MENON ECONOMICS

REPORT

GCE BLUE MARITIME 2016 – GLOBAL PERFORMANCE BENCHMARK

Challenging times for the cluster: Impressively adaptive, but will the cluster remain complete?

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Foreword

Companies in Møre and Romsdal practiced cluster-based collaboration long before the theory of clusters was known in Norway. Hence, it is not surprising that the maritime cluster in Møre became the first pilot in the Norwegian Centre of Expertise program in 2004. In 2014, due to its unique global market position and its important contribution to Norwegian value creation, the cluster was granted the status of a Global Centre of Expertise.

This report describes and analyzes the performance of the cluster from the first pilot year in 2004 up to today. The maritime cluster has been a tremendous success, although in the current market situation, the companies struggle with excess capacity, low prices and negative profitability as a consequence of a dramatic fall in demand. This report documents that the story is more complex than bad market conditions. Oil prices kept rising until June 2014, with booming offshore supply markets as the result. However, already in 2011 we saw significant signs of reduced competitiveness in the cluster. The ship yards reached a peak in both value added and profitability in 2011. Equipment producers actually have faced falling profit margins from 2009. And for the cluster as a whole, productivity stagnated in 2009, after several years of impressive growth. We have not conducted an analysis of the causes of lost competitiveness, but a reasonable hypothesis is that there were *few incentives for innovation and cost efficiency* while the offshore market was strong. The response to the competition from low cost rivals in China and Korea and from shipping companies with large, standardized fleets was to build and operate the most advanced and most expensive offshore vessels. When the market turned, the Møre cluster was hit harder than many competitors because it was exactly the most advanced and most expensive parts of the oil & gas activities that pushed the brakes hardest. The results are clear and documented in this report.

So what now? The answer is twofold: On the one hand, the companies have to work hard to adjust their capacity, and hence total cost, to the current market situation, and to work smartly and efficiently to increase their productivity. On the other hand, there is need for innovations and development of new growth opportunities. Although the alternatives to offshore oil & gas seem small and less attractive today, the expected growth in several ocean-based industries is huge, creating promising opportunities for the dynamic maritime cluster in Møre.

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September 2016

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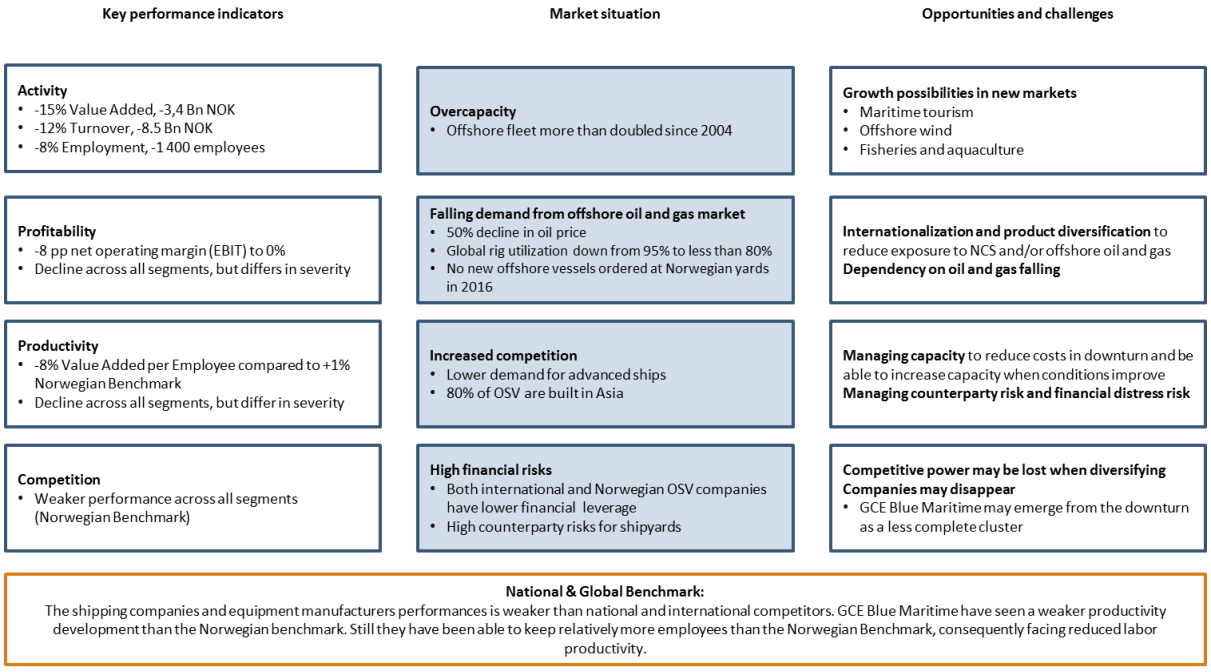
1. Introduction and Main Findings

1.1. Global Performance benchmarks – an overview of our findings

The last two years have been rough for the Blue Maritime cluster in Møre. After 12 years of continuous growth, both value added, revenues and employment fell by respectively 15, 12 and 8 percent. For the companies that constitute the cluster, profitability from the business was wiped out. The net profit margin for the cluster as a whole dropped from 8 to 0 percent, leaving nothing from the operations to pay for capital costs.

Figure 1-1: Overview of development in performance indicators, market situation and opportunities and challenges for the cluster going forward. Source: Menon (2016)



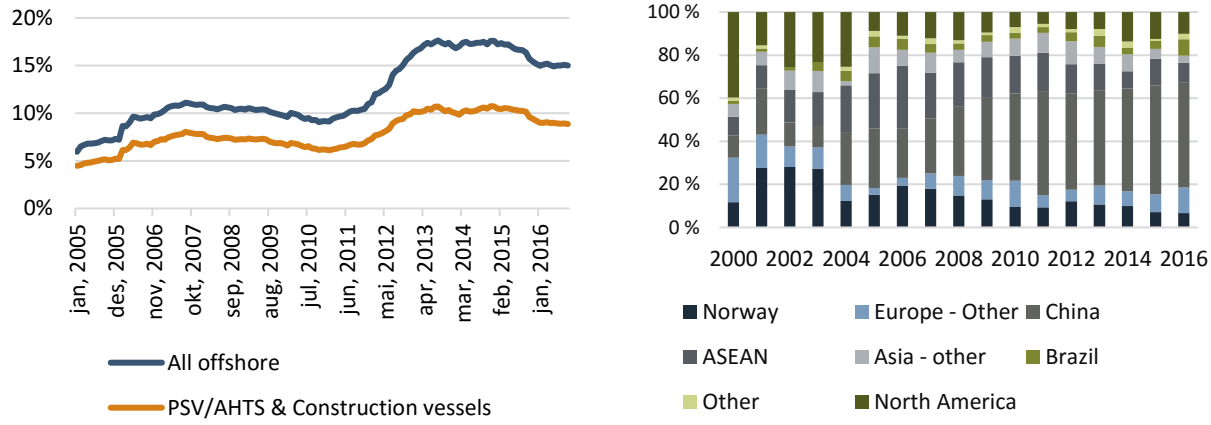
Companies in the Blue Maritime Cluster demonstrated spectacular growth from 2004-2014 with the total value added increasing at, on average, 13 percent annually and reaching 23 billion NOK in 2014. As a result, more than 8000 new jobs were created in the cluster. That said, the growth, by all measures, already started to slow in the period from 2009-2014. This reduction in growth of revenue and value added coincided with stagnating productivity. Hence, it seems that the dramatic drop in revenues and profits cannot be entirely explained by market conditions.

The falling oil price was the catalyst that uncovered the large oversupply that the market is currently facing. From levels of above USD 100 per barrel in 2010-2014, the oil price appears to have stabilized around USD 45-50 per barrel by the fall of 2016. As a result, 2016 may be the first time in a decade when no new vessels will be ordered at Norwegian yards. There are significant levels of excess capacity in most segments with large portions of ships in lay-up and looming order books for new vessels to be delivered in the next years, too. This will dampen the utilization and rate recovery in the next couple of years. Still, the offshore market is expected to pick up in 2017/2018. This will, however, have a small effect on the Møre cluster, because the excess capacity of offshore vessels is so large.

The whole cluster is struggling, but right now the main focus has been on the shipping companies. They are struggling with high debt and a critical need for financial restructuring. Rem Offshore was earlier this year acquired by Solstad and the Aker-group, while the situation for many other companies currently is uncertain. It will be a huge blow to the cluster if large parts of the shipping companies' activities are moved away from Møre.

To make the situation even more difficult, the competitive position of Møre shipyards has deteriorated as the offshore segment has grown and attracted larger international competitors such as Hyundai and Samsung Heavy Industries. In the last five years, 1 300 OSV vessels have been delivered from yards around the globe. Of these 2/3 were delivered from Asian yards, and 10 percent by Norwegian yards. In the period from 2000 to 2005, as many as 20 percent of the vessels were delivered from Norwegian yards. That is an indication that the dominance of the Norwegian yards has been reduced. The international market shares of the ship equipment producers in the cluster have decreased as well.

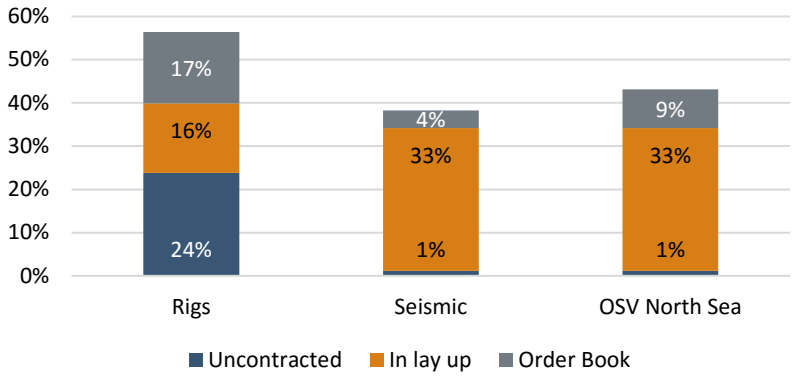
Figure 1-2: To the left: Offshore vessels' share of global order book (number of vessels). Source: Clarkson (2016)
To the right: Share of OSV-deliveries from different regions 2000-2016.



Benchmarked against companies offering similar products and services in Norway, we see that the members of Blue Maritime have performed well, but there are signs that they have been falling behind their Norwegian counterparts recently. In the last four years, the national benchmark (see chapter 2 for an explanation) has seen significantly higher growth and better productivity development than the Møre cluster. While the national industry has increased its productivity since 2011, productivity growth in Møre has stagnated.

The decrease in OSV capacity utilization does not only hurt the ship owners, but also has a negative cascade impact for the whole value system. Currently a third of the OSV vessels in the North Sea are laid up, while an additional 10 percent are uncontracted or in the order book. There is a vast oversupply. Order delays and cancellations for shipyards have propagated to equipment producers – as equipment can account for about 70 percent of a ship's cost – as well as to ship designers and service providers.

Figure 1-3: Excess capacity key offshore oil service segment 2Q 2016. Source: Pareto Securities



Last year we wrote that the market circumstances called for substantial revisions of the companies' strategies directed towards international expansion and, for some segments, diversification out of the offshore oil & gas industry, improved operational efficiency, flexible management of capacity, and increased focus on financial risk management. During 2015 and 2016 we have seen yards and ship designers targeting other vessel types with surprising success. The shipping companies' ability to adapt to new market conditions is of course more limited, since they are stuck with irreversible investments in offshore service vessels.

1.2. Future prospects

1.2.1. Møre home to a world leading maritime cluster

The offshore market that most of the companies in the Møre cluster are dependent on has been bad and turned gradually worse over the last two years. Neither are there any signs of improved market conditions in 2017. Nevertheless, it is important to emphasize that the future may be quite bright for the cluster, not only because offshore markets will recover and other ocean-based maritime applications will experience strong growth, but also because the maritime cluster in Møre is dynamic, innovative and still has a strong position compared to other local clusters in Norway and competing clusters in other countries.

