade long position
        - can use to lend out
    - agency trade long position (client long position)
        - can use to lend out theoretically but not now due to system limitation
        - only used as collateral in current design
            - because if lent out, if the client sell the position, no system capability to stop the client sell order, no system capability to inform that the share has been lent out but now need to recall
            - Flo mentioned other banks can detect this case and pause the client sell order, create a synthetic fill to partial not fill the trade.
    - buy cover (which is to buy to unwind the existing short position)
- Short depot
    - external borrow
        - can use to lend out
- SPB long is the client long position
- SPB short is the client short position

PTH trade

- client pay fee to hold the asset for future short sell
- when the short sell order comes, Nic will check if there is existing PTH, then unwind the PTH and use that asset for new SS trade

general collateral (GC)

- offer fee is cheap, can be substitude with each other without changing the repo rate
- others are special collateral or hard to borrow names.

back to back trade (B2B)

- two linked trades, A buy from B, and then A sell the same to C
- for subsidiary to pass the trade to another subsidiary.

TW collateral

- Nomura TW ranking is quite high

Three collateral parts

a. Bilateral counterparty
- e.g. Standard charter
- bilateral repo
   - two party exchange money and collateral without clearing bank
- set up long repo trade with counterparty to borrow large amount of USD for cheap funding for other desks
- different bilateral counterparty agreed different acceptable collateral types
- Nic cover the negative collateral expsoure to the counterparty every day
   - USD repo trade is static
   - if collateral value drop, then need to pledge more
- Nic use three input files
   - Citi (custodian) send the list of collateral availabe for T-1 6PM for next day
   - collateral returns list from ops email
   - position extract from SPINX
      - consist unsettled trade
      - load recall
b. Triparty
- triparty repo require a clearing banks
- JPM is the clearing bank
- our offshore lenders citibank, JPM use triparty
c. Onshore lenders
- e.g. Fubon, Yuanta
- Nic after using the collateral to cover bilateral counterparty part, he will send the remaining collateral to SBL ops to cover the SBL borrow trade collateral for that day

Settlement requirement for TW

- 1:30 PM close market
- 3:30PM settlement cut off
- max extension to 4PM to settle
- If collateral cannot be found/settle before 4PM, the trade will be fail to settle
- Nic said Rabobank (Holland bank) is quick to recall collateral intraday if we need any quick collateral.

Two TW depots

- HD - long depot
    - for long sale
    - may be from house long position (swap long trade)?
- BR - borrow depot
    - for SBL desk
    - for collateral from onshore lenders (e.g. Yuanta)
    - Long depot can be used to cover for borrow depot
    - but borrow depot cannot used to cover long depot
- When order, we don't know which depot to use, we need to make sure that we have enough for that particular depot
- When settlement, Citi will manage the two depot and settle with the correct depot collateral.

TWSE SBL System Overview & Publications - Taiwan Stock Exchange Corporation

Eligible collateral	•Cash (TWD, GBP, USD, EUR, JPY, AUD, HKD) •Bank guarantee •Eligible stocks for margin trading •Government bonds
SBL short selling limits	•Daily maximum short selling of borrowed stocks cannot exceed 30% of the average trading volume during the previous 30 business days per stock. •Maximum short selling of borrowed stocks cannot exceed 10% of outstanding shares per stock. •The total volume of short selling of borrowed stocks and margin short sales cannot exceed 25% of outstanding shares per stock.
	12 TWSE

Flo session (19 Sep 2023)

- TW collateral management
    - Nic manage the bilateral repo to borrow USD and use the pledge some TW stock as collateral at SOD
    - the rest of the collateral pool will be used for the intraday collateral for the onshore lender borrow
        - pledge stock collateral is not efficient
            - if we borrow 1M notional of a particular stock, then we need to pledge 110% collateral if it is cash collateral (TWD, JPY, USD)
            - for stock, it will require around 158% collateral, because 110% , and the collateral value apply 30% hair cut.
            - but if not used for collateral, we don't know what to use that stock for.
- There is credit limit check on SBL business
    - SBL exposure is the 58% of the borrow trade
        - if we borrow 1M, we pledge 1.58M collateral, the business exposure is around 0.58M
        - there is limit on the overall credit limit on the desk, it actually kind of set the hard limit for the business
            - that's why the desk will choose to flip some of the borrow to ofsshore lenders because offshore lenders are global firm, the credit limit is larger
            - for onshore lenders, we need to pick carefully for the borrow trade (choose higher rate borrow)
        - Flo monitor this credit limit daily
- There is a SS borrow requirement (the stocks need to borrow for client, e.g. Citadel)
    - can choose either to borrow from onshore or offshore lenders
        - offshore lender is more relaxed for the credit limit, but you may not be able to borrow for some small or mid cap stock

- small or mid cap stock will need to be borrow from onshore lender (onshore are smaller firm, then credit limit is tighter)
    - we need to pledge the collateral for the borrow
        - offshore usually can accept wider range of collateral
        - onshore accept only TW stock as collateral
        - when we pledge the collateral stock, there will be lot size for the stock, there will be rounding lot issue which make it overpledge.
            - the overpledge will be bigger if the stock price is big and lot size is big.
    - the onshore lenders have some fix size collateral buffer
        - it is some fixed notional collateral we pledged and keep in the onshore lenders
        - it is larger for some onshored lender which have more trades with us, e.g. Yuanta
        - this buffer is to cover some sudden change of the collateral amount shortage due to sudden collatera/borrow stock price change.
- Flo mentioned that the T0 SOD borrow requirement can be done in T-1 EOD
    - then can ask lender to hold T-1
    - if T0 SOD exchange published some update on uptick/Quota rules, then desk can ask client to cancel the locate for the updated stocks.
- Client Order comes in as Buy or Sell
    - for sell
        - if client position is long, then it is unwind => Long Sell
        - if client position <=0, then need to submit locate
            - the locate will be approved as LS locate or SS locate
        - When order comes in, there will be two level check for sell order

