

# The Cost of a Newbuilding

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## SECTOR REVIEW

### What Drives The Cost Anyway?

- *There has been a lot of talk recently about rising input costs driving up newbuilding ship prices and that a new floor has been set for newbuilding ship prices. Over the last five years the run-up in newbuilding ship prices has been remarkable – with both VLCC (crude oil tankers) and Capesize (dry bulk carriers) newbuilding prices more than doubling.*
- *Shipbuilders are in the midst of a Global Shipbuilding Boom.* The shipbuilding orderbook stands at over 500 million dead weight tons (dwt). – a 130% increase in the world orderbook over the last 3 years. The strong growth in the orderbook has resulted in some shipbuilders having backlogs until 2012. While some yards have deliveries already scheduled for 2012 – the orderbook has plenty of room available in 2011 and we expect additional newbuilding openings in 2010. We note, while the world cargo orderbook stands at over 500 million dwt the verdict is out on whether all of this capacity will be delivered; on schedule is a whole other question.
- *So What Drives the Cost of a Newbuilding?* While factors such as input costs (labor, vessel components, and raw materials) contribute to the cost of a newbuilding. We believe the primary driver of the price of a newbuilding is driven by the balance between supply (ship yard capacity) and demand (ship owners demand for ships). We believe increased shipyard capacity, a difficult credit environment, and uncertainty surrounding the global economy could result in newbuilding prices moving lower over the next few years.

#### Exhibit 1: Tsuneishi Shipbuilding Facility



Source: Tsuneishi Group

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## Cost of a Newbuilding?

Discussions with ship owners, shipbuilders and manufactures lead us to believe that the cost of a newbuilding vessel is variable. For our discussion we focus on VLCCs (crude tankers) and Capesizes (dry bulk vessels). Newbuilding prices for the same asset class vary depending on ship yard and vessel specific design. For instance last year as China aggressively expanded its dry bulk orderbook (the Chinese took roughly half of all newbuilding dry bulk orders) - the cost of their newbuildings was roughly 5% less than their competitors. Looking at vessel specific designs a VMAX (shallower draft than a standard VLCC) is roughly 5-10% more expensive than a standard VLCC. In other words there are many nuances in the overall pricing of a newbuilding vessel contract.

Newbuilding prices are variable depending on ship yard and vessel specific design.

Newbuilding vessel input costs include – labor, steel plate, engines, pumps, generators, piping, electronics, and other components specific to a ship. Not surprisingly most of these input costs have doubled over the last 5 years as strong demand by shipyards (increasing orderbook) for these materials has risen sharply. On the flip side a shrinking orderbook could result in price declines for many of these components.

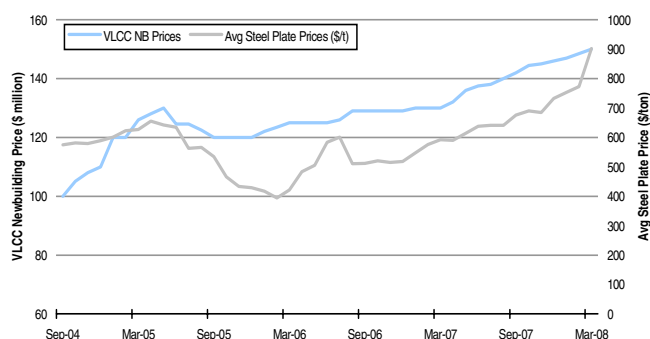
Recently, we have received a lot of inquiries from investors about rising steel prices and what that means for newbuilding prices. However, steel prices are not the only cost input rising, strong demand for labor, engines, generators and other components have resulted in these input costs increasing as well. We note, given the expected ramp up in the number of vessels scheduled to hit the water over the next three years (See Newbuilding Supply, Pg 6) we would not be surprised to see newbuilding equipment shortages. We detail the effect of rising steel prices on newbuilding costs below.