The cluster is a tight vertically structured cluster, with world-leading designers, equipment manufacturers, yards, shipping companies and other specialized service providers. The companies in the cluster are world-leading in all the parts of the value system. Companies such as Skipsteknisk, Ulstein Design, Havyard Design and Marine Teknikk design the world's most advanced offshore vessels that perform different operations in some of the most challenging environments at sea. The cluster controls a fleet of more than 200 offshore vessels, around 10 percent of the global advanced offshore fleet, although a large share is currently laid up. The fleet is young, advanced and equipped with world-leading equipment. These ships are built on yards all over the world, although the vast majority is produced by local shipyards such as Kleven, Vard and Havyard. The shipyards in turn use equipment – motors, propellers, winches, dynamic positioning, etc. – produced locally by Rolls-Royce Marine, IP Huse and Brunvoll, all located in the cluster. The shipping companies, including Farstad, Bourbon, Island, Havila and Olympic, operate the ships serving the offshore fields across the globe.

In 2014, due to its unique global market position and its important contribution to Norwegian value creation, the cluster was granted the status of a Global Centre of Expertise. By cluster we mean "a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities [common needs] and complementarities" (Porter, 2008: 215). The companies in the cluster both share the

knowledge commons and have strong operational ties, which contributes to continuous innovation and higher value creation in the cluster. As some of the interviewed companies mention, "We jointly develop good projects. You are much more productive when you can talk to your neighbor than when you have to call abroad. Such basic things as common language, culture and business substantially improve our productivity."

1.2.2. Will the cluster retain competitiveness?

GCE Blue Maritime is one of three Global Centers of Expertise in Norway – the highest level in the hierarchy of Norwegian Innovation Clusters. To become a GCE, a cluster has to prove that it has established a systematic collaboration between the companies, a collaboration characterized by dynamic relations with high interaction. The GCE-clusters must also be considered to have a strong potential for growth in national and international markets and together form a strong innovation system.

The cluster has historically demonstrated a remarkable capability for strategic transformation through both company and cluster-based innovation. The collective knowledge that innovation relies on – carried by firms and research institutions and spread among them through buyer-seller relations, cooperation, informal communication and mobility of people – is strong in the Møre region. In addition, the critical mass that the cluster has gained in the last decade has made it much more robust to adverse shocks than it was ever before.

Although the Møre cluster has achieved an impressive performance over the last ten years, three fundamental questions about future competitiveness can be raised:

1) **Productivity**: Since 2009, productivity in the cluster has stagnated, while the rest of the offshore oriented part of the maritime industry in Norway has improved productivity. ***Why has productivity stagnated, and how will that impact competitiveness in offshore markets when global demand starts to increase?***
2) **The value chain:** The most distinguishing feature of the Møre cluster has been the tight value chain structure, with internationally competitive companies within the local cluster in all steps in the value chain. This vertical structure is under pressure for two reasons: a) The offshore shipping companies will probably consolidate, and ownership and headquarters may be centralized outside Møre. b) The ship designers and yards in Møre show an impressive ability to adapt to market changes by switching to other types of vessels, for example ferries, cruise ships and well boats. ***How will cooperation, knowledge flows and cluster-based innovation be affected when the buyer-seller linkages in the value chain are broken?***
3) **Standardization and cost-efficient mass production**: The Norwegian maritime industry, and the Møre cluster in particular, has been in the forefront of the technological breakthroughs and innovations of new ship types and equipment for many decades. It is important to emphasize, however, that yesterday's innovations are today's standards, because customers will require standardized solutions to reduce their own costs. This implies that the competitive conditions probably will be different when the offshore oil & gas market returns. Hence, there is need for innovative solutions within the offshore market, and for continuous search for new growth opportunities. ***Will the Møre cluster be able to find sufficiently large and attractive market opportunities to capitalize on innovation capabilities?***

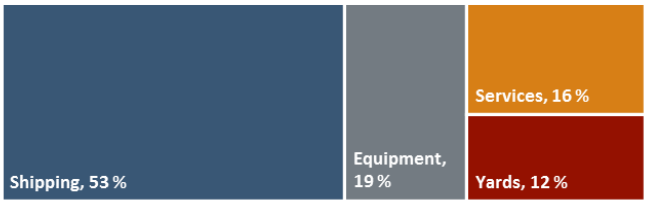
In the remainder of this report, we will divide the cluster into four separate segments: Shipping companies, Yards, Equipment manufacturers and other specialized services. Since the designers play a crucial role in the product innovation in the cluster, we will also present some separate numbers for this group, but they will mainly be included together with other companies offering specialized services. A selection of the leading companies within the four areas is shown above to illustrate the width of activities in the cluster.

Figure 1-4: The four segments in the cluster with company illustrations

2. Key developments in the Blue Maritime cluster

2015 marks a clear breach with the growth path the Møre cluster has been on for more than ten years.[1] From 2014 to 2015 turnover fell by 12 percent, while it has grown 15 percent annually in the decade 2004-2014. Yards is the group with the largest fall in turnover from 2014 to 2015 with a 25 percent drop. Not only the activity level fell in 2015. Profitability also fell strongly across the different segments in the cluster. From seeing healthy profit levels of around 10 percent, the cluster delivered a net operating (EBIT) margin of 0 percent in 2015.

Figure 2-1: Value Added 2015. Source: Menon (2016)



Still the cluster plays a key role for the industry in Norway and as a contributor to the regional economy. In 2015, the companies in the cluster generated a turnover equal to NOK 62 billion and a value added of 19 billion. The value added in the cluster equals around a fifth of the total maritime cluster in Norway. More than 16 000 people were employed in the cluster, making it the most important contributor to employment in Møre and Romsdal (excluding public administration).

Table 2-1: Key financials in 2014 and 2015. Source: Menon (2016)

	2014	2015	Development
Turnover	70.0	61.5	-12 %
Employment	17 494	16 131	-8 %
Net Operating Margin	8 %	0 %	-8 pp
Value Added	22.7	19.3	-15 %

The cluster is home to world-leading companies that can be divided into four main segments – four steps in a complete value chain from design to operation of offshore vessels. Their respective shares of the value added have remained relatively stable over the last years with shipping constituting the majority of the value added in 2015. The value added contributions are found in the figure above.

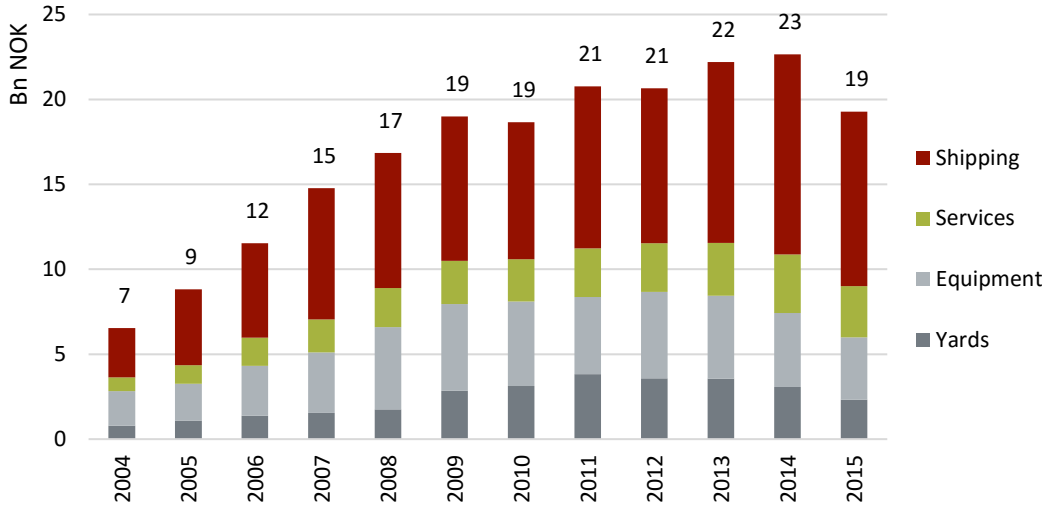
2.1. Activity in the cluster is falling – value added decreased by 15 percent

Looking at the development since 2004, we see a vast growth in value added. The cluster increased its value added from NOK 6.5 billion in 2004 to NOK 22.5 billion in 2014. That is equivalent to a yearly growth rate of 13 percent. From 2014 to 2015 however, the cluster – hit hard by global market developments – has seen a decline in value added of 15 percent.

From the figure below we can observe that the manufacturing side of the cluster – yards and equipment producers – reached a peak already in 2011 and 2012, while the shipping companies secured an increase in value added for the cluster as a whole through strong growth in 2013 and 2014.

[1] *The terms Møre cluster and Blue Maritime cluster are used interchangeably through the report. All maritime companies in the region are included, regardless of whether they are members of the Blue Maritime cluster project.*

Figure 2-2: Value added 2004-2015. Source: Menon (2016)



Value added

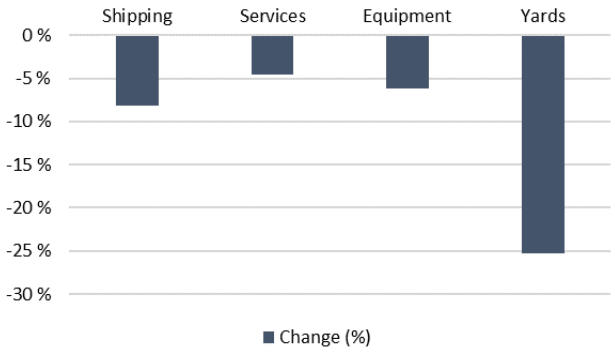
Value added is often used as a measure of activity. Value added is a company's purchases of goods and services deducted from its Turnover. Thus, Value added is the sum of EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization) and wage costs. This measure has some key advantages others lack. It avoids double-counting purchases of goods and services, making the measure comparable across sectors. This is important in a cluster such as Blue Maritime where there is a high degree of internal sales. In addition, it can be used to measure the economic contribution or return from the sector to the national economy. This is possible because the measure shows how much is left to the key stakeholders in the industry, meaning employees through wages, government through taxes, creditors through interest payments on loans, and owners through profits.

2.2. Revenues declined in all segments

Since 2004, the aggregated turnover for the entire cluster has increased from 18 billion NOK reaching a peak of 70 billion in 2014, equaling an annual growth rate of 14 percent. In 2015, however, turnover fell by 1.5 billion and is now close to the levels seen in 2012. The sharpest decline is found among Yards, with a revenue reduction of 25 percent in 2015. All segments have seen a negative development over the past year.

Table 2-2: Change in turnover 2014-2015. Source: Menon (2016)

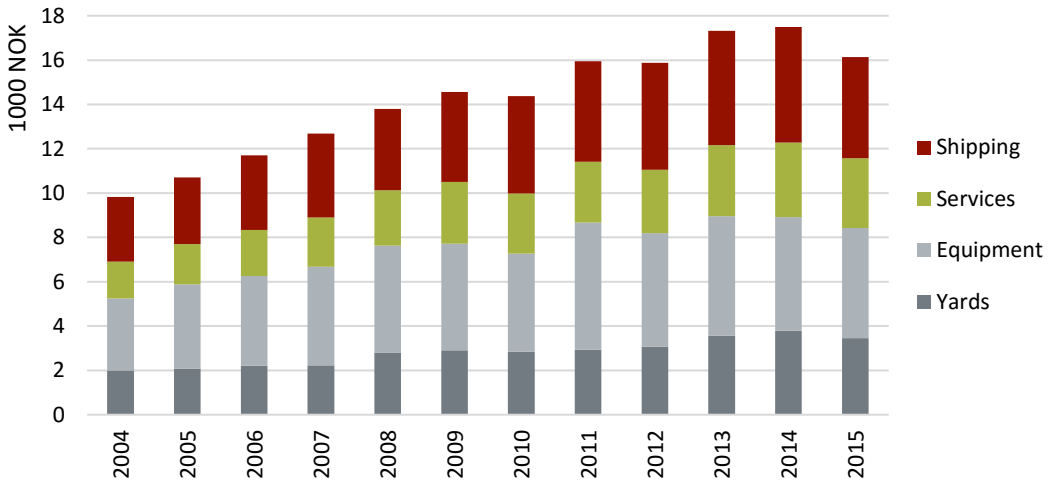
	2014	2015	Change	Change (%)
Shipping	17.8	16.4	-1.4	-8
Services	14.3	13.7	-0.7	-5
Equipment	16.8	15.7	-1.0	-6
Yards	21.0	15.7	-5.3	-25



2.3. Employment reduced by 8 percent

Employing more than 16 000 people, the maritime industry plays a key role in the region. Since 2004, employment has increased by more than 6 000 people, reaching a peak of 17 500 in 2014. Over the last year however, employment in the cluster has been reduced by close to 1500 people, constituting the first major decline in employment during the last ten years. The negative trend is expected to continue in 2016.

