Retail the TOC way
How to implement

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"Should we bother? And with what?

WHAT TO CHANGE?

Confusion?

- TOC Insights into Distribution/ Distribution the TOC way
- Retail S&T
- My presentations on TOCICO: 2007, 2010, 2011 (European and Intl)
- Other works/presentations

- Where to start? What to use?

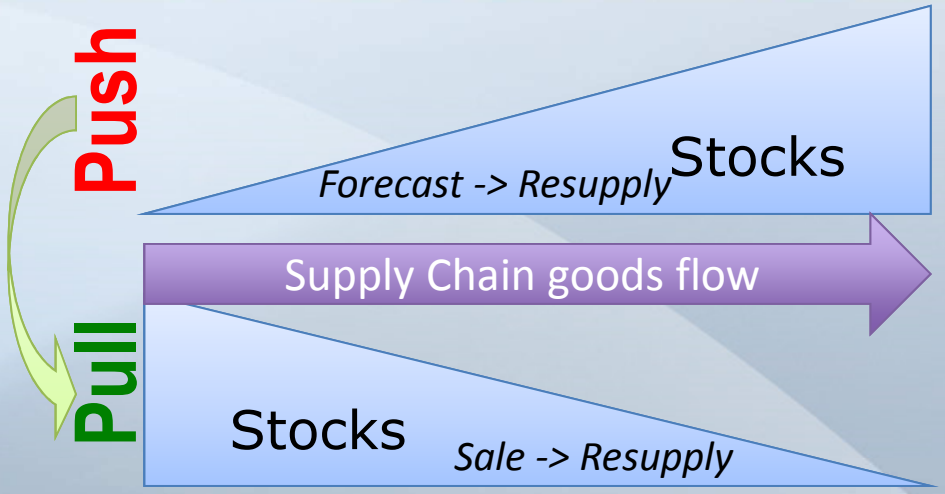
Understanding Retail

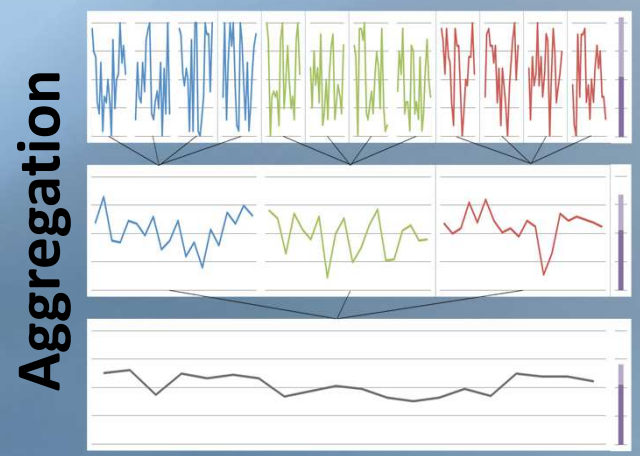
- Space
- Core cloud and simplifying assumption
- Sales curve and mix
- Product classification
- 1 unit buffer problem
- Seasonalities
- Life Cycle x Sales (turns) x RLT