### Rising Steel Price Implications on Newbuilding Costs

With major iron ore importers such as Japan and South Korea and some Chinese steel mills accepting a 65% price increase for iron ore from Brazil – some investors expect increased iron ore prices to pass through to newbuilding prices creating record high prices. While, the Australians are holding out for higher iron ore price increases (related to their geographic proximity to Asia) – Australians believe a freight differential is warranted – for purposes of our discussion we assume iron ore prices are up roughly 70% (y-y).

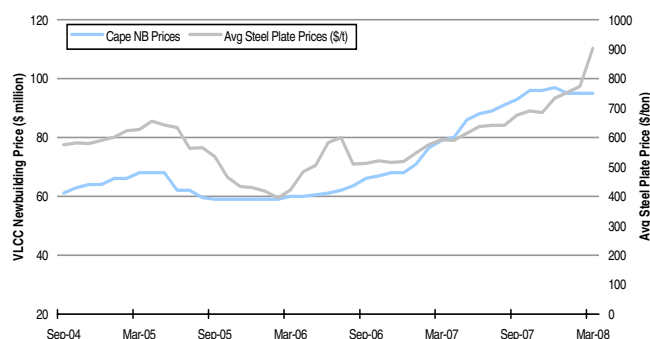
With Asian steel plate prices up roughly 10% over the last month and rumblings of additional price increases over the next few months – the steel input costs of newbuilding vessels are definitely on the rise. Discussions with shipbuilding analysts lead us to believe that steel plate prices could surpass \$1,000/ton later this year even for the larger established yards (currently ~\$780/ton). Looking at the three major shipbuilding countries – Japan, South Korea, and China – the Chinese shipyards appear to have the most exposure to rising steel prices. We detail VLCC and Capesize newbuilding prices versus average steel plate prices below.

**Exhibit 2: VLCC NB Prices vs Steel Plate Prices**



Source: Clarksons, MySteel, Credit Suisse estimates

**Exhibit 3: Capesize NB Prices vs Steel Plate Prices**



Source: Clarksons, MySteel, Credit Suisse estimates

While these charts indicate a somewhat strong relationship between newbuilding prices and steel plate prices – a regression analysis shows the results are not statistically significant. In other words steel prices do not drive the cost of newbuildings. So what drives the cost of a newbuilding? We believe newbuilding prices are driven by the supply (shipyard capacity) and demand (ship owner's new vessel demand) balance.

We believe Newbuilding prices are driven by supply (shipyard capacity) and demand (owner's demand).

### So how do we explain the relationship between rising steel prices and newbuilding prices – simply enough at least for Capes

- High steel plate prices are driven by strong steel demand growth;
- Steel demand growth increases iron ore demand
- Iron ore demand drives dry bulk charter rates
- Strong freight environment drives demand for newbuildings.

Turning our attention to tankers – we believe high newbuilding tanker prices are driven by the tight supply demand balance for shipbuilding berths around the world.

### What If Our Thesis is Wrong and High Steel Prices Drive Newbuilding Prices Higher – Steel Costs Aren't as much of the Cost of a Newbuilding as One might think.

With steel plate prices at roughly \$800/ton in February the estimated value of a ship's steel was about \$32 million for a VLCC and \$20 million for a Capesize. With VLCC newbuilding prices at \$150 million – the value of the steel was roughly 20% of the newbuilding cost, the result for Capes was also about 20% of the total newbuilding cost. These steel plate estimates are for the larger established shipbuilders. Some of the smaller less established yards may be faced with steel plate prices as high as \$1,200/ton, further evidence of the nuances in the pricing of a newbuilding vessel. Of course even the larger shipbuilders are not immune to rising costs – we expect some of the larger established shipyards to see their steel plate prices reach \$1,000/ton later this year. This equates to steel input costs for a VLCC of \$40 million – roughly a 25% increase. However, the increase to the total price of a newbuilding is only 5% for both VLCCs and Capes. We provide a sensitivity analysis on the price of steel plate for VLCC and Cape newbuildings below.