Figure 2-3: Employment 2004-2015. Source: Menon (2016)

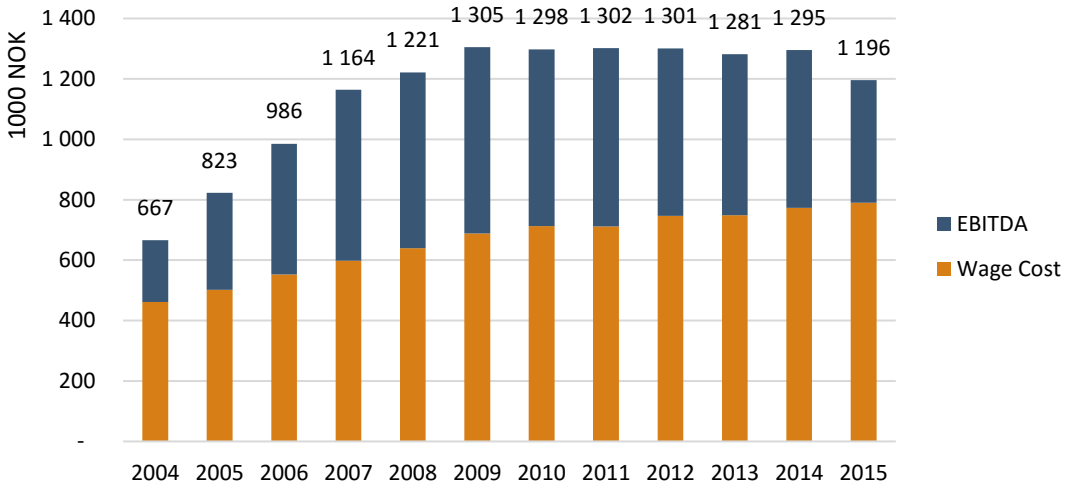


2.4. Productivity development has been weak since 2009

Productivity in the cluster, measured as value added per employee, grew rapidly from 2004 to 2009. Since 2009, however, value added per employee has stagnated – suggesting that productivity growth in the cluster has declined. Decomposing value added, EBITDA per employee has fallen since 2009, while wage cost per employee has risen.

Productivity is far too low to retain competitiveness in the cluster. We have already seen that total net operating margin (EBIT) in the cluster was 0 in 2015, which implies that the entire EBITDA was spent on depreciation and amortization, leaving nothing to cover financial costs. A related indication of reduced competitiveness is the fact that the EBITDA share of value added was close to 50 percent in the years from 2007 to 2009, while it has gradually decreased to 33 percent in 2015.

Figure 2-4: Value added per employee 2004-2015. Source: Menon (2016)

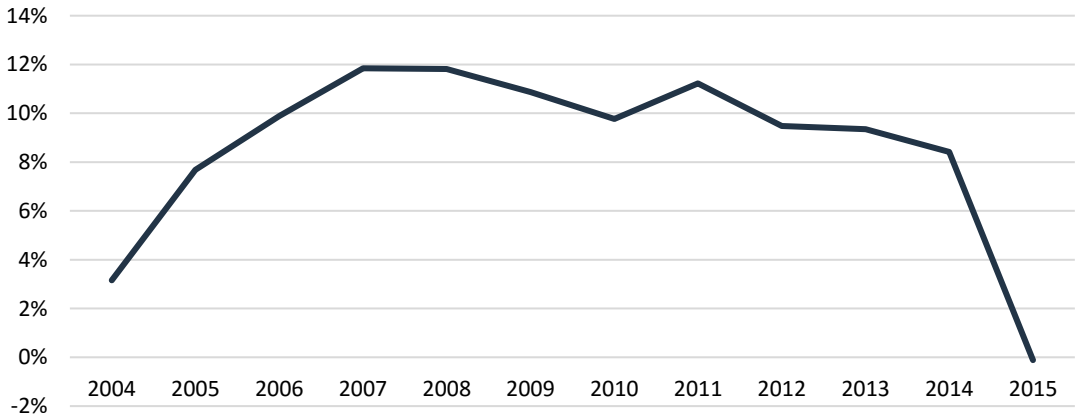


2.5. Sharp decline in operating margins

Operating in a global market, companies in Møre face competition from countries with lower costs. To be competitive, the cluster must deliver higher value goods and services. Profit margins can be seen as an indicator of the cluster's ability to leverage its capabilities and deliver goods and services that are valued higher than its input factors. In other words: as an indicator of how competitive the cluster is. It is important to mention that there are also other factors such as market orientation and temporary supply shocks that can explain periods of deviations in profitability.

For the cluster as a whole, the operating margin grew rapidly to a peak of close to 12 percent in 2007 and 2008. After the financial crisis, profitability remained high, but has gradually decreased from 12 to 8 percent. In 2015, the aggregated profitability dropped sharply from 8 percentage points to 0.

Figure 2-5: Net operating margins(EBIT) for the cluster in total. 2004-2015. Source: Menon (2016)



Operating margin as a measure of profitability

Net Operating Margin is defined as operating profit as share of turnover. In other words, the net operating margin is equivalent to a company's operating net income as a share of its operating gross income, where the term "operating" reflects that financial income items are excluded. The operating margin is perhaps the most commonly used measure of profitability in private companies. A weakness of the measure is that it concentrates on companies' "turnover" rather than value added. For example, consolidation of companies in an industry will lead to fewer goods and services purchased, since some transactions will now be internal. The consolidation will result in an increased operating margin, even though there has not been any direct improvement in profitability. What is more, changes in input mix and the degree of outsourcing might have indirect effects on profitability.

All segments have seen deteriorating net operating margins in 2015. Where equipment and yards face a continuation of recent downward trends, the two other segments experience a clear worsening compared to recent years. Looking at the two most recent years, we observe that it is the equipment producers who have experienced the weakest results, with negative margins in both 2014 and 2015. It is important to highlight that the numbers for the equipment manufacturers are dominated by the development of Rolls-Royce Marine, which has delivered weaker financial results in recent years. Particularly small and medium-sized equipment producers have retained higher profits.

Operating margins at segment level are illustrated and described in more detail for each segment in chapter 5.

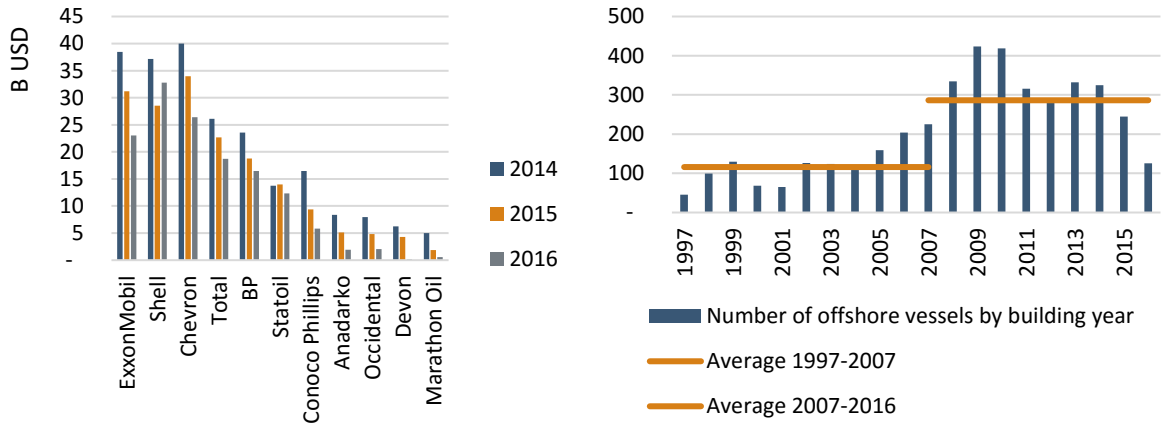
3. Market Developments

3.1. The offshore crisis can be explained by fundamental economics

The weak offshore oil and gas market can be explained by imbalances in the supply and demand in the offshore market. The oil price is the main driver of investments in the offshore oil and gas industry. In mid-2014 the oil price started to fall from a level of over 100 USD/barrel down to just below 30 USD/barrel in the beginning of 2016. Since, the oil price has recovered somewhat, and oil is currently traded at around 45 USD/barrel. This sizable fall in the oil price has led to large decrease in the demand from oil operators such as Statoil for deliveries from the offshore supplier industry. Operators' spending on exploration and production fell strongly from 2014 to 2015 and has fallen further in 2016 (as seen in A in the graph below). On the supply side, there has been a huge increase in capacity over the last few years. The number of offshore service vessels entering the market has increased from an average of about 100 new vessels in the decade before 2007 to 300 new vessels in the following 10 years. The supply of offshore vessels has doubled over the last decade.

For the Norwegian industry the falling demand was amplified by problems in what were expected to be growth markets in Brazil and Russia. Norwegian deliveries of services have been hampered by the Petrobras corruption scandal in Brazil combined with other institutional problems. Russia was considered another growth market, but this market was closed by sanctions from the EU after the war in Ukraine. This exaggerated the imbalance in demand/supply even further.

Figure 3-1: Capital expenditures for companies 2014-2016 and Number of offshore vessels by building year 1997-2016. Source: Menon (2016)

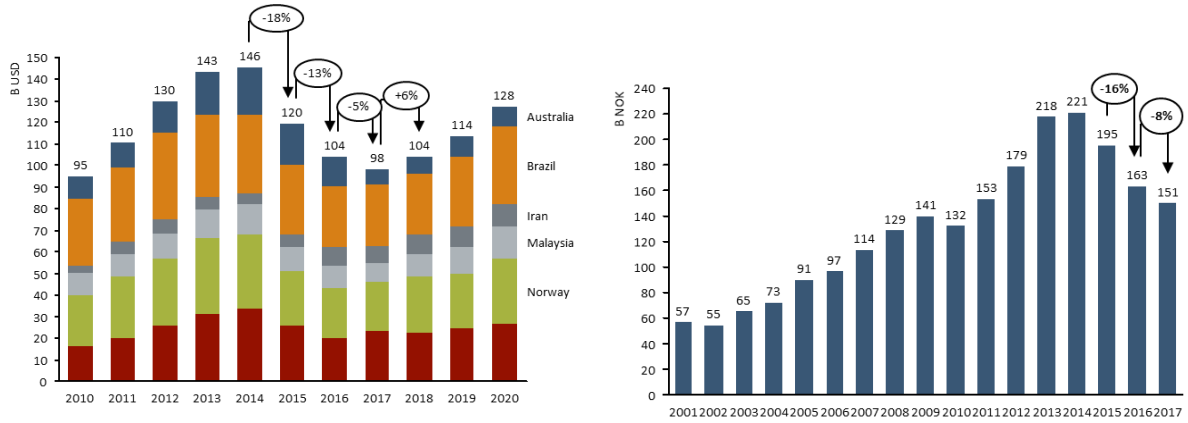


3.2. The short-term outlook for offshore oil and gas is bleak

It is expected that the oil and gas market both in Norway and globally will fall further in 2016 and 2017, before increasing again in 2018. The graph below indicates that the key markets for the Norwegian offshore supplier industry will fall by 5 percent from 2016-2017, before increasing again after 2017. The market is expected to grow to back to 2016-level already in 2018, and will continue to grow further from that level. We see a similar development in the Norwegian market where market size is expected to fall both in 2016 and in 2017. This

development is highly dependent on the development in the oil price. Since the oil price is dependent on many factors that are difficult to predict, the real development might be very different from what is illustrated below.