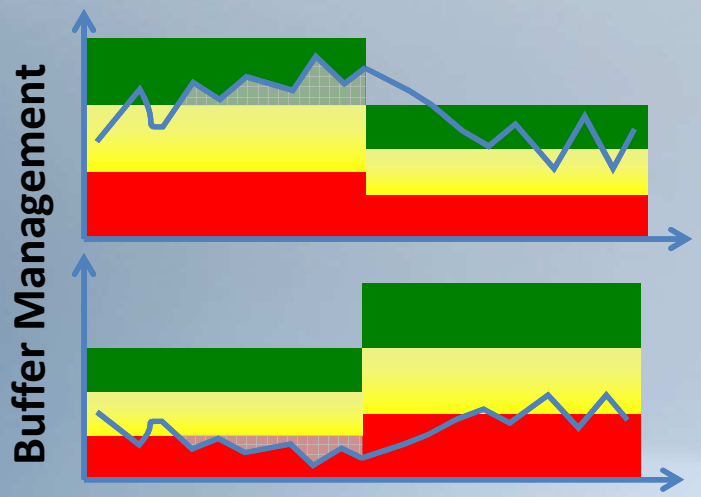
TOC Distribution: quick overview

Until the end consumer has bought no one in the supply chain has sold

Buffer Size = optimistic demand within the RLT factored by supply Murphy

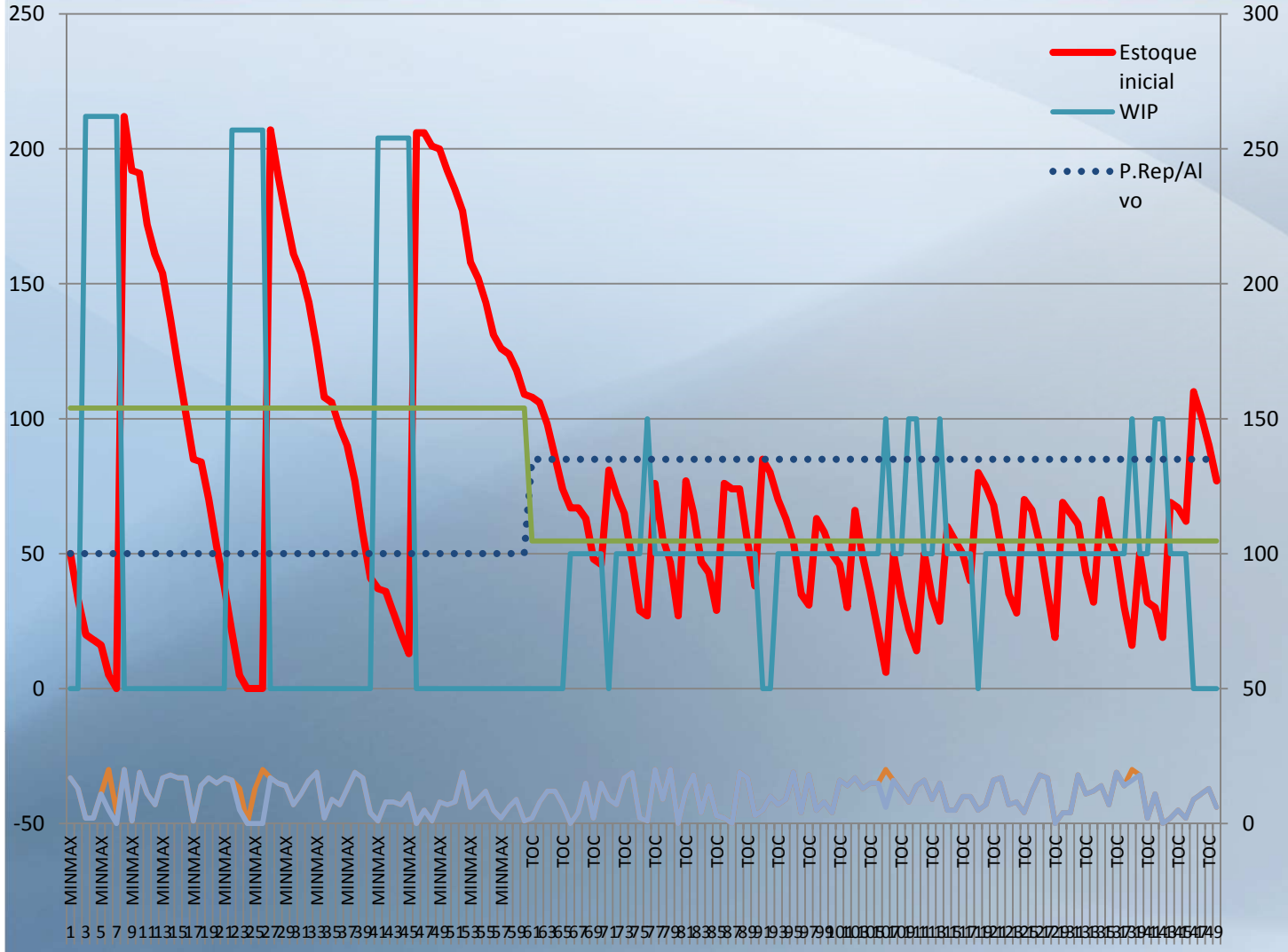






Decide: Hold (MTA) or Order (MTO)

Example for 1 SKU



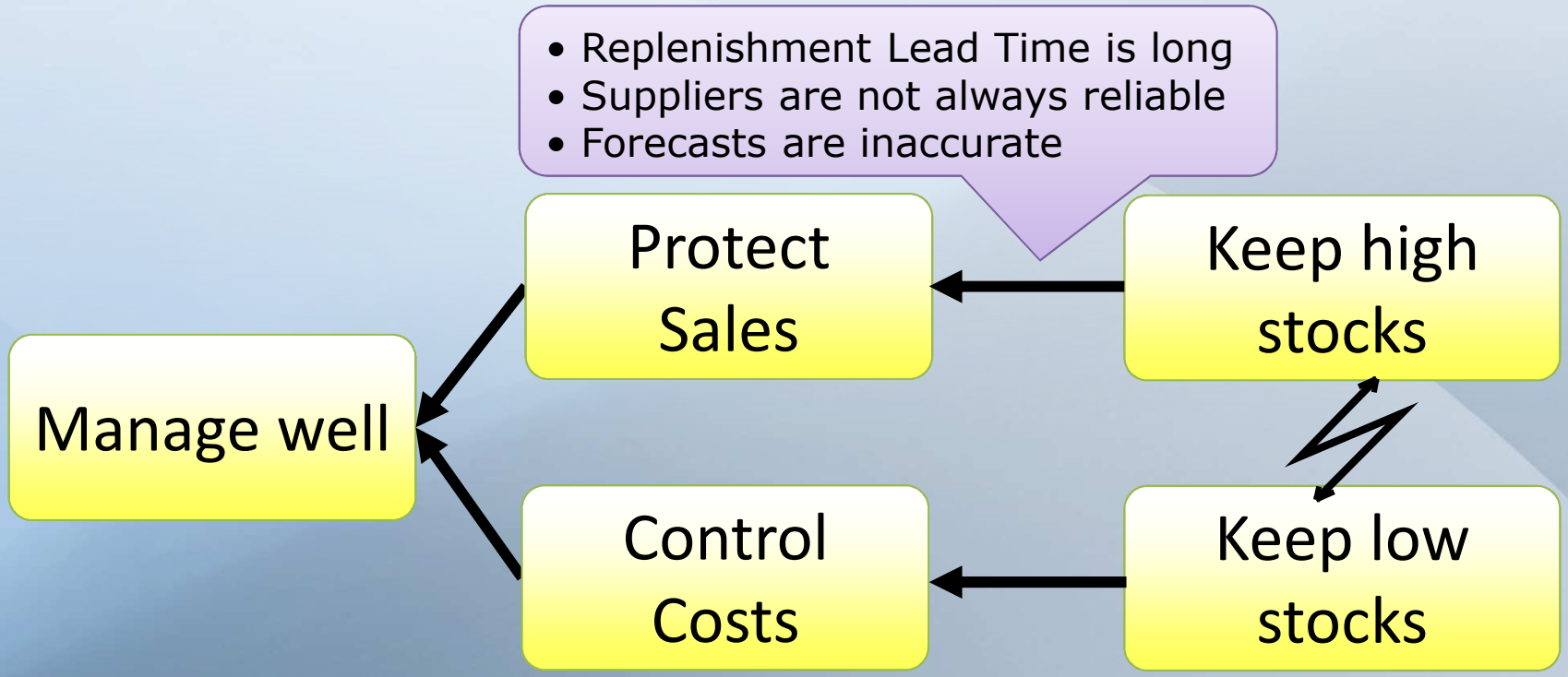
Before (MinMax):
Stock: 103
Losses: 10%
Turns: 2.7