**Exhibit 4: Estimated Steel Plate Cost of a Newbuilding (\$ million)**

	\$600/t	\$700/t	\$800/t	\$900/t	\$1,000/t	\$1,100/t	\$1,200/t
VLCC	\$24	\$28	\$32	\$36	\$40	\$44	\$48
Pct of Newbuilding Cost	16%	19%	21%	24%	27%	29%	32%
Capesize	\$15	\$18	\$20	\$23	\$25	\$28	\$30
Pct of Newbuilding Cost	16%	18%	21%	24%	26%	29%	32%

Source: Capital Shipbrokers, Clarksons, Credit Suisse estimates

Notes: We estimate a standard VLCC at 40,000 LDT and a Capesize at 25,000 LDT

Newbuilding Estimate Purchase Prices – VLCC \$150 million and Capesize \$95 million

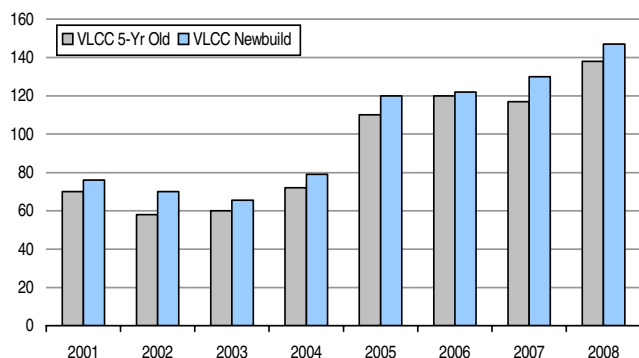
## Newbuilding Prices and Second Hand Tonnage

VLCC newbuilding prices are hovering around \$150 million compared to a 5-Yr old VLCC which costs \$140 million (roughly a 7% premium), while Cape newbuilding prices are \$95 million compared to a 5-Yr old Cape at \$140 million (roughly a 30% discount). Note that our vessel newbuilding prices are for deliveries in late 2010 and 2011 (3 years away). The negative discount for Capesize newbuildings versus 5-Yr old tonnage is the result of an expected strong freight rate environment over the next three years. In other words, an owner buying a ship for prompt delivery expects to generate sufficient cash flows to cover the cost in excess over the newbuilding price – other wise the owner would order a newbuilding if they were looking to expand their fleet.

Looking at Exhibits 5 and 6 below, Cape 5-Yr Old vessels have exceeded Cape newbuilding values over the last three years. Given the strong freight environment that we expect over the next two years we are not surprised by this result. However, what is interesting is looking back at VLCC rates in 2004 (arguably the best year ever for VLCC rates) which was followed by 2005 and 2006 (good freight rate years) – 5-Yr Old VLCCs never were priced at a premium to VLCC newbuildings. For a brief period at the end of 2004, VLCC newbuildings and 5-Yr old vessels were quoted at the same price. Looking back at the 2004 orderbook the world cargo fleet orderbook stood at ~216 million dwt (roughly 25% of the world cargo fleet), while today it stands at over 500 million dwt (roughly 47% of the world cargo fleet). We believe the strong back log of orders at shipyards has given shipbuilders pricing power not often seen historically – the question is how long will it last.

Strong newbuilding backlog has swung the pendulum in shipbuilders favor – the question when will it swing the other way.

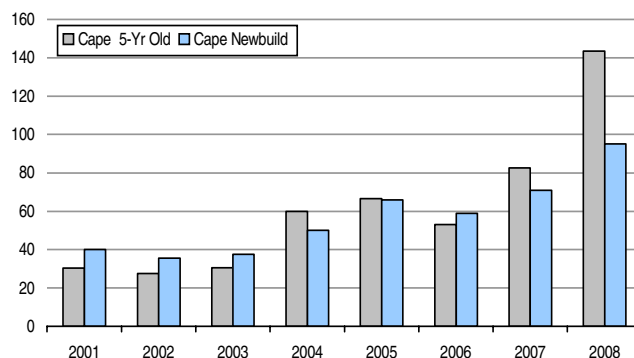
**Exhibit 5: VLCC Prices -5-Yr Old and Newbuildings (\$ mi)**



