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Relationship between charter rates and cargo/fleet ratio in recent drybulk markets

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- More granular analysis on supply and demand structure is getting required by dry bulk industry.
 - AI and Bigdata boom.
 - Easier access to supply and demand data granular than before.
 - Spread of BI tools
- However, analysis by information providers are just started.
 - IHS Maritime & Trade Freight Rate Forecast

- Supply and demand structure model
 - Not updated after Beenstock and Vergottis (1993)
 - Based on annual data (not granular enough)
 - Does not reflect time-series analysis improvement
- Time-series analysis
 - Popular after 2000.
 - Focus on EMH, volatility or risk premium, not price level.
 - Based on freight or commodity indices, not supply and demand.

Objective of Research

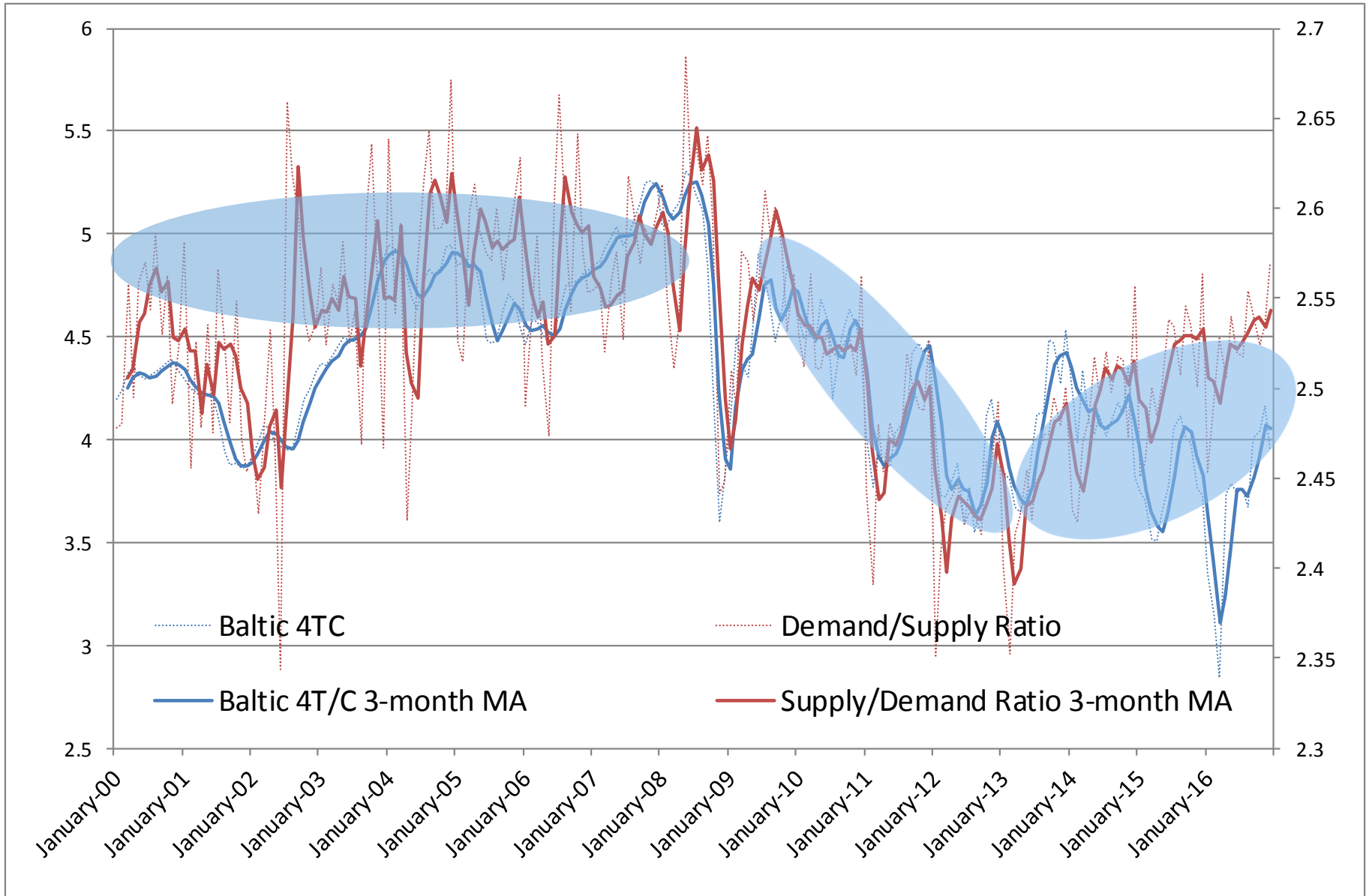
- Are there anything new in supply and demand analysis on dry bulk market after 1993?
 - With more granular data.
 - Time-series analysis methodology.
 - (Possibly) Significant market structural change.
- This presentation is for preliminary survey.
 - Comparing the movements of freight level and demand/supply ratio on graphs.