After (Pull):
Stock: 54
Losses: 2%
Turns: 5.4

Simplifying Assumption

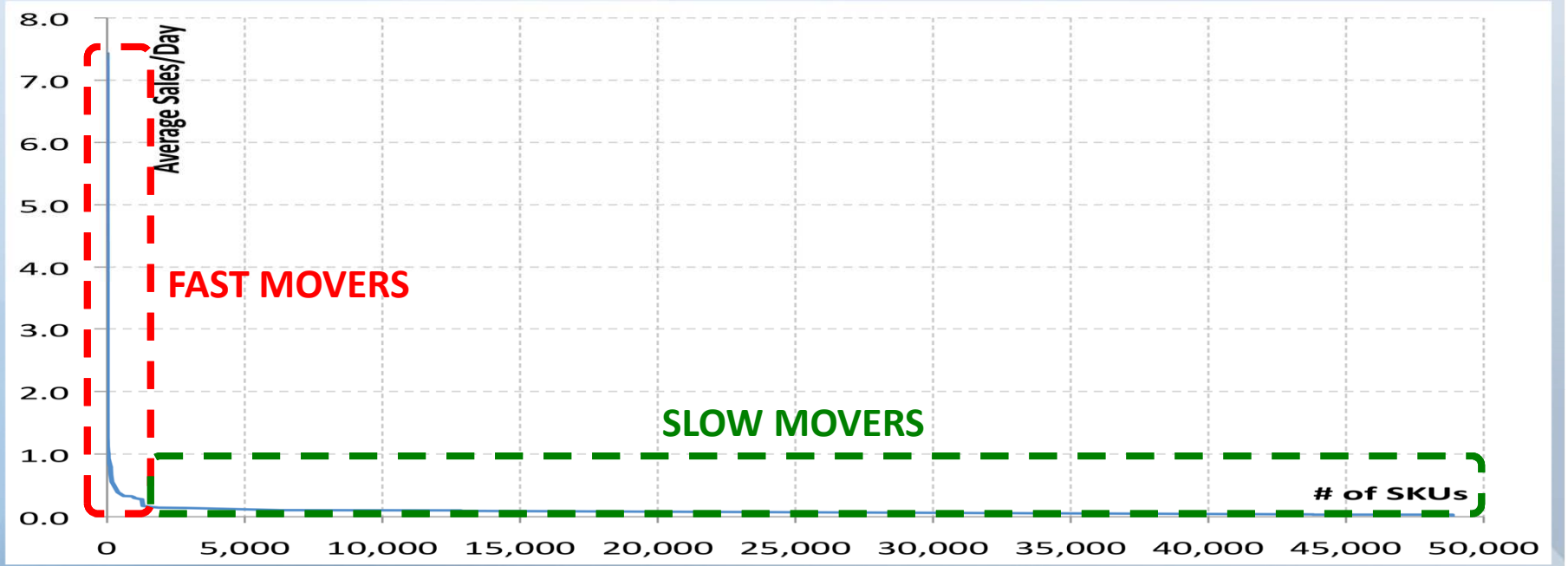
- SKUs are independent
  - Resupply rules: per SKU
  - Buffer sizing: per SKU
  - (Dynamic) Buffer Management: per SKU
- Totally counter the fact that cash and space are constraints (RRCs) also!
  - Ups
  - But not too much

Core Cloud



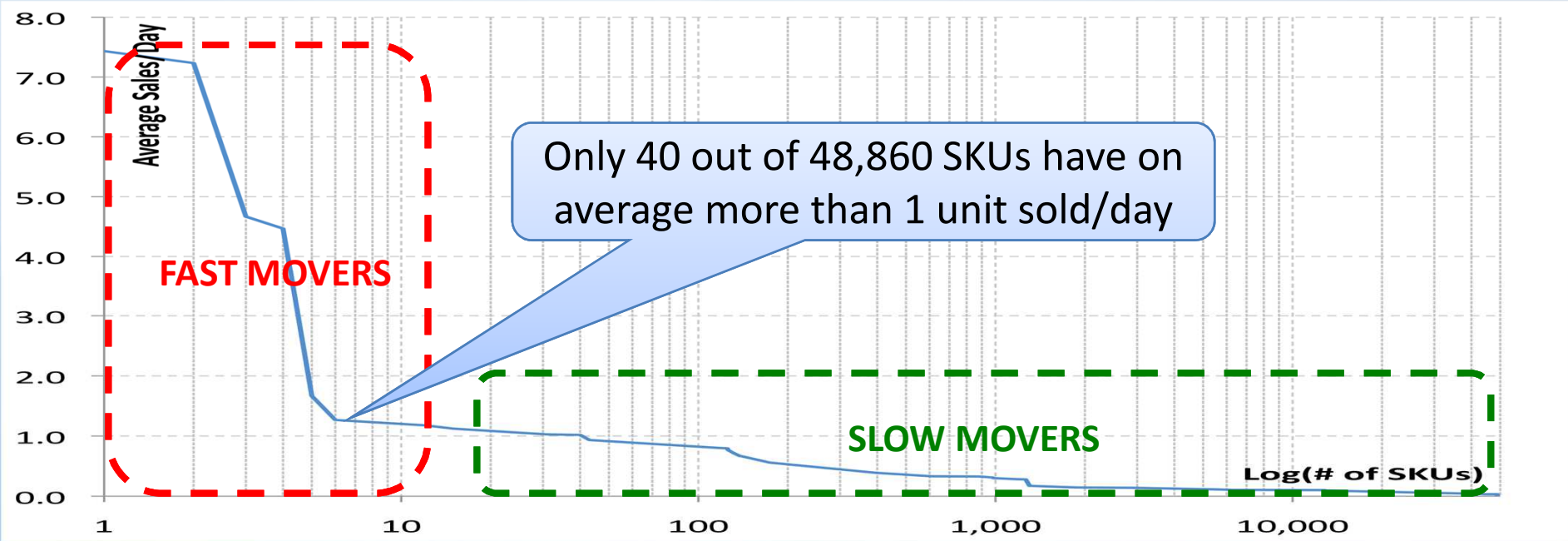
- What is "high stock"? More of the same SKUs or more variety?

Demand Curve



- 2 parts
- Fallacy of average
- ABC or αβγ? (more on my TOCICO 2010 presentation)