Source: Capital Shipbrokers, Clarksons, Credit Suisse estimates

Note: At of start of each year

**Exhibit 6: Cape Prices -5-Yr Old and Newbuildings (\$ mi)**



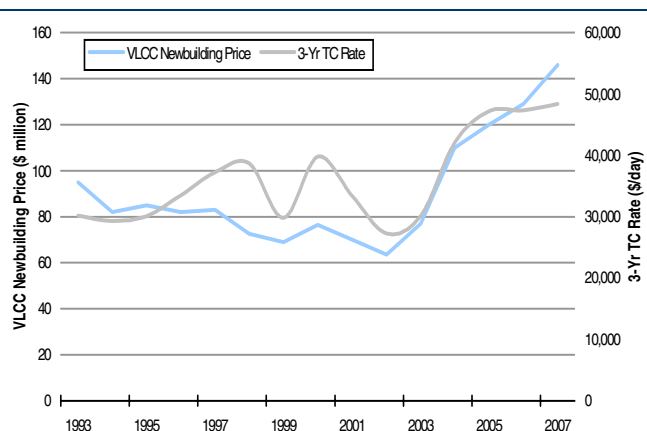
Source: Capital Shipbrokers, Clarksons, Credit Suisse estimates

## Newbuilding Demand – Appears to Be Driven By Ship Owner's Rate Expectations

Over the last 15 years, charter rate expectations appear to drive demand for newbuildings for both tankers and dry bulk carriers (bulkers). We looked at average spot rates, and 1-Yr and 3-Yr time charters. As we expected, the 3-Yr time charter rates exhibited the highest correlation with newbuilding prices.

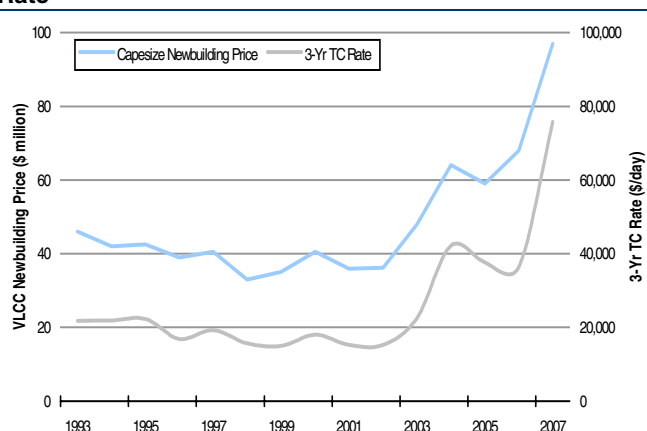
The turnaround time from an owner ordering a newbuilding ship until the owner takes delivery of the newbuilding has historically been about 16-20 months. Given the long lead times it is not surprising that short term rates have less of an impact on newbuilding demand than long term time charter rates. Recently, the turnaround time on a newbuilding order has increased sharply – newbuilding orders placed today take roughly 30-36 months – meaning a vessel ordered today might not be delivered until 2011. Below we detail newbuilding asset prices and 3-Yr Time Charter rates for both tankers and bulkers.