Figure 3-2: Expected change in key markets for the Norwegian oil and gas supply industry. Source: Rystad (2016). Investments in the Norwegian Oil & Gas Industry 2014-2015. Expected change in 2016 and 2017. Source: SSB (2016)

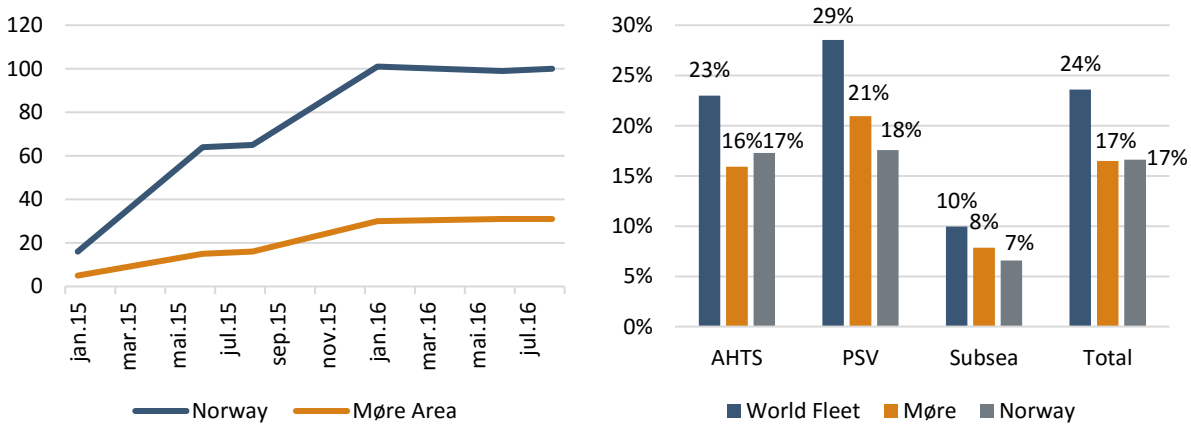


3.3. The large increase in laid-up vessels in 2015 has stabilized in 2016

The Møre cluster is home to shipping companies that control a large fleet of more than 220 vessels. Of these, 31 were in lay-up in August 2016. The number of vessels out of service showed a dramatic increase throughout 2015 before stabilizing at 31 vessels in 2016. That is the same share of laid-up vessels as for the Møre cluster's Norwegian competitors, but still 7 percentage points lower than the world average. With an average age of the fleet of 8 years, the Møre fleet is much newer that the world fleet. That explains why the utilization of the Møre fleet is higher than the world average.

According to IHS Markit, a third of the world fleet will need to be scrapped to get back to a situation with market balance. They suggest that all vessels built before the year 2000 will need to be scrapped. If this is to happen, the Møre shipping companies will need to reduce their fleet by 12 percent.

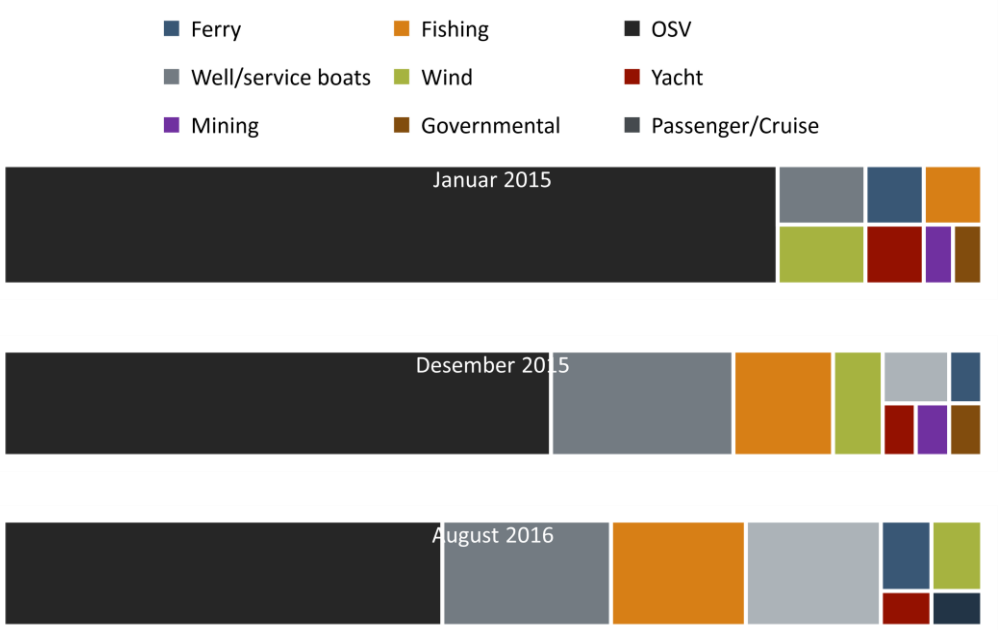
Figure 3-3: Number of laid-up vessels January 2015 to August 2016 (left) and share of fleet laid up in 2016. Source: Menon and Clarkson (2016)



3.4. Shift towards new markets

In line with lower demand from offshore oil and gas markets, the cluster has made a clear shift towards more diversified operations. This can for instance be seen through the order books of Norwegian yards that are much more diversified today than only two years ago. The number of new orders for offshore vessels has been around 20 annually for Norwegian yards over the last decade. After only seven contracts for offshore vessels were made in 2015, the decline has continued in 2016 with zero new contracts. If this is the situation at the end of the year, the yards are facing a situation not seen during the last decade.

Figure 3-4: Order book at Norwegian Yards January 2015- August 2016. Number of vessels (larger than >40m). Source: Norsk Industri

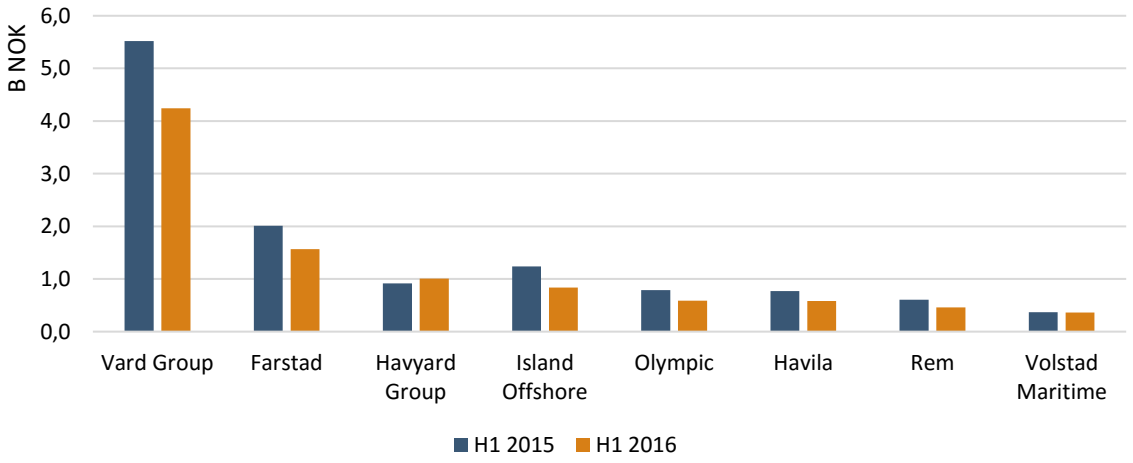


From the figure above, we can see that fisheries and aquaculture have become much more important for the yards, in addition to the cruise/passenger segment. Both Kleven and Vard have seen a move into cruise with a special focus on expedition cruise. Kleven has a large contract with Hurtigruten for delivery of up to four vessels over the next years, while Vard is building two expedition cruise vessels for Hapag-Lloyd Cruise and four for French Ponant. These vessels are large and costly and thereby increase the yards' order books quite substantially. The key question going forward is if the cluster in Møre will be able to stay profitable when moving into more diversified operations.

3.5. The outlook for 2016 is bleak

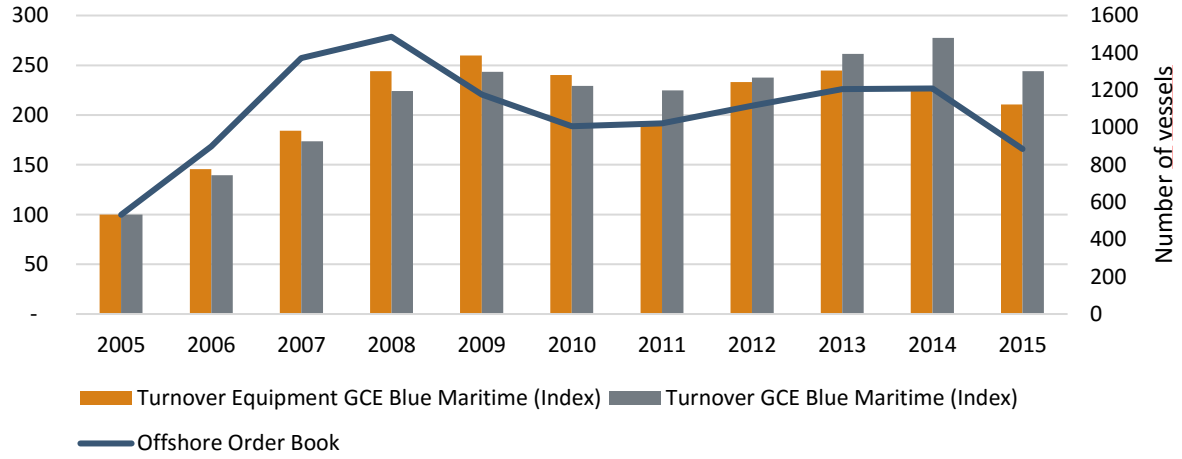
The downturn in 2015 is expected to continue for large parts of the cluster also in 2016. The graph below shows the development in turnover for the first half of 2016 compared to first half of 2015. Vard[2] for instance has seen a reduction of activity of almost 25 percent in the first half of 2016 compared to the first half of 2015. We also see a clear reduction in the shipping companies' activities in the first half of 2016.

Figure 3-5: Turnover for large companies in the cluster. H1 2015 compared to H1 2016. Source: Menon (2016)



As mentioned earlier, the expected reduction in the offshore market will also have a negative influence on the activity level in the cluster for 2016. The graph below shows how the order book of offshore vessels is highly correlated with the turnover in the cluster. Looking at the development in the global order book for offshore vessels in 2016, we see that it has been reduced by 20 percent in 2016 alone. This is another sign that 2016 will be another year with reduced activity in the cluster.

Figure 3-6: Number of offshore vessels in the world order book January 2005 to September 2016. Source: Clarkson/Menon (2016)

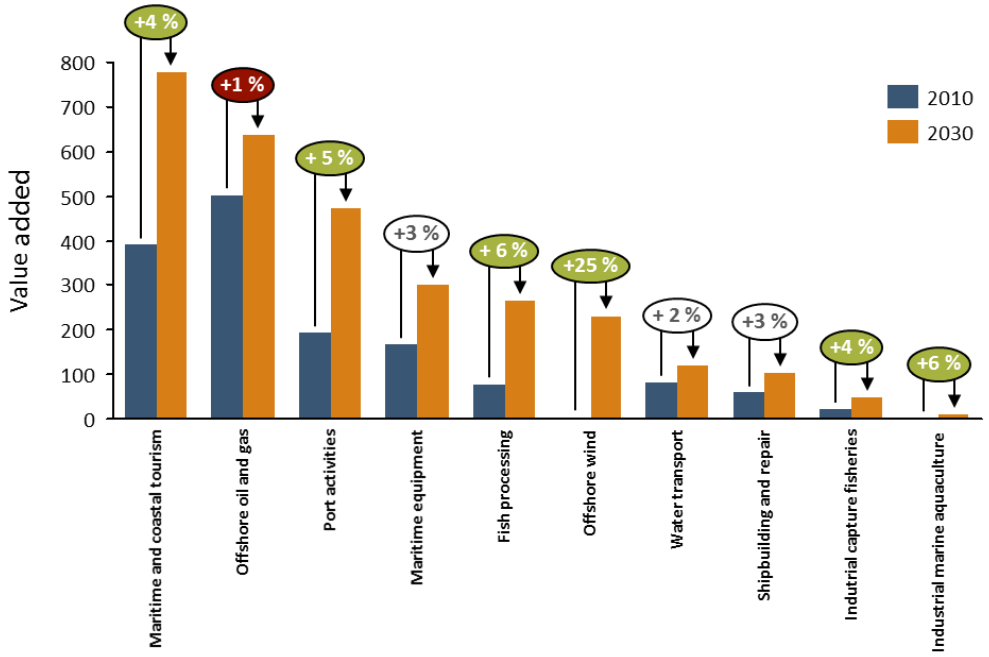


[2] *These numbers are at group level and include operations abroad.*

3.6. The long term outlook is promising

While the short term market developments are weak, the long term outlook is much more promising. The economic activity in the ocean is expanding quite rapidly, driven by developments in global population, economic growth, trade, rising income levels and technological developments. According to OECDs recent report "The Ocean Economy in 2030", ocean-based industries have the potential to outperform the growth of the global economy as a whole. They expect a particularly strong growth in marine aquaculture and offshore wind, but also a strong growth in maritime tourist activities, port activities, shipbuilding and repair and equipment production. Maritime oil and gas activities are expected to grow the slowest with an annual growth rate of 1 percent. Still oil and gas activities are expected to be the second largest ocean industry in 2030, only overtaken by tourism.