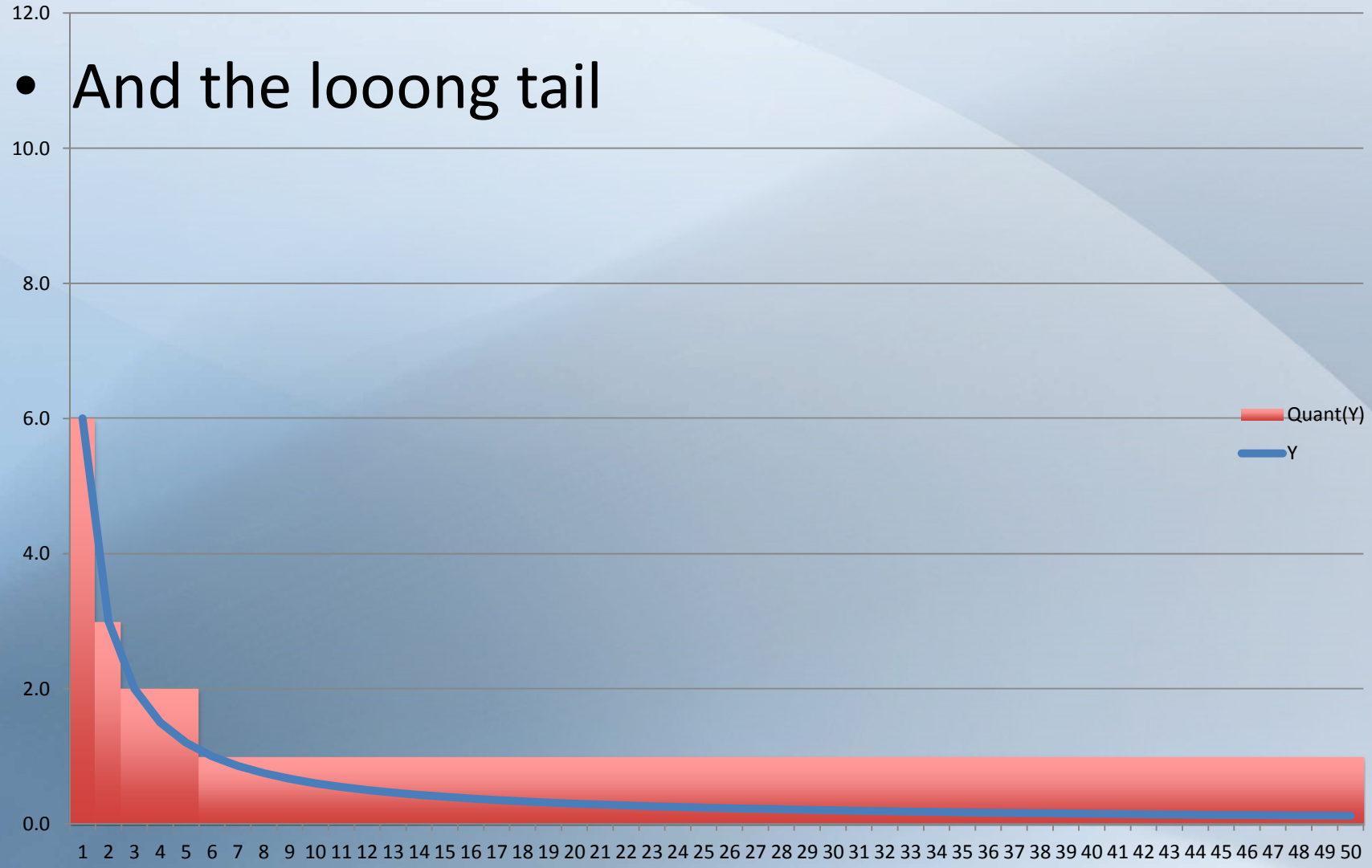
Demand Curve



- 2 parts
- Fast Movers: 3-5% -> 50% sales, Tail: rest.
- Still want to average?

1 unit size Stock/Buffer

- And the looong tail



Space

- Given what we've seen and the ever-shrinking life cycles the tail grows, usually without formal controls (because there is no resupply)

So

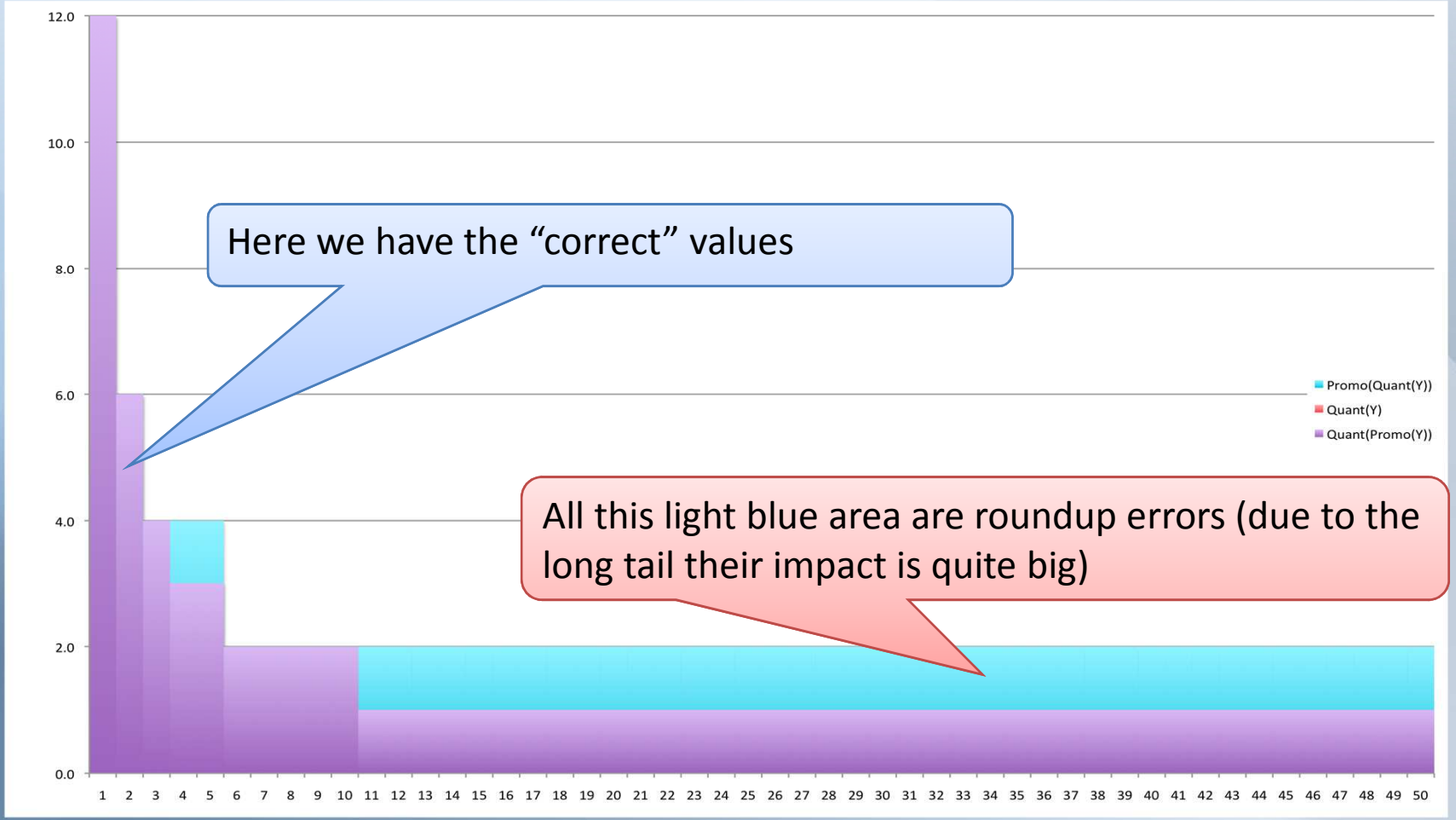
- Space is a constraint, but how to integrate this with the overall solution?

Seasonality

- Should we multiply all buffers by an index?
  - What about end-of-life product
  - Treat Fast Movers (FMs) as we do Slow Movers (SMs)?
  - Error on the 1 size buffers
    - Vast majority of 1 size buffers have sales speed so slow even a very strong seasonality should NOT change the buffer size.
- And what about transient Bottlenecks (or better: overloaded CCRs)?