            - Client level check
                - check if client position enough to sell
                - if not, is the a SS locate approved
            - firm level check
                - if it is LS locate, is firm position enough to cover it?
                - if it is SS locate, is the SS locate approved?
                    - for SS locate, normally the desk need to look at external availability to decide if that SS locate should be approved
        - The hedge can be separated from the client order
- For current Nomura limitation, the desk cannot lend the stock from client A to another client B
    - because if client A want to sell the stock, we need to notified and recall from client B
    - but this procedure is not in place, doesn't link them together
    - that's why now the desk only use the stock from client to pledge as collateral instead
        - collateral swapping can be done intra-day
        - TW trade is settled on T+2
        - if client want to sell the stock, can swap the collateral and get that stock back to client on time
    - For other better firms, the desk can lend the stock from client A to another client B
        - if client A want to sell the stock
        - the system will notify the desk and the desk will do synthetic fill (risk fill on the sell hedge order)
            - basically the desk is taking risk on the hedge, and manage the size of total risk fill

SBL short depot	SS Locate	Lender Hold	SS Execution	Deficit

Rules

Execution - short depot = Deficit

The deficit then the desk need to take down from Onshore lenders or external. (from the hold)

For TW, as long as there is hold from the onshore lenders, the SS order can be placed.

- the hold is the onshore lender guarantee to reserve that for us.

approved SS Locate <= hold + short depot

   - if approved SS locate larger than the short depot + hold, we are over-locate

SS Execution <= approved SS Locate

Questions: How Citibank decide what is in the long depot, what are in the short depot?

TW Collateral Tool Requirement

Features

1. SBL desk can upload SOD inventory file to the systerm
2. SBL desk can add more intraday inventory to the system
3. SBL desk can remove inventory which is not being used from the system
4. MO book can input new borrow trade to the system
   a. support single stock and basket
   b. system will calculate the optimized collateral for the inventory and suggest to MO of the pledge
      i. system calculate based on minimum number of collateral names and reducing the over pledge amount by round lot issue
   c. MO can accept the suggestion?
   d. MO can edit the suggestion before accept?
5. For the accepted collaterals, MO can cancel the record and rebook them with other collateral?
   a. before and after it is being pledged with lender?

Technical

- can we use live price for calculating the borrow notional and collateral notional to reduce the risk of overpledge?
- audit of who did what, and when it happen?
- Permissions
   - only SBL desk can update inventory?
   - only MO can enter borrow trade and pledge collateral?

Reject Collateral Stock Feature

- Maintain Lender to reject collateral stock list
- the list available for one day up to one week

Pledge Collateral Calculation Algorithm

Assume everything is in USD.

Inputs: require_amount, available_inventory_exclude_rejected_stocks

TW depot projection

- Created by Vincent Chung, last modified on Aug 29, 2023

-

TW have two depots

- Long depot
    - settle on T+2
- short depot/ borrow depot
    - settle on T+0
    - need to borrow from lenders

For buy order, no need to locate

For sell order

- If client position is long, no need to locate

- If client position is flat/short, need to locate (but cannot differentiate long sell locate or short sell locate)

LS quote the same as SS

Depot projection

T+1	+10K	-	client A buy cover 10K, 10K added to long depot (settle on T+3)
T+0	-10K	-	client A SS 10K, 10K added to borrow depot, need to borrow from lenders 10K
T+2		-10K	no need to borrow because the long depot have 10K from client A buy cover

- need to identify client negative position and buy cover order which will be added to the long depot because the original negative position must be borrowed to cover already.
- In the future, LIMA will provide live inventory which will solve this problem

Return excess borrow

- When returning excess borrows, the priority of exchange is to return from short depot and any additional return will be allocated to long depot. Excess borrow in short depot is not entitled to dividends.

short depot: 30K

long depot: 70K

if there is 80K borrow return, then it need to cover short deport first and the rest will be used to cover long depot

result:

short depot: 0

long depot: 20K = (70- (80-30))

Short Sell Depo	Direction	Comment	Data source	Available now
SOD SS Depo	Plus	T+1 return factor in?	Citi	Y
New Borrow (s/d today)	Plus	Position file - B	Sphinx	Partial (missing O type)
Short locate approved for Colo	Deduct		Desk	Y
Short sell order NP3	Deduct	12 noon for now	NP3	Pending
Calculated Num - Pending Return (s/d today)	Deduct	Position File - BR (max 0)	Sphinx	Partial (missing O type)
Work out Residual Return size from LS depo				

Long Sell Depo	Direction	Comment	Data source	Available now
SOD LS depo	Plus		Citi	Y
Collateral Deliver (T+1)	Plus	would factor in recalls booked	GSR	Y
Bilateral Loan (T+1)	Plus		GSR	Y
LS locate approved for Colo	Deduct		Desk	Y
LS execution NP3	Deduct	12 noon for now	NP3	Pending
Residual Return size	Deduct	Total return - Return from SS		Calculated number
Bilateral Loan New Today	Plus	Return file - L	Sphinx	Partial (missing O type)
Bilateral Loan return Today	Plus	Return file - LR	Sphinx	Partial (missing O type)

short sell depot

- positive value means unused borrow shares which allow to be short sell. similar as quota
- cannot be negative
- SOD SS depot + new borrow today - short locate trade for colo - short sell order NP3 (D1 or other desks)

long sell depot

- positive value means unused inventory allow to be long sell
- SOD LS depot + collateral deliver (recall T-1)+ bilateral loan (recall T-1)- LS locate approved for Colo - LS execution NP3