Figure 3-7: Size of different ocean industries in 2010 and in 2030 measured in value-added. The numbers show the annual growth rate for the period. Source: OCED (2016)

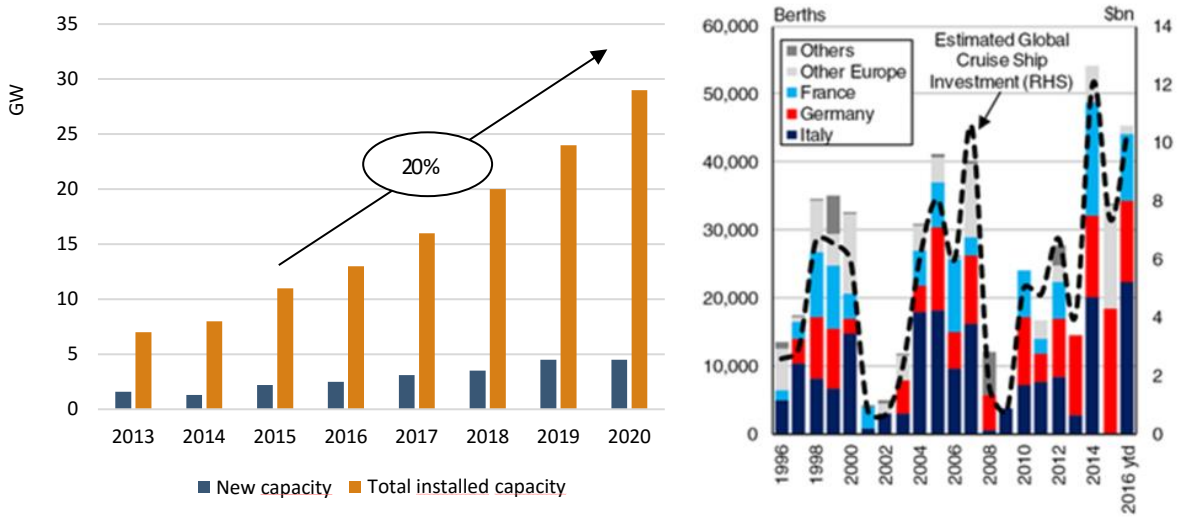


3.7. Offshore wind and cruise are two segments with promising growth opportunities

Offshore wind is still a small market compared to offshore oil and gas, but the market is growing quickly and many actors in the Norwegian maritime cluster are now paying increasing attention to this market. Uptime in Ålesund is one example, delivering gangways that can be used in the offshore wind industry.

The offshore wind industry is growing quickly and with an expected growth of 15-20 percent over the next years it should become an interesting market for companies in the Møre Cluster.

Figure 3-8: New installed capacity and total capacity in the global offshore wind marked. Source: IEA Mid-Term Market Update 2014 (left). Value of investment in cruise ships and passenger berths 1996-ytd 2016. Source: Clarkson (2016) (right).



Another interesting market is the cruise industry and especially the expedition cruise segment. Investment in the cruise industry has been record high the last three years and with long-term growth in the tourism industry, it is likely that this market will grow further. Kleven and Vard already have a growing part of their order book within this segment.

Figure 3-9: To the left: Hapag-Lloyds' cruise expedition vessels that will be built at Vard. To the right: Hurtigruten's new cruise ships built at Kleven.

3.8. A weaker NOK has increased the competitiveness of the cluster

The exchange rate has a strong impact on the industry. Since the summer of 2014, the NOK/USD exchange rate has spiked. Companies with revenue in USD and the majority of costs in NOK experience a positive effect on their competitive situation. The cost-disadvantage of Norwegian labor has shrunk – wage cost constituting around a fifth of the turnover. Still, companies also buy input factors from abroad, something that neutralizes some of the positive effect of a weak krone. Companies with revenue in NOK and majority of costs in USD experience a negative effect, unless they

Figure 3-10: Effect of a weakening of the Norwegian krone (NOK) on competitiveness and profitability on company level. Source: Menon (2016)

		Revenue	
		USD	NOK
Costs	USD	**0**	-
	NOK	**+**	**0**

are able to increase their prices in Norway (NOK). These effects are summarized in the table below. The total effect on the cluster is positive, but will vary between companies and segments depending on the share of revenue and costs coming from abroad. It will also depend on the company strategy for handling exchange rate risk.

Figure 3-11: Exchange rate NOK per USD September 2010 to August 2016. Source: Menon (2016)

Since the Norwegian Bank meeting in March, the Norwegian currency has strengthened, and there is an expectation among currency analysts that the NOK will gradually strengthen towards Euro and USD. If this prediction holds, this will have a negative impact on most companies in the Blue Maritime cluster.

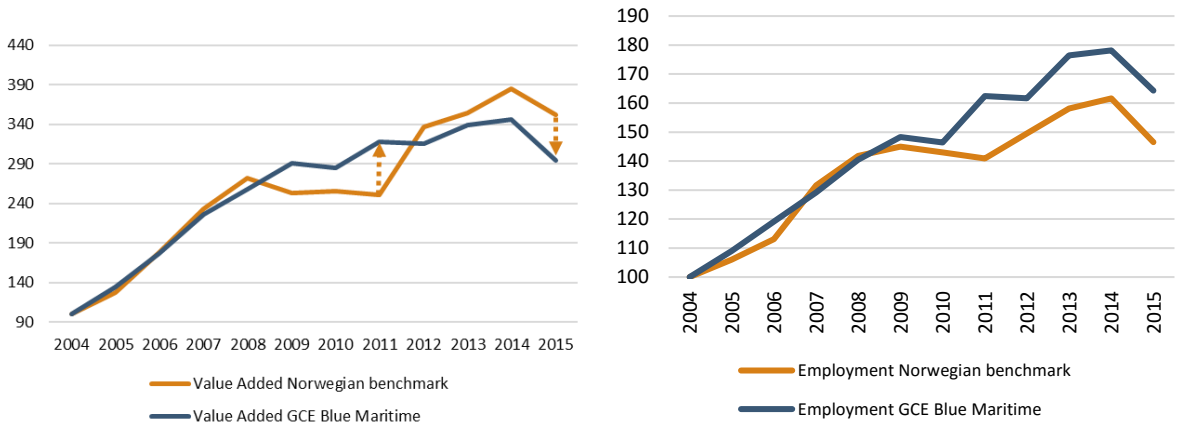
4. Cluster competitiveness – local and global competition

4.1. Similar Norwegian companies have outperformed the Møre cluster the last few years

Both the cluster in Møre and the benchmark of similar companies in Norway performed extremely well in the period from 2004-2009. Value added almost tripled in this period. In the following three years, the Møre cluster achieved stronger growth than the Norwegian benchmark.[3] Since then, the Norwegian benchmark has shown higher value added growth. It passed Møre in 2012 and has since been growing at a faster pace.

In terms of employment, the Møre cluster has experienced faster growth than the national benchmark, particularly up to 2011, and the difference between the two groups has remained quite stable from 2011 to 2015. In two out of four segments, the Blue Maritime Cluster has seen higher growth rates than the industry elsewhere in Norway: Yards (only a few outside Møre) and Services. Equipment manufacturers and Shipping on the other hand are lagging behind. The variations between the segments are elaborated on in chapter 5.

Figure 4-1: Development in Employment and Value Added 2004-2015 GCE Blue Maritime and Norwegian benchmark (Index). Source: Menon (2016)



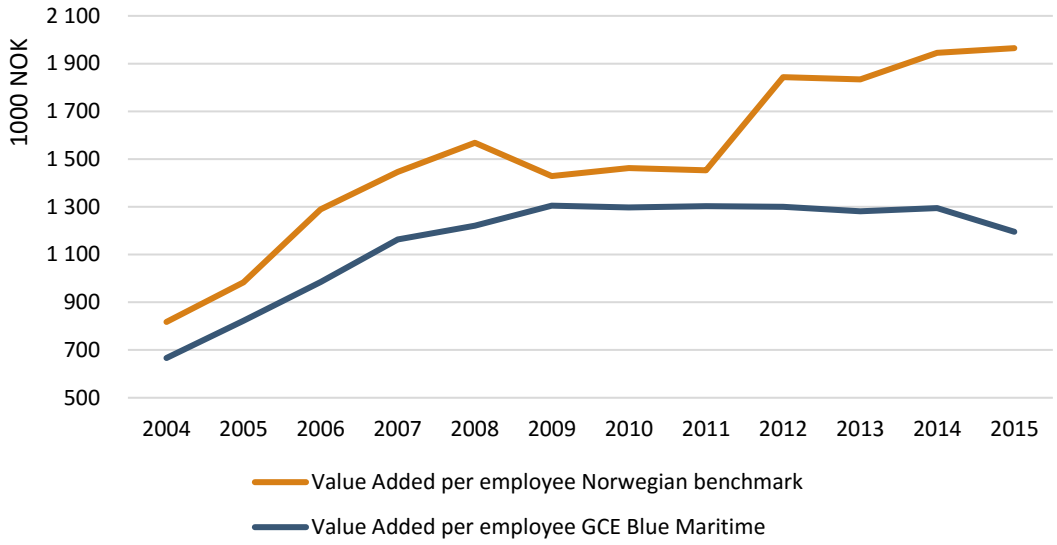
4.2. Lower productivity in Møre

Looking at productivity, we see that both the Møre cluster and the Norwegian benchmark group experienced high productivity growth in the period before the financial crisis. This was at a time of rising oil prices and increased activity both in Norway and globally. As we have seen earlier, however, value added per employee stopped growing in 2009. In the Norwegian benchmark, after a post-financial crisis struggle, productivity continued to increase in 2011-2015. Hence, the cluster has been outperformed by similar companies in Norway in terms of productivity. Value added per employee is now significantly higher in the rest of Norway than in the

[3] The benchmark consists of maritime companies with similar market focus and activity as the companies in the Møre cluster. The development in the benchmark is weighted so that the composition of different activities in the Norwegian benchmark is the same as in the Møre Cluster.

Møre cluster. Labor productivity has been slightly lower compared to the national benchmark across all segments, except for yards and design.

Figure 4-2: Development in gross Value Added per employee 2004-2015 for GCE Blue Maritime and Norwegian benchmark. Source: Menon (2016)

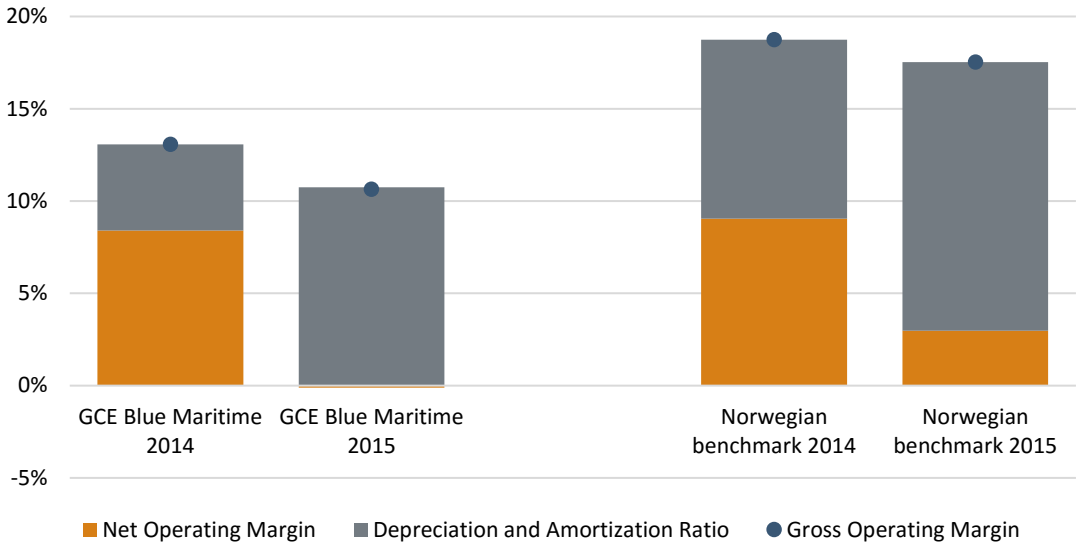


4.3. Profitability weaker than for Norwegian peers

High profitability over time is key to development and expansion. The cluster in Møre has delivered net profit margins above 8 percent up until 2015, but seen a dramatic decline the last year.