Seasonality

- If we use the buffer (integer) values to recalculate:



Life Cycle

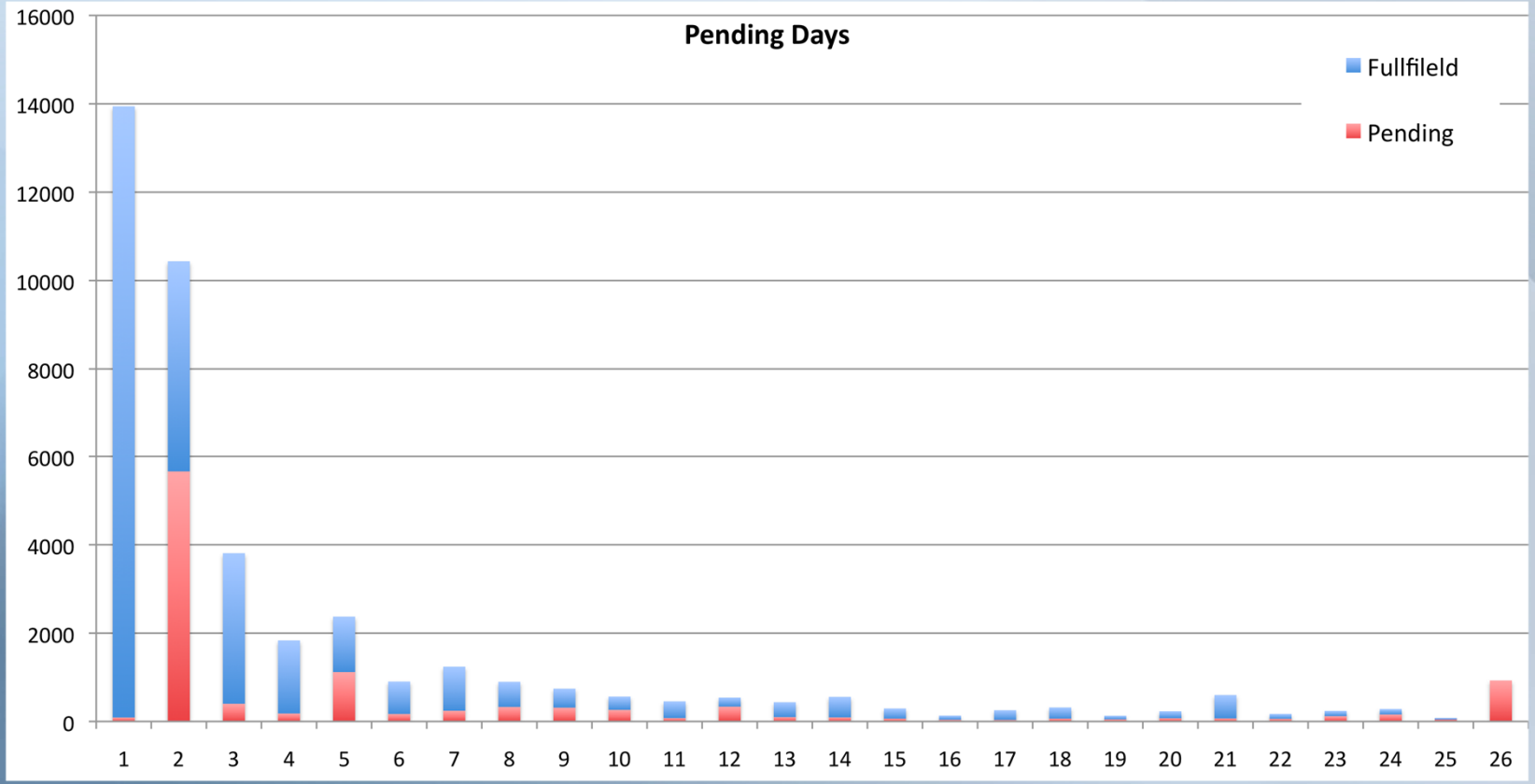
- Compare the Life cycle with:
  - Slow sales: no resupply for the vast majority
  - Long RLT: how to buy more products?
- Should we use stock buffers to add/terminate products or time buffers?

Balanced Capacity

- Speaking of overloaded RRCs:
- Particularly in retail we need MORE capacity in ALL links of the supply chain – internal and external – THAN the demand.
- Insidious, think of every point being optimized as a potential BN candidate!
  - Purchasing, Picking, Transportation
- Worsened by unit SKU resupply…
- Second degree consequences: poisoning the mix

The WH operation - Example

- For instance, the lead time on a resupply that should be done in 1 day (below we have days late to fulfill):

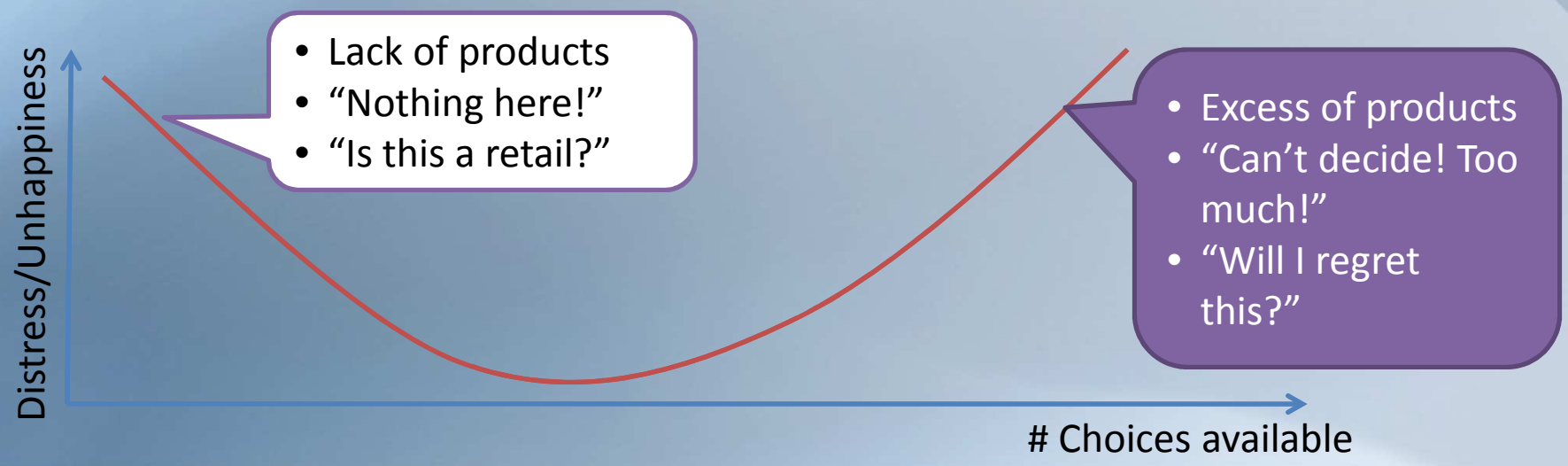


(more details on my 2010 TOCICO presentation)