Drawing graphs with below data:

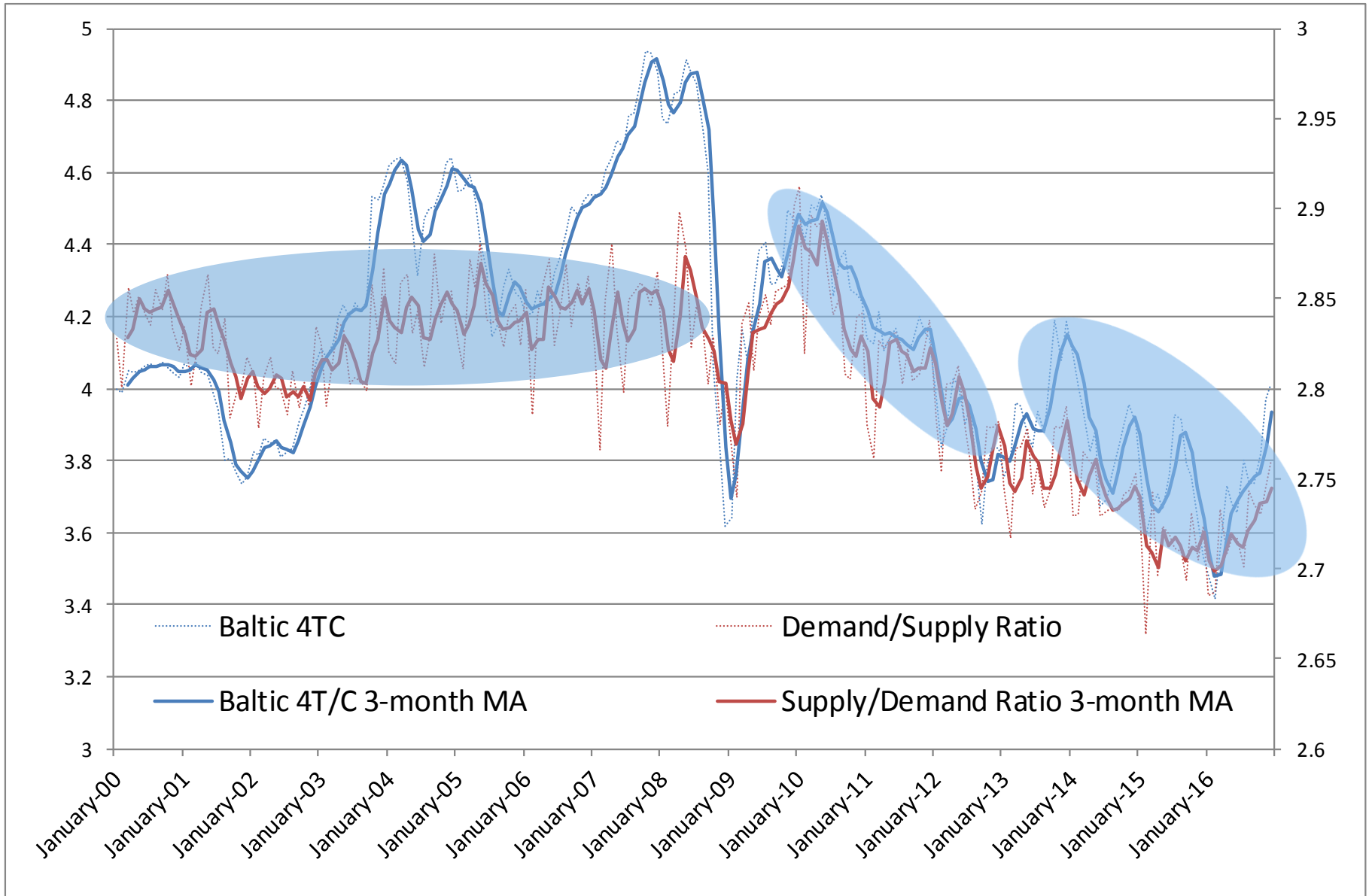
- Vessel Size: Capesize and Panamax
- Rate: Baltic 4T/C respectively
- Period: Jan 2011 – Dec 2016
- Supply: Total DWT reported by Clarkson
- Demand: Export volumes from major loading countries.
 - Capesize: Iron Ore (Australia/Brazil/South Africa)
 - Panamax: Iron Ore (India) / Coal / Grain

Graphs are 3 month MA and logarithm scale.