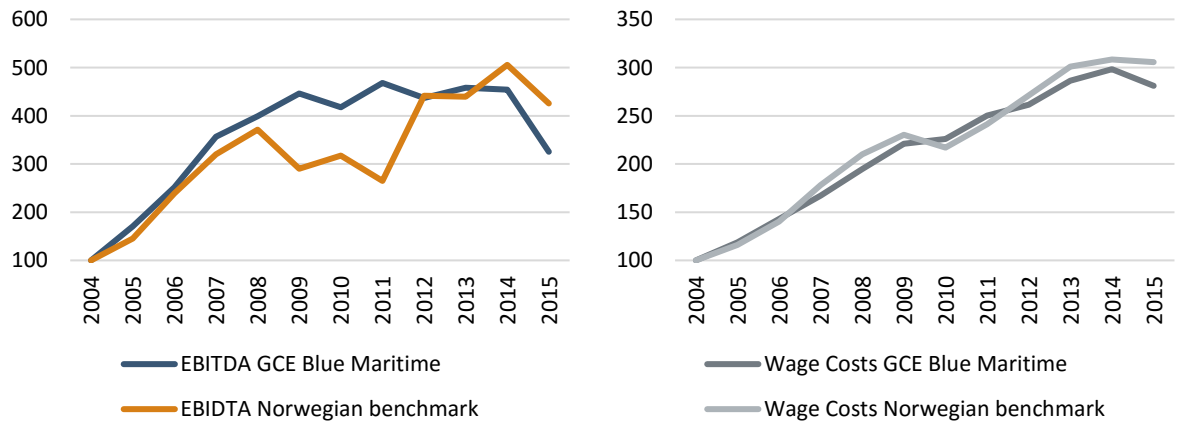
The national benchmark outperformed Møre with a wide margin. Profitability in the Møre cluster measured by gross operating margin has been relatively low partly due to lower capital intensity than for the rest of the maritime industry. Breaking down the gross margin at segment level gives insight into the difference in performance.

Figure 4-3: Operating margin GCE Blue Maritime and Norwegian benchmark 2014 and 2015. Source: Menon (2016)



At segment level, the Møre cluster is outperformed in shipping, the most important segment in the benchmark. In the next chapter we will also show how the shipping companies are underperforming compared to international competitors. The cluster also underperforms in the two segments equipment and services. The underperformance in these two segments explains the difference in the overall cluster performance compared to the national benchmark. For yards, Møre had lower gross margins, but higher net margins in 2014; it still comes out below across the board in 2015 (again noting that there are only a few Yards outside Møre). The cluster outperforms in design, but has seen a substantial deterioration over the last year.

Figure 4-4: Development in EBITDA and Wage Costs 2004-2015 GCE Blue Maritime and Norwegian benchmark (Index). Source: Menon (2016)



5. Cluster competitiveness at segment level

In the following subchapters we will describe the four segments that make up the cluster separately, and look at some of their features.

5.1. Shipping companies are struggling in the current market situation

Shipping makes up half of the cluster's value added in 2015. This, combined with a large part of their fleet being built in Møre – makes its contribution to the cluster vital. The shipping companies have been growing steadily for more than a decade, except for minor set-backs in 2009, 2011 and now in 2015. The segment generated 10 billion in value added in 2015, down 2 billion from the previous year. Margins and profitability have been healthy, but saw an alarming dip in 2015 when profits turned negative for the year.

Figure 5-1: Value Added 2015. Source: Menon (2016)

Table 5-1: Key financials in 2014 and 2015. Source: Menon (2016)

	2014	2015	Development
Turnover	17.8	16.4	-8 %
Employment	5206	4561	-12 %
Net Operating Margin	26 %	3 %	-23 pp
Value Added	12	10	-13 %
Profit Margin	27 %	-7 %	-34 pp

The future of the shipping cluster in Møre is currently being decided. The shipping companies have a financial structure where bank loans and bonds are financing much of their operations. As shown in our report from 2015, the shipping companies in Møre have high financial leverage compared to competitors, and that is still the case today. Entering 2016, the four shipping companies Farstad, Rem, Havila and Olympic alone had a net interest-bearing debt of NOK 27 billion. At the same time, the value of the offshore vessels in their fleet has fallen dramatically, putting them in a difficult financial position. Rem has already been acquired by the Aker system, while the situation for companies such as Farstad, Olympic and Havila is still uncertain. If many of the shipping companies in the Møre region are acquired, it could lead to a weakening of the dynamics that the cluster has based its success on.

Figure 5-2: Development in Turnover and Operating Margin 2004-2015. Source: Menon (2016)

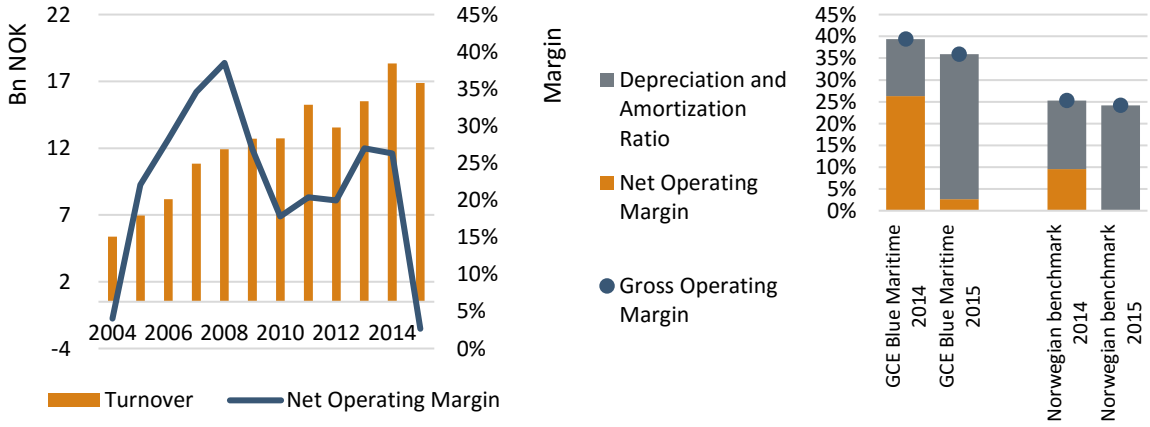
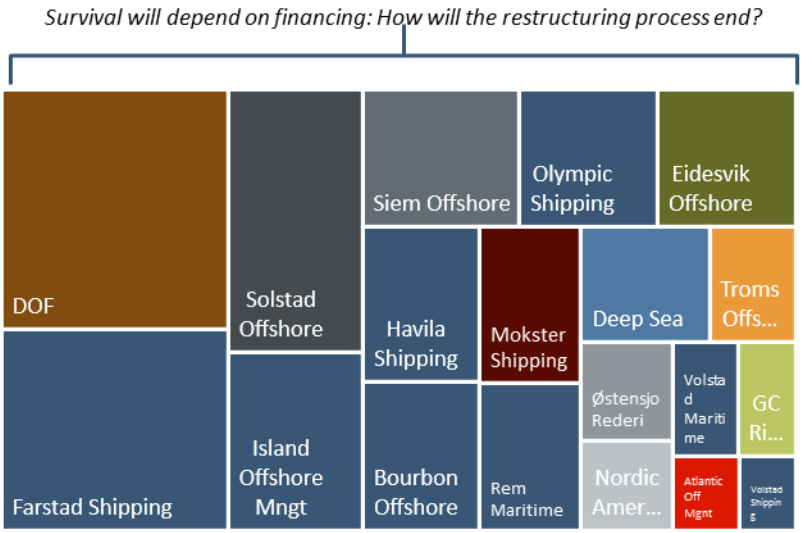
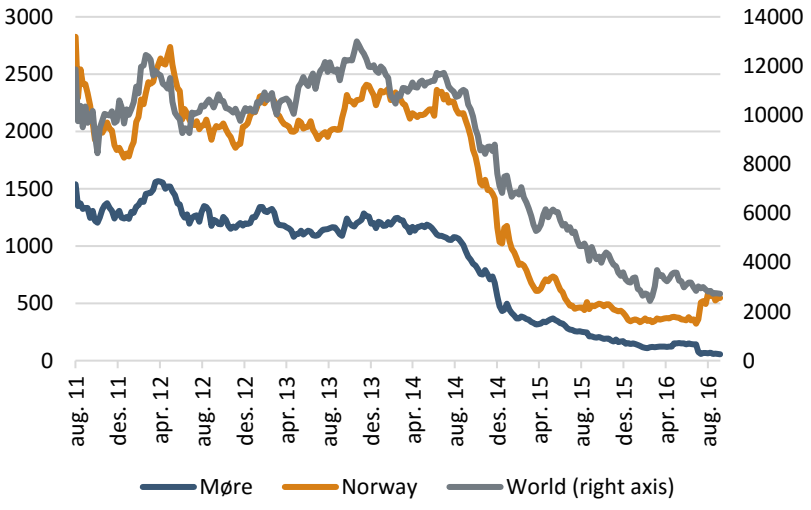


Figure 5-3: Size of fleet for leading Norwegian offshore shipping companies. The largest Blue Maritime Cluster shipping companies are marked in blue. Source: Menon (2016)



The difficult situation for offshore shipping in general can be seen in the figure below. The value of the three listed Møre companies is only 4 percent of the market value five years ago. That is much lower than the 19 percent for the Norway-benchmark and 23 percent for the world-benchmark. Part of the explanation is the high financial leverage for Møre companies. This was described more in detail in the report last year. High financial leverage might create possibilities when the market is growing, but also means that the companies are more vulnerable when the market is weak.

Figure 5-4: Market value of listed offshore shipping companies[4] 2011-2016 (M USD). Source: Menon (2016)



The development above compares the development of listed shipping companies in Møre with similar companies in Norway and abroad. As we can see, the companies in Møre and in Norway expanded their operations and won market shares in the whole period from 2006-2014. The last 18 months have seen a sharp decline in activity for

[4] *Møre is home to three listed shipping companies: Havila, Farstad and REM.*

the Møre companies, and their activity has been falling more than both the Norwegian and global benchmark.[5] Looking at profitability (measured as development in EBITDA), we see that the difference in profitability was large in Møre's advantage before the financial crisis. Since then this difference in performance has disappeared.

In the appendix it can be seen how the entire shipping cluster performed compared to the Norwegian benchmark. This comparison suggests that the Møre shipping companies have been outperformed by Norwegian companies during the last few years. One of the reasons behind this could be the fleet composition.