WHAT TO CHANGE TO

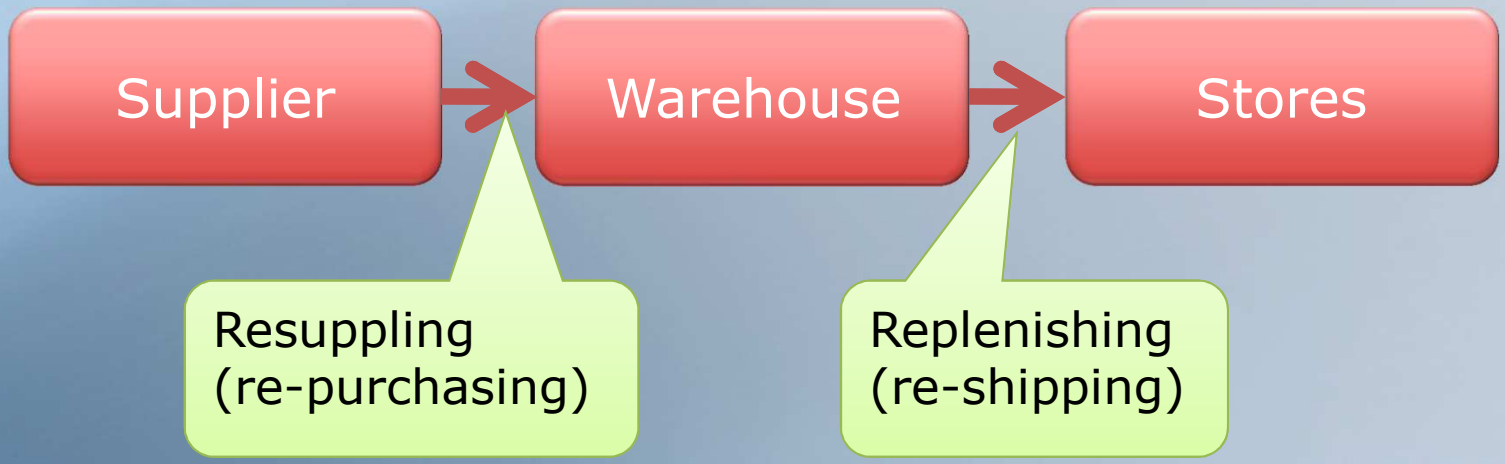
Space

- Physical
  - Constrains the display of more new products
  - Therefore the discovery of new FMs
- Perceptual
  - Paradox of choice and the U curve:

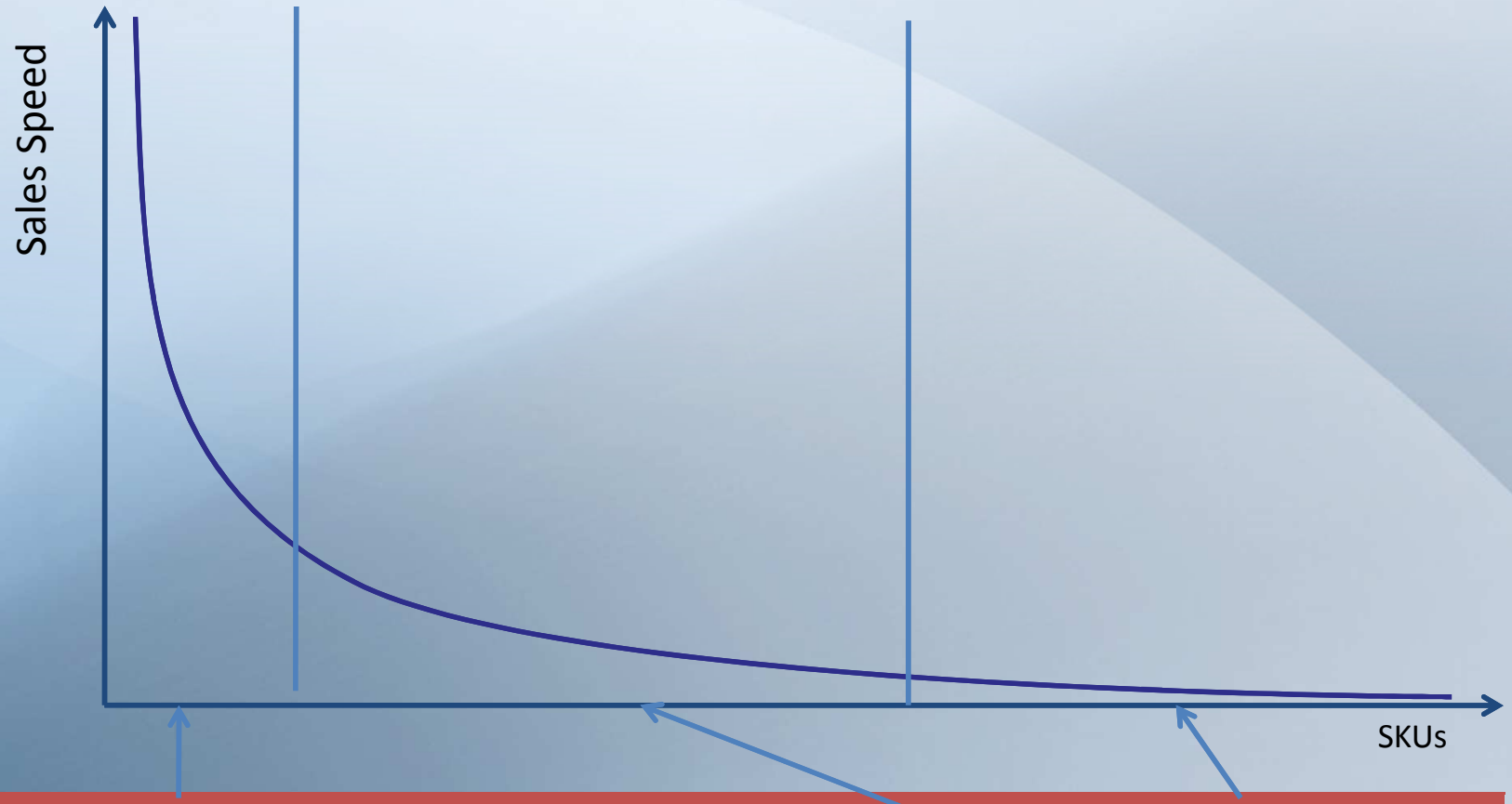


"MTA x MTO" Decisions

- Hold or order, or: "Resupply x Replenish decisions"
- Supply chain of retail is not usually: Supplier -> Store (at least one WH in the middle)