Monthly Movement - Capesize

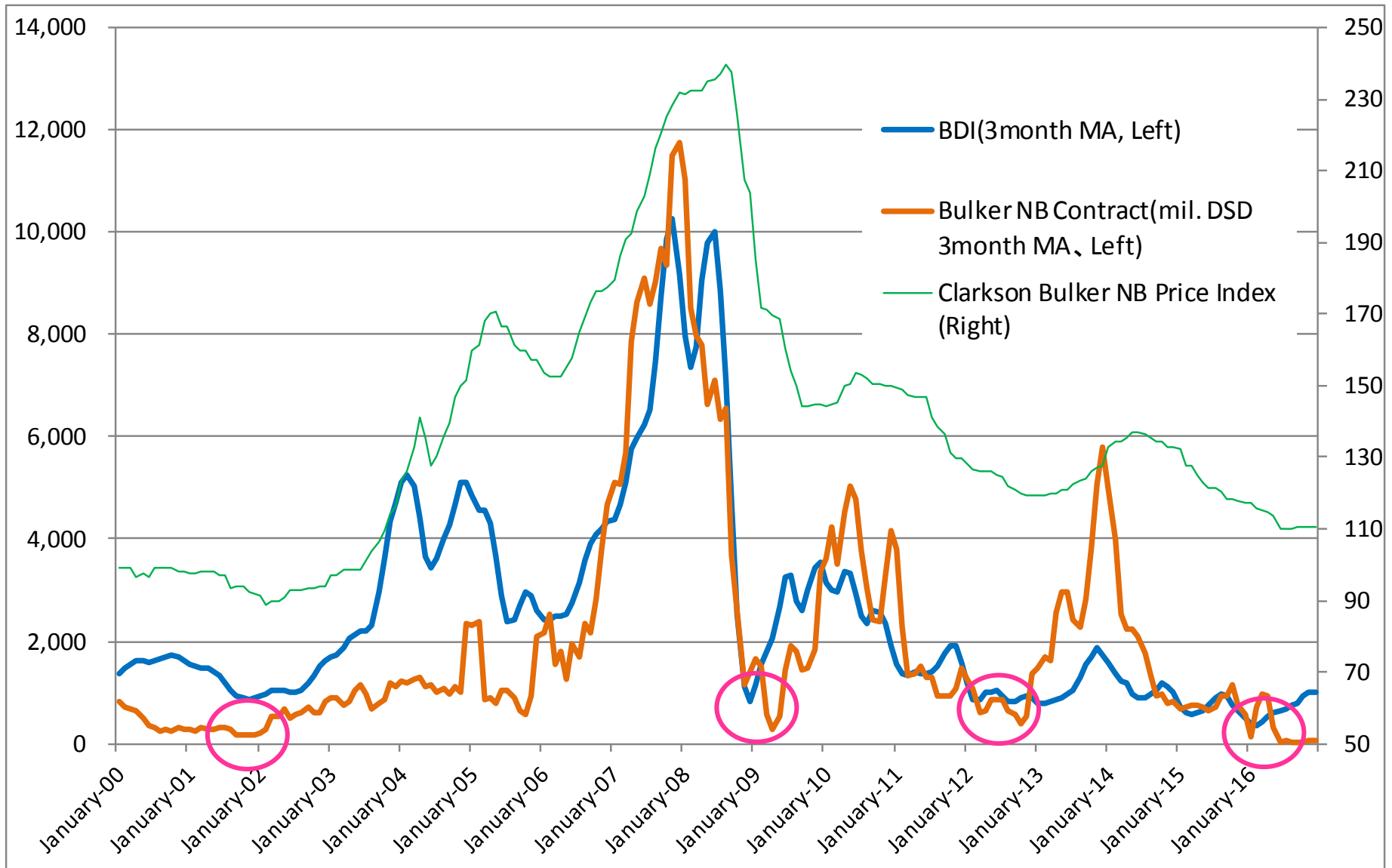


Monthly Movement - Panamax



- Relationship between Baltic 4T/C and demand/supply ratio have changed in 2008 and 2013 (and maybe in 2002 and 2016).
- During some period (e.g. 2008-2013), two lines moved together very closely, while other period not so much.
- Changes of relationship occurred at the same time with Capesize and Panamax.
- Changes are coincident with market participants' perception of "changing tides".

Relationship between BDI and NB contracts



Implications

- It is confirmed that, at least during some period, freight level and demand/supply ratio moves together.
- However, the relationship is not stable over the period. Therefore some of time-series analysis method assuming stationarity may produce incorrect results.
- Applying suitable time-series analysis will be possible and produce quantitative results.
- The cause of market participants' perception change should be identified.



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