Figure 5-5: Development in turnover and EBITDA GCE Blue Maritime, Norwegian Benchmark and Global Benchmark (Index). Source: Menon (2016)

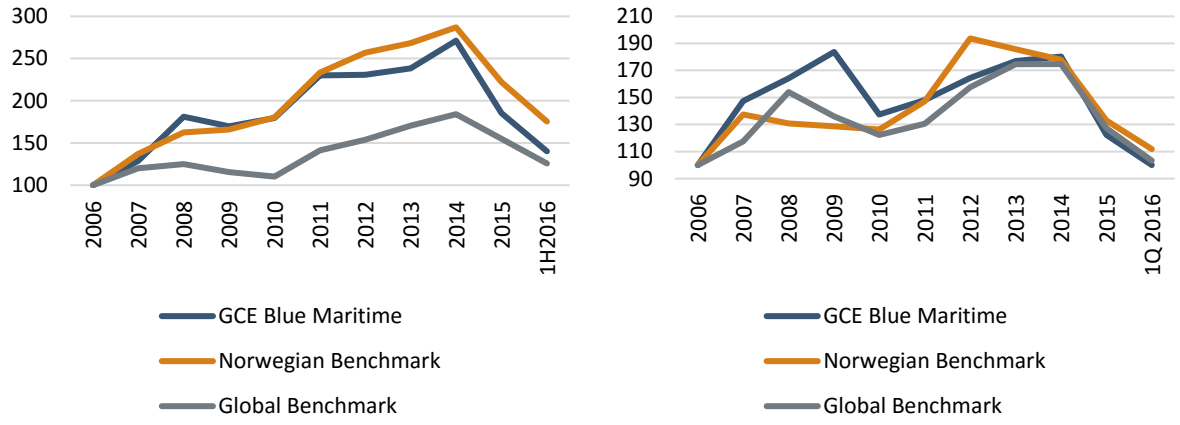
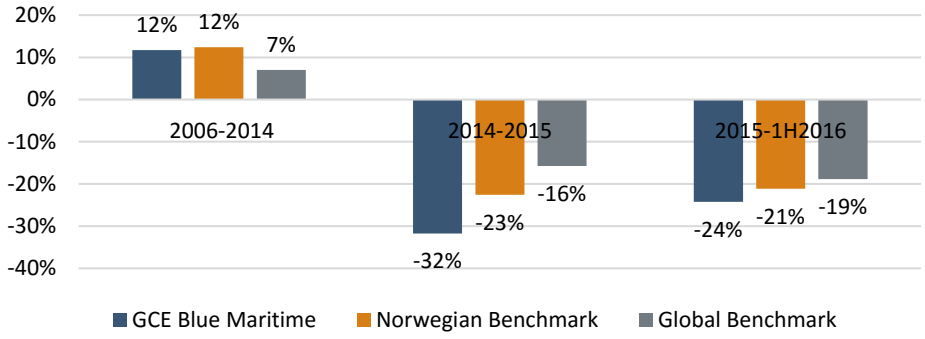


Figure 5-6: Annual growth in turnover for shipping companies in the GCE Blue Maritime, Norwegian benchmark and global benchmark. Source: Menon (2016)



[5] *Part of the strong fall in revenue can be attributed to the weakening of the krone. Since the shipping companies operate in a global market and have a majority of their income in foreign currencies, this can only explain some of the difference in performance.*

5.2. The service segment is key for the innovative power in the cluster

The service segment consists of companies that provide services to other companies in the cluster or directly to foreign companies. Activities include trade, installation and service of ship equipment, and other specialized maritime services.

Figure 5-7: Value Added 2015. Source: Menon (2016)

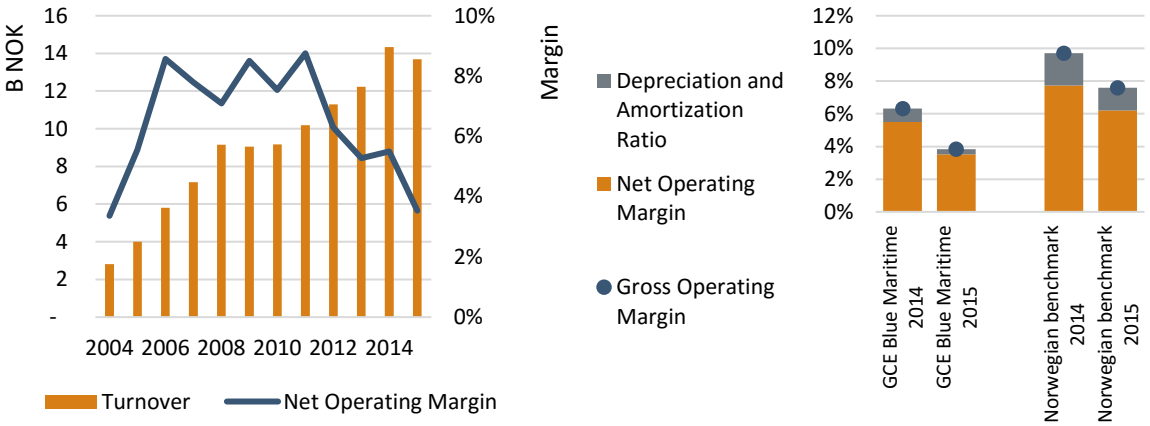
Table 5-2: Key financials in 2014 and 2015. Source: Menon (2016)

	2014	2015	Development
Turnover	14.3	13.7	-5 %
Employment	3373	3147	-7 %
Net Operating Margin	6 %	4 %	-2 pp
Value Added	3.4	3.0	-12 %

Design, considered a part of the segment, holds an especially important role in product innovation. Design, as a sub-segment, has the highest net operating margin in the cluster of 11 percent in 2015 – but still down significantly from the previous year. At the same time, both turnover and value added have dropped by more than 20 percent over the last year, the former from 870 to 670 million NOK and the latter from 475 to 375 million NOK. The sub-segment has also seen a decline in the number of employees.

Both the key financials and the figures below show that the service segment is struggling in 2015. All key financials are negative, but net operating margin is still positive despite falling with two percentage points. 2015 was the first time this segment saw a significant drop in turnover in this decade.

Figure 5-8: Development in turnover and operating margin (EBIT-margin) 2004-2015. Source: Menon (2016)



5.2.1. The design companies play an important role for the cluster's innovative power

Design and engineering companies are a major driver for the innovation and product development in the cluster and a key component of the value proposition from the Møre shipyards to their customers. They play a crucial role when they sell design services to ship owners since these services are based on services from Møre-yards and equipment packages from local equipment producers. In other words, they work as a "sales force" for both

local shipyards and equipment and service suppliers. In last year's report some of the surveyed shipyards argued that without in-house design, significantly fewer ships would be built in Norway.

In addition to playing a key role in the innovative power of the cluster, design's contribution to value creation is high and historically ship design has enjoyed higher EBIT margins than any other activity shipyards perform. Not surprisingly, Hyundai Heavy Industries, one of the world's largest shipyards, decided to establish its own offshore ship design subsidiary that started working from 2014.

5.3. Equipment manufacturers delivering negative profits in 2015

The Møre cluster is home to some of the world's leading equipment manufacturers with Rolls-Royce Marine in the forefront. Since the financial crisis, activity and profitability have fallen sharply. Still, many of the companies are the leading manufacturers in their area.

Through several acquisitions, Rolls-Royce Marine has grown into the largest equipment manufacturer in the cluster, accounting for close to two-thirds of revenue within the segment. Developments within the segment will consequently be dominated by this one player. IP Huse, Inmarsat Solutions and Brunvoll are the second, third and fourth largest.

Figure 5-9: Value Added 2015. Source: Menon (2016)

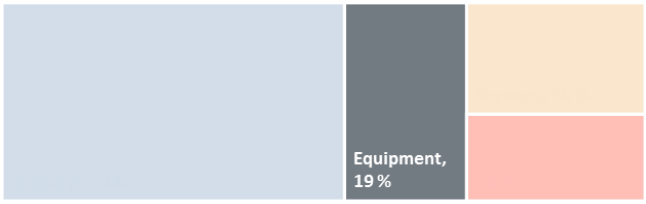
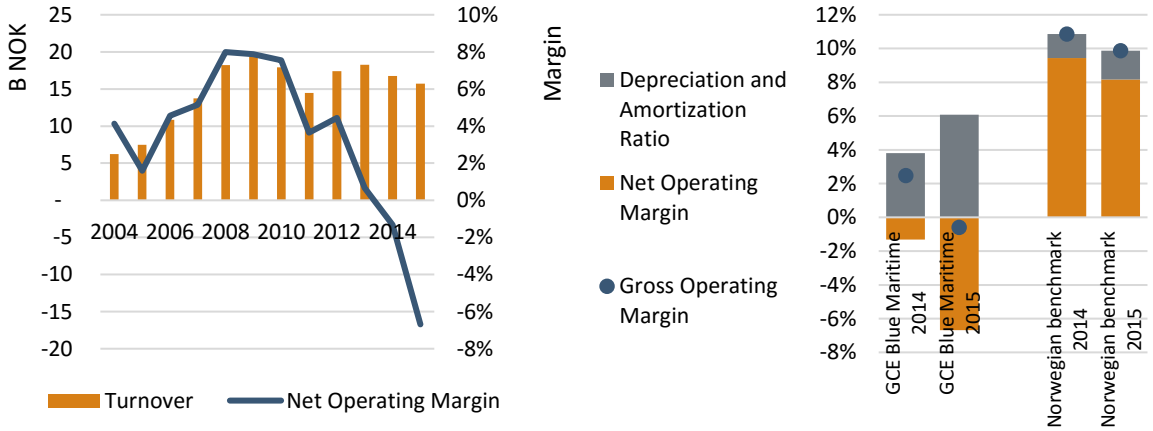


Table 5-3: Key financials in 2014 and 2015. Source: Menon (2016)

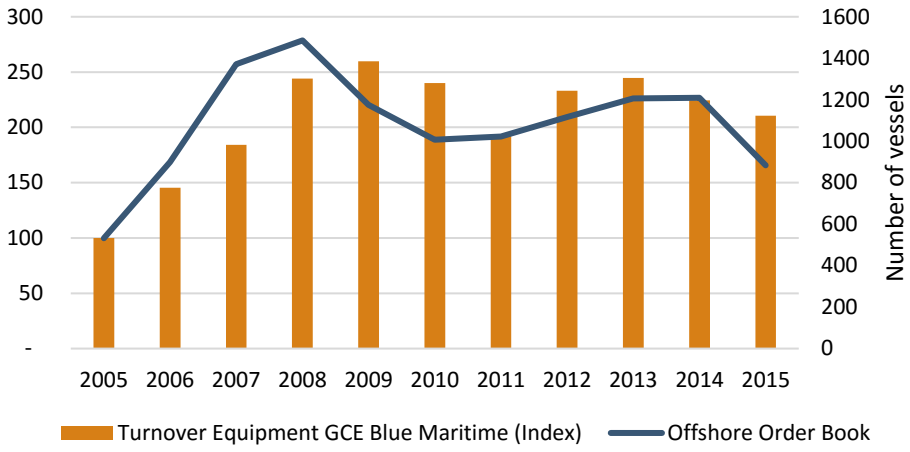
	2014	2015	Development
Turnover	16.8	15.7	-6 %
Employment	5130	4961	-3 %
Net Operating Margin	-1 %	-7 %	-6 pp
Value Added	4.4	3.7	-16 %

Figure 5-10: Development in turnover and Operating Margin 2004-2015. Source: Menon (2016)



Most of the revenue for the cluster is related to the offshore market, but the companies also deliver to the merchant, cruise and fishing fleet. The dependency on deliveries to the offshore market is strikingly observable in the figure below, where revenues among the Møre equipment producers correlate closely with the global offshore vessel order book.