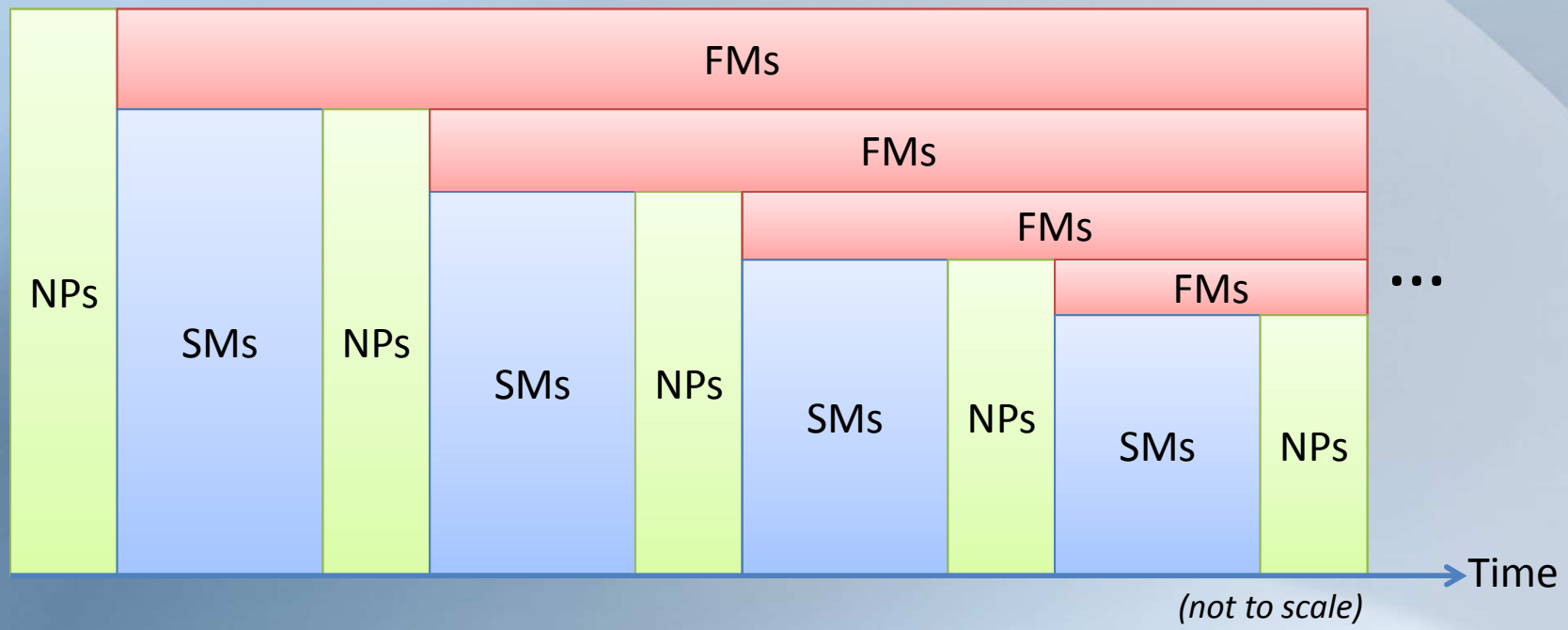
"MTA x MTO" Decisions



Type	Fast Mover	Slow	"no" mover
Actions	Resupply, replenish, spread and expedite	Replenish	Liquidate

Freshness

- Usually seen as an aid to generating more traffic (impact on the constraint)
- More important: the gateway for more FMs!



Freshness

- New products are always better that SMs:
- Taking a typical case:
  - FMs: 50% sales with 5% mix (and say 30% stock)
  - SMs: 50% sales with 95% mix (and 70% stock)
  - %T on Sales price of FMs: 50%
  - Give away 70% stock: lose 35% full sales price of stock
  - Get another 5% of 95% = 4.8% FMs more, representing another 48% sales @ full price + aprox 40% sales of SMs…

Tail Weight

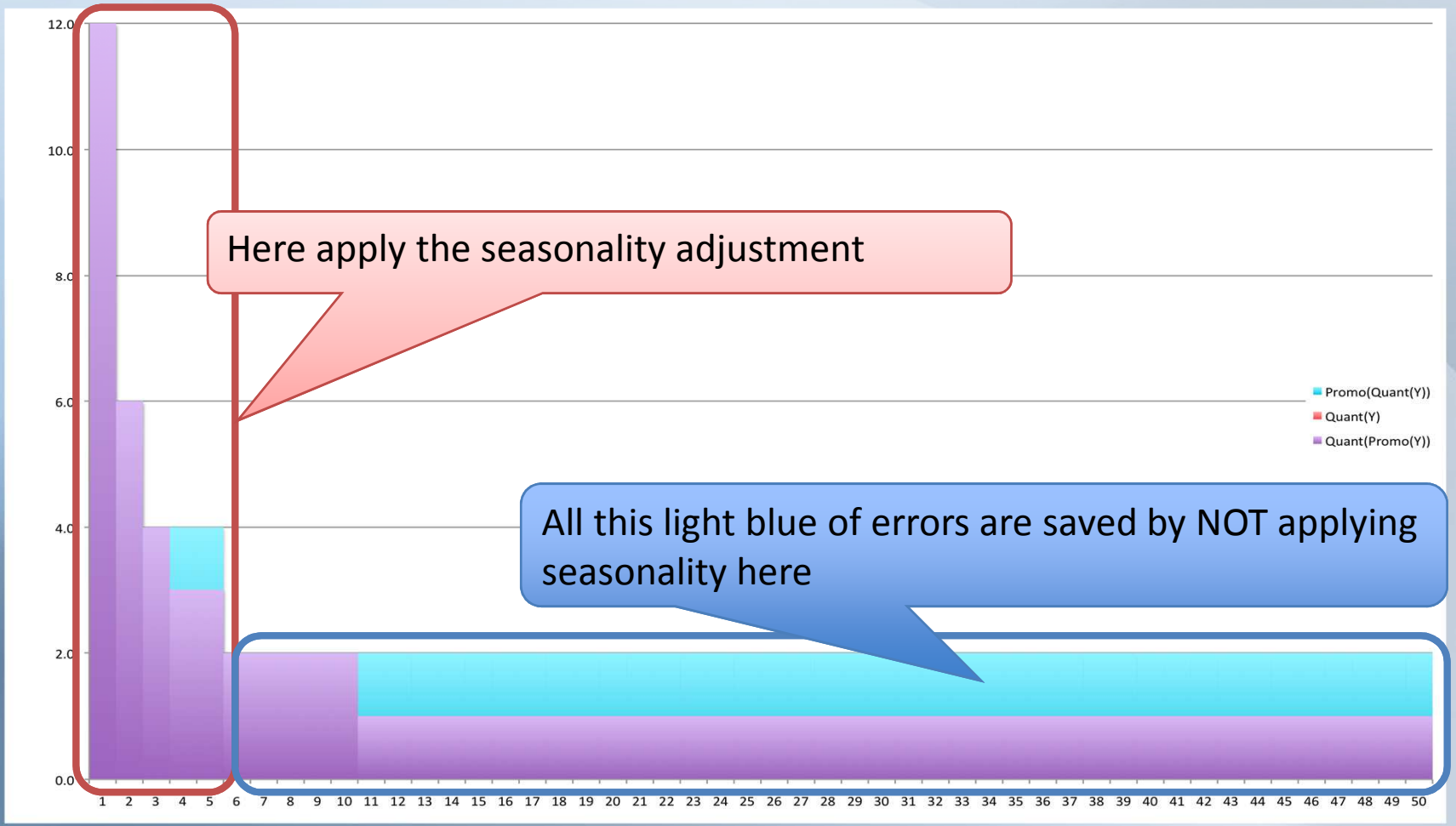
- How to challenge the 1 unit buffer/tail problem?
- Notice the impact of this with the curve and abundance of SMs
- Assumption: all NPs have to go to ALL stores.
- Challenge anyone?