**Exhibit 7: VLCC Newbuilding Prices vs 3-Yr VLCC TC Rate**



Source: Capital Shipbrokers, Clarksons, Credit Suisse estimates

**Exhibit 8: Capesize Newbuilding Prices vs 3-Yr Cape TC Rate**



Source: Capital Shipbrokers, Clarksons, Credit Suisse estimates

### Spot Rates, 1-Yr Time Charter, and 3-Yr time charter rates.

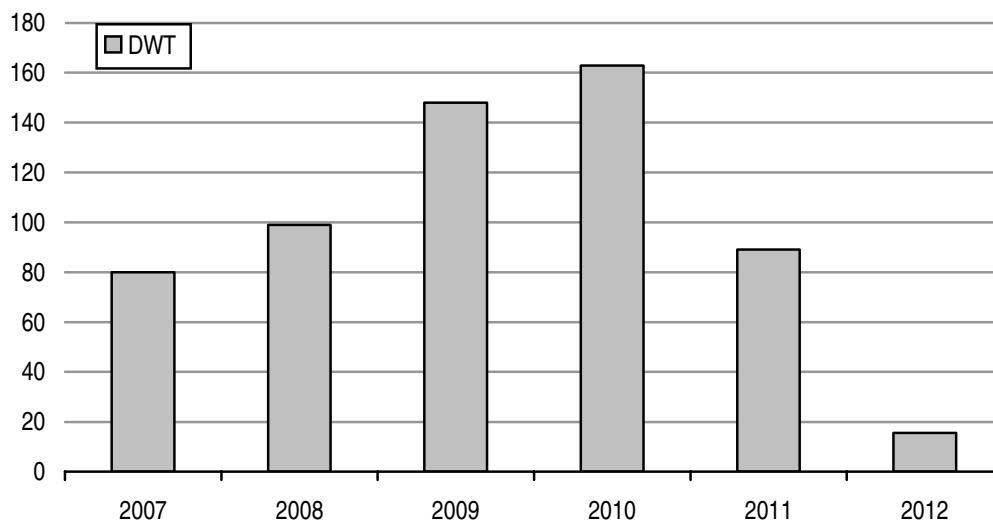
Comparing spot rates, and 1-Yr and 3-Yr time charter rates – the 3-Yr time charter rates appear to have the greatest impact on the demand for newbuildings for both VLCCs and Capesize carriers. A regression analysis indicates a reasonably strong relationship with 3-Yr time charter rates and newbuilding asset prices. The correlation coefficient for VLCC newbuildings and 3-Yr VLCC time charter rates is roughly 0.84x, while the correlation coefficient for Capesize newbuildings and 3-Yr Capesize time charter rates is roughly 0.93x. The correlation coefficients were roughly 0.75x for 1-Yr VLCC time charter rates and 0.85x for 1-Yr Capesize time charter rates.

**Bottom Line:** We believe market conditions and time charter rates drive a ship owner's outlook and hence their decision to acquire vessels. Of course an owner has a choice between acquiring 2<sup>nd</sup> hand tonnage and ordering a newbuilding. The spread between newbuilding prices and 2<sup>nd</sup> hand tonnage as well as an owner's expectation of what a 2<sup>nd</sup> hand ship's earnings potential is during the construction process drives an owner's decision to opt for a newbuilding or a 2<sup>nd</sup> hand vessel. However, that is only half of the equation – shipbuilding capacity is the other side. Together demand from ship owner's and supply by shipyards drive newbuilding prices.

## Newbuilding Supply – Ship Yard Capacity

World shipbuilding capacity is scheduled to ramp up over the next few years. In 2008, the shipbuilding industry plans to deliver roughly 100 million dwt of capacity – this represents a ~25% increase (y-y). This includes containerships, tankers, bulk carriers, gas carriers, general cargo ships, and offshore vessels. While shipbuilding capacity growth in 2008 looks robust – it pales in comparison to the growth slated for 2009. The shipbuilding industry plans to delivery almost 150 million dwt of capacity in 2009 – roughly a 50% increase in shipbuilding capacity (y-y). While existing yards are expanding and also gaining operating efficiencies and new yards are coming on-line – we wonder if the shipbuilding industry will be up to the task. Moving ahead to the 2010 orderbook, scheduled deliveries stand at about 160 million dwt - 7% growth (y-y). Beyond 2010, shipbuilders must be ecstatic to see the 2011 orderbook already at 90 million dwt and the 2012 orderbook at 15 million dwt. These orders provide the shipbuilding industry with visibility 3-4 years forward.

**Exhibit 9: Shipbuilding Fleet Scheduled Deliveries (million dwt)**



Source: Clarksons, Credit Suisse estimates

The shipbuilding industry's capacity expansion both through efficiencies and new ship yards coming on-line will need to be met through continued growth and renewal of the world fleet. Should the demand side of the equation soften we would expect competitive pricing pressures to push newbuilding prices lower. Additionally, prolonged tightness in the credit markets may result in further newbuilding cancellations and we would not be surprised to see at least a few speculative newbuildings cancelled. While these cancellations are clearly good news for ship owners (smaller fleet means less supply and higher rates) shipbuilders may face a difference scenario. Shipbuilders may be forced to cut newbuilding prices and capacity to maintain high utilization levels.



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