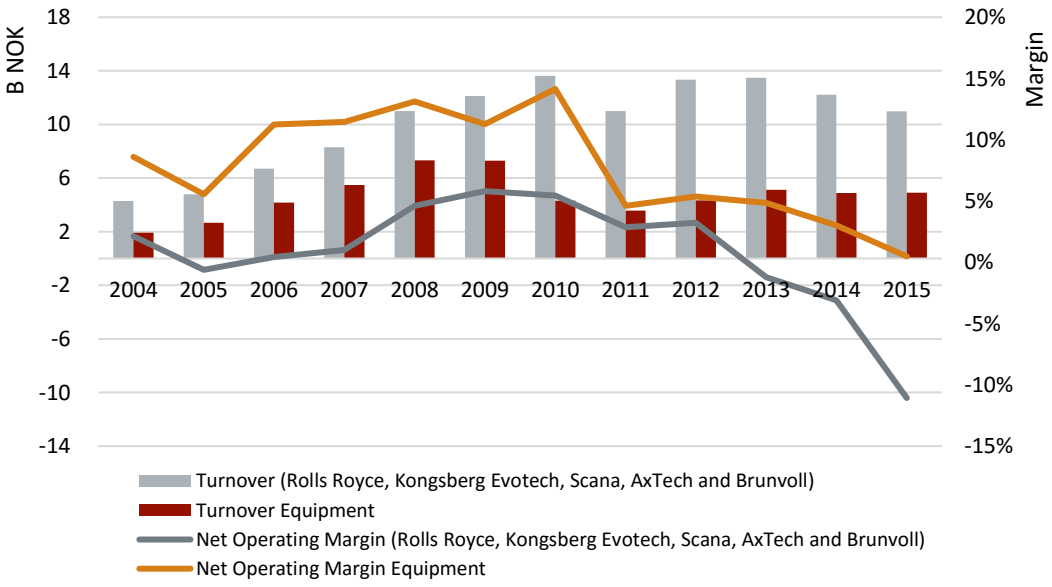
Figure 5-11: Development in Turnover Equipment GCE Blue Maritime (Index) and Offshore Order Book 2005 to 2015. Source: Menon (2016)



5.3.1. Central large companies head the downward trend

Since 2010, the profit margin for the cluster has fallen dramatically, turning negative in 2014. The aggregate hides the fact that while some of the leading companies have delivered weak results over the last years, many of the smaller companies have performed visibly better and still deliver positive profit margins also in 2015. Five large companies stand for the majority of the decline in turnover in the segment. Rolls-Royce and Kongsberg Evotech have experienced a development that is significantly weaker than for the cluster and segment as a whole, both in turnover and net operating margins. Brunvoll, Scana and AxTech have all seen a significant decline in turnover, while margins remain positive. These companies have a significant negative effect on the development of the segment at an aggregate level. When removing them from the segment, the image brightens. Both turnover and value added increase from 2014 to 2015, while net operating margins remain positive.

Figure 5-12: Development in turnover and Net operating margin 2004-2015. Source: Menon (2016)



5.4. The yards are adapting to new market conditions

The cluster went through a period of strong growth up to the financial crisis in 2009. No segment experienced stronger growth in turnover than the yards. Turnover increased five-fold between 2004 and 2009. In 2011 the profit margin exceeded 10 percent. Both turnover and profit margin have fallen since – a key driver being new capacity outside Norway. As oil prices collapsed in 2014, the market for new builds collapsed with it, and the fall in turnover and operating margin continued in 2015.

Figure 5-13: Value Added 2015. Source: Menon (2016)

Table 5-4: Key financials in 2014 and 2015. Source: Menon (2016)

	2014	2015	Development
Turnover	21.0	15.7	-25 %
Employment	3785	3461	-9 %
Net Operating Margin	3 %	0 %	-3 pp
Value Added	3.1	2.3	-24 %

The answer for the yards has been to move into other markets than offshore. The development in the order book described in earlier chapters shows how the yards are now focusing on new growth markets. Cruise and passenger vessels and vessels for fisheries and aquaculture will soon dominate the order book, assuming that new orders from the offshore market remain at the current low level. It will be interesting to follow the financial results in the yards as they move into more diversified operations. This readjustment in focus will put the yards into a challenging situation, but as history shows us, they have been able to adapt to changing market situations for a long time.

Figure 5-14: Development in turnover and Operating Margin 2004-2015. Source: Menon (2016)

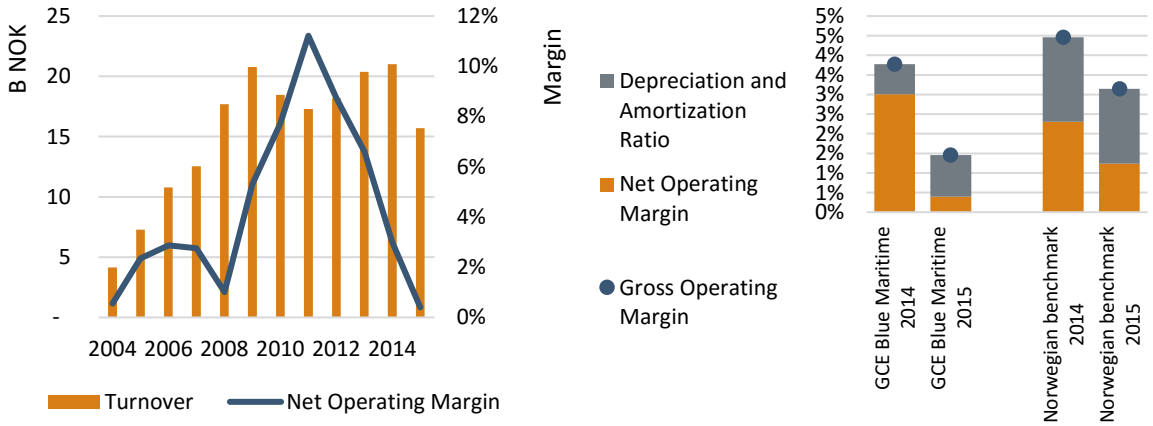
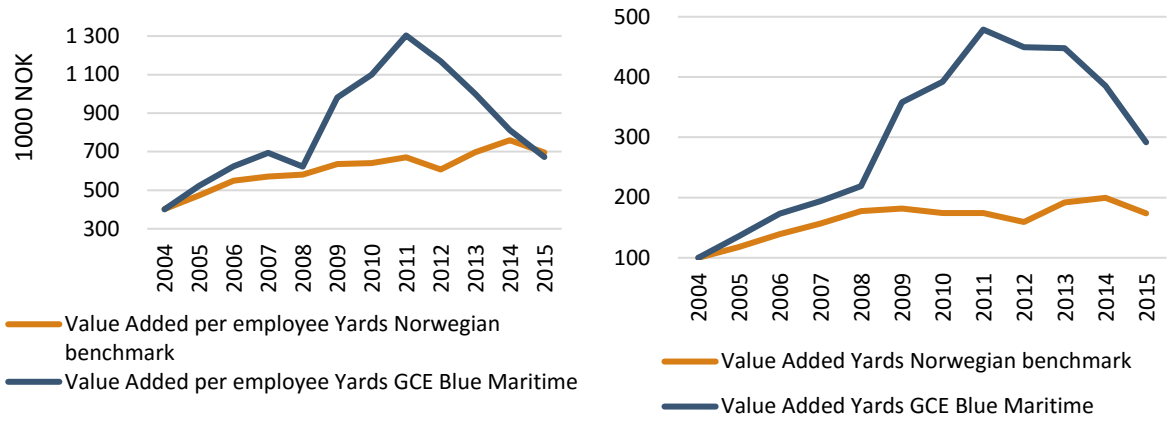


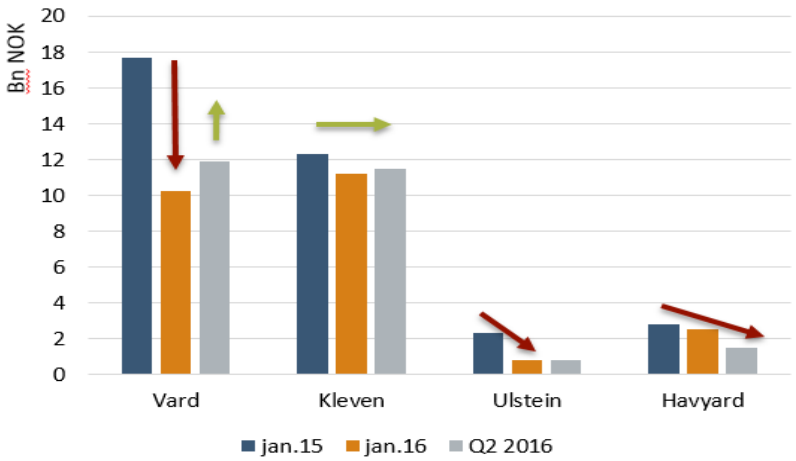
Figure 5-15: Development in Value Added and Value Added per employee 2004-2015 GCE Blue Maritime and Norwegian benchmark (Index). Source: Menon (2016)



The yards entered 2016 with an order book that was much lower than the peak in 2013/2014. The four largest yard groups entered 2016 with an order book of 25 B NOK, down 30 percent since January 2015. Since then the order book has increased somewhat to 26 billion in June 2016. It has probably increased further since, as new major contracts have been won. Still, there are large differences between the different groups. Kleven currently has an order cover (order book/last year's turnover) of 3.0 years, compared to 0.3 for the Ulstein Group. That equals an order cover of only 4 months. Vard had an order cover of 0.9 in the beginning of the year, but this has increased to 1,1 during the year. The increase in the order book relating to the new contract with Hapag Lloyd for two expedition cruise vessels is not included in the numbers, something that will increase the order cover further.

None of the yards have received orders for OSV vessels in 2016. The average number of offshore vessels ordered at Norwegian yards the last 10 years has been more than 20 per year, and the industry has not seen a situation without new offshore orders in the last 10 years.

Figure 5-16: Order books at the four largest yard groups for 2015, 2016 and q2 2016. Source: Menon (2016)



6. Appendix: Comparison with national benchmark: Shipping, service companies and equipment manufactures

Figure 6-1: Development in value added and value added per employee 2004-2015 for Blue Maritime shipping companies and Norwegian shipping companies benchmark (Index). Source: Menon (2016)

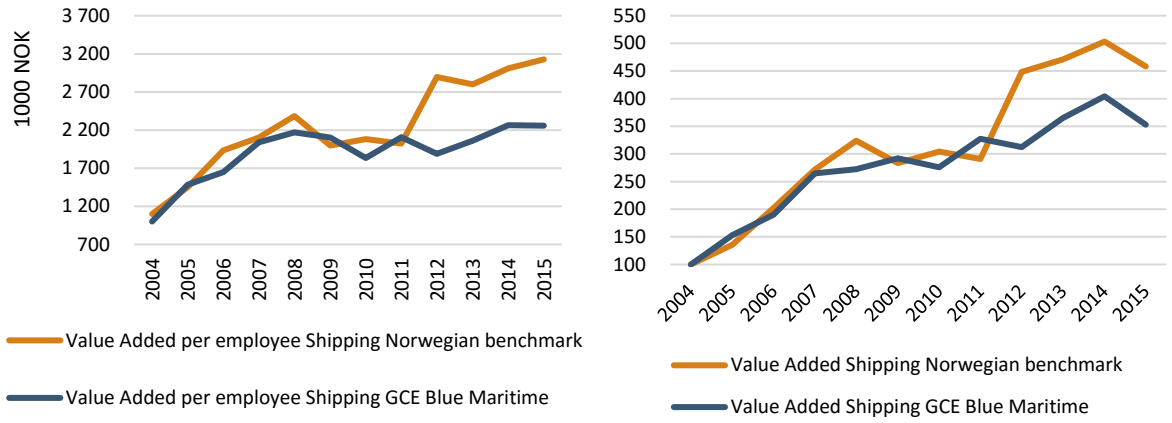


Figure 6-2: Development in value added and value added per employee 2004-2015 for service companies in the GCE Blue Maritime and Norwegian benchmark (Index). Source: Menon (2016)

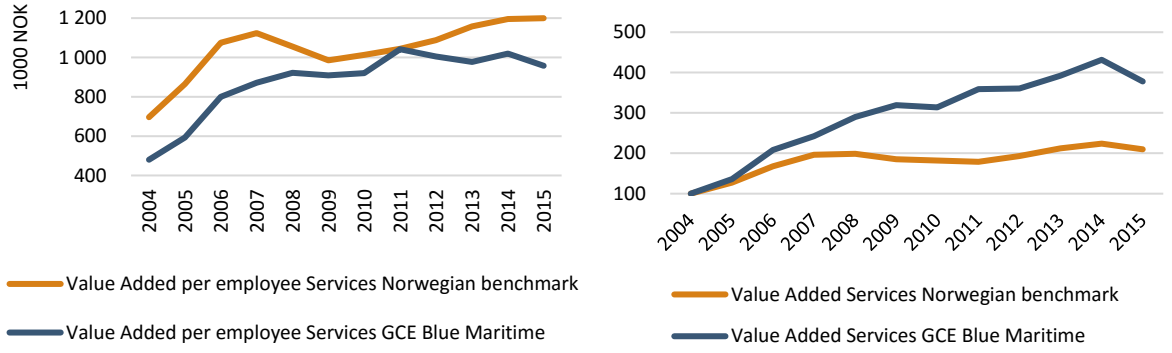


Figure 6-3: Development in value added and value added per employee 2004-2015 for equipment producers in the GCE Blue Maritime and Norwegian benchmark (Index). Source: Menon (2016)