Seasonalities

- Totally different between FMs and SMs
- First: theoretically
  - The tail (or at least the 1 sized buffers) does not need more stock/buffer for ANY seasonality
- Second: empirical test
  - Big dept store chain: Christmas (5x sales)
  - FMs: sell 6X more, SMs: 2x (within the buffer tolerance, also help to drain WH buffers…

Seasonality

- Only applied on FMs or buffers > 1



"Are we there yet?"

HOW TO CAUSE THE CHANGE

Space Buffer

- Setup
  - Defining a portion of the sales area to be USUALLY EMPTY (remember sales area space = RRC)
  - Suggestion: 20%
- And Operation
  - Anything invading this space must be disposed: either on site, or by reverse logistics and institutional liquidations/sales

Buffers

- Per SKU on store level
- Per SKU on WH for FMs, aggregated (some cases) for new products on WHs per dept

Reverse Logistics

- Do it! Now!!
- First: get rid of Betas
- Second: clear space buffers in stores
- Therefore: improves significantly sales of FMs (and even of the remaining SMs)

Liquidation process

- Institutional liquidation of old/excess products in WH
- Liquidation process research and development (in store only as a after-the-last-resort)
  - Aimed to create quick and frequent disposal of SMs WITHOUT cannibalization/impact on the normal sales

Fast Movers

- Detection
  - On old data: careful: usually metrics are sales/days. No care is taken to check stock-ous!
  - Best approximated by: sales/days with stock
  - Move to pull based data asap.
- Replenishment without overloaded RRCs
- Spread
  - ALL stores (even where it may not be a FMs it will be a good SMs)
- Purchasing and Buffer management on WH asap

NP Introduction

- First at the speed of tail "evaporation"
  - As SMs aren't bough at the WHs level there is a natural rate of shrinkage of the tail there and in the stores
- Then at the speed of tail liquidation

- On Dept/Groups with highest Turns
- From suppliers sell-out data if possible

NP Introduction

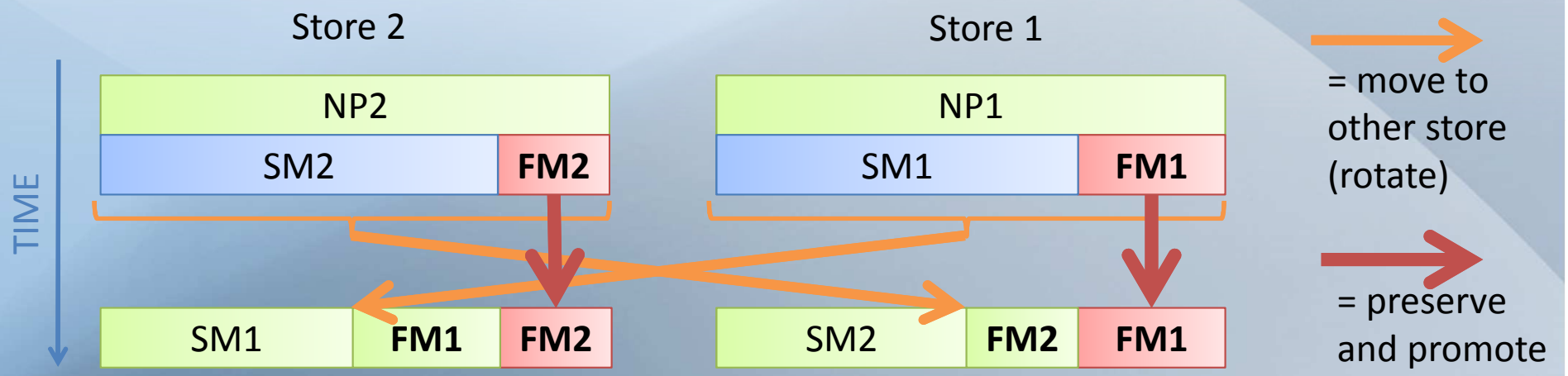
- First at the speed of tail "evaporation"
  - As SMs aren't bough at the WHs level there is a natural rate of shrinkage of the tail there and in the stores
  - Notice this creates a need for NPs at the WH level and then they are readily available to the stores right after (pull NP introduction).
- Then at the speed of tail liquidation

NP Introduction

- How to chose the New Products?
- First: chose from depts with higher Turns
- Second: use supplier data (sell out only) if available
- Test often, resupply only FMs!
  - Normally FMs reveal themselves in 15 days
  - Be prepared to expedite new purchases of FMs often
  - Economically still very interesting as they sell at full markup price!!

Tail Thinning

- Challenge the 1 unit buffer/tail problem by *tail rotation* (ex: 2 stores, 2 NP groups):



- This reduces significantly the buffer size for NP in the WHs and in the Stores and still allows for the discovery of FMs.

Humberto R. Baptista

- Husband and father changing the world one person at a time
- Scientist seeking to apply science to people's endeavors
- Hunter of hidden assumptions
- Teacher, student and colleague of students
- Believer of values over tools

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