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A Global exploration farm out update
plus
“Is farming in good business practice?”
J Staffurth – JSI Services Ltd



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Last year's predictions



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Assuming oil price stability

- Farm in activity will increase ✓
- Drilling activity will decrease ✓
- Discovery sizes will rise ✗ ✓
- Drilling success rate will remain stable ✓
- Unconventional deal making will stay low ✓

There may be swings in commodity prices in 2017

Announced deals vs oil price



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Deal flow declined from 2011 to 2016 despite the high oil price in 2011 to 13

The bottom of the market looks to have been at the end of 2016 but the recovery since has been slow

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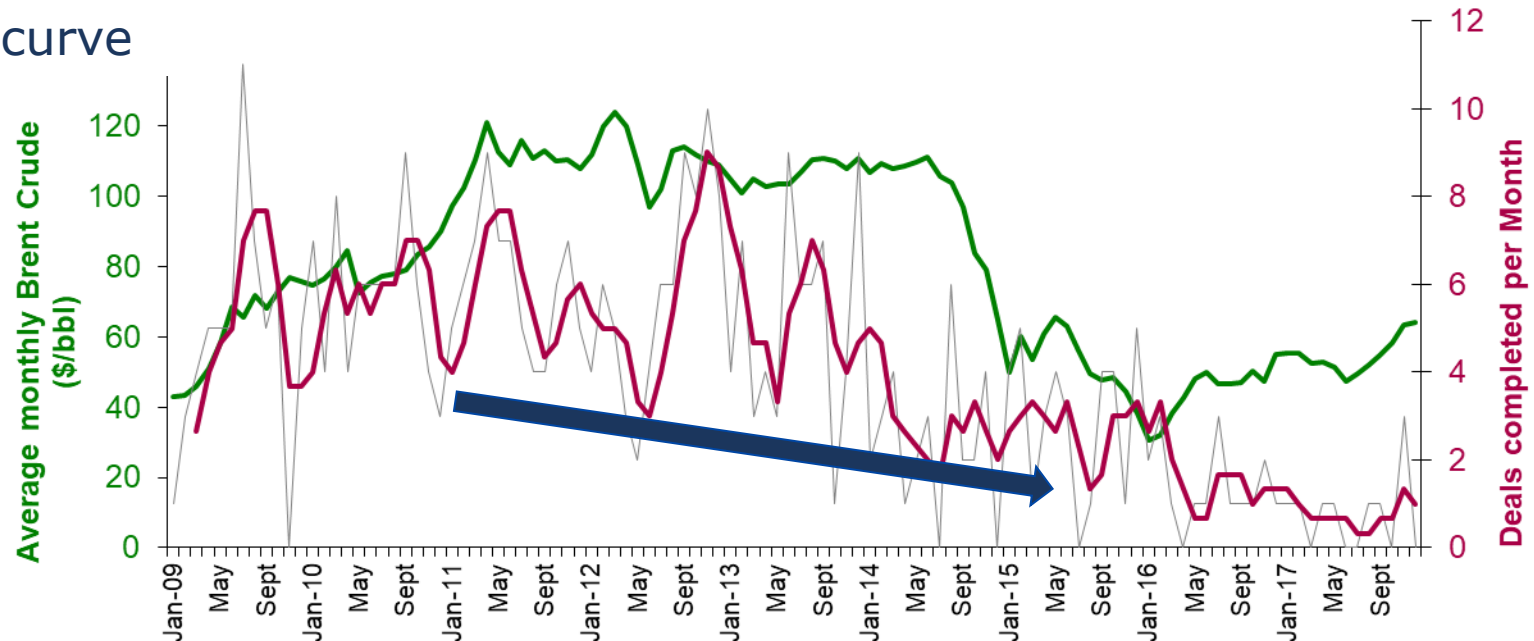
Announced shallow water deals



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Water depth < 500m

Smoothed
Deals curve



Shallow water deal making has declined slowly since 2010

This was due to a switch to deep water exploration

Deal making has picked up marginally in 2017 but is still very low with less than 1 new farm out announced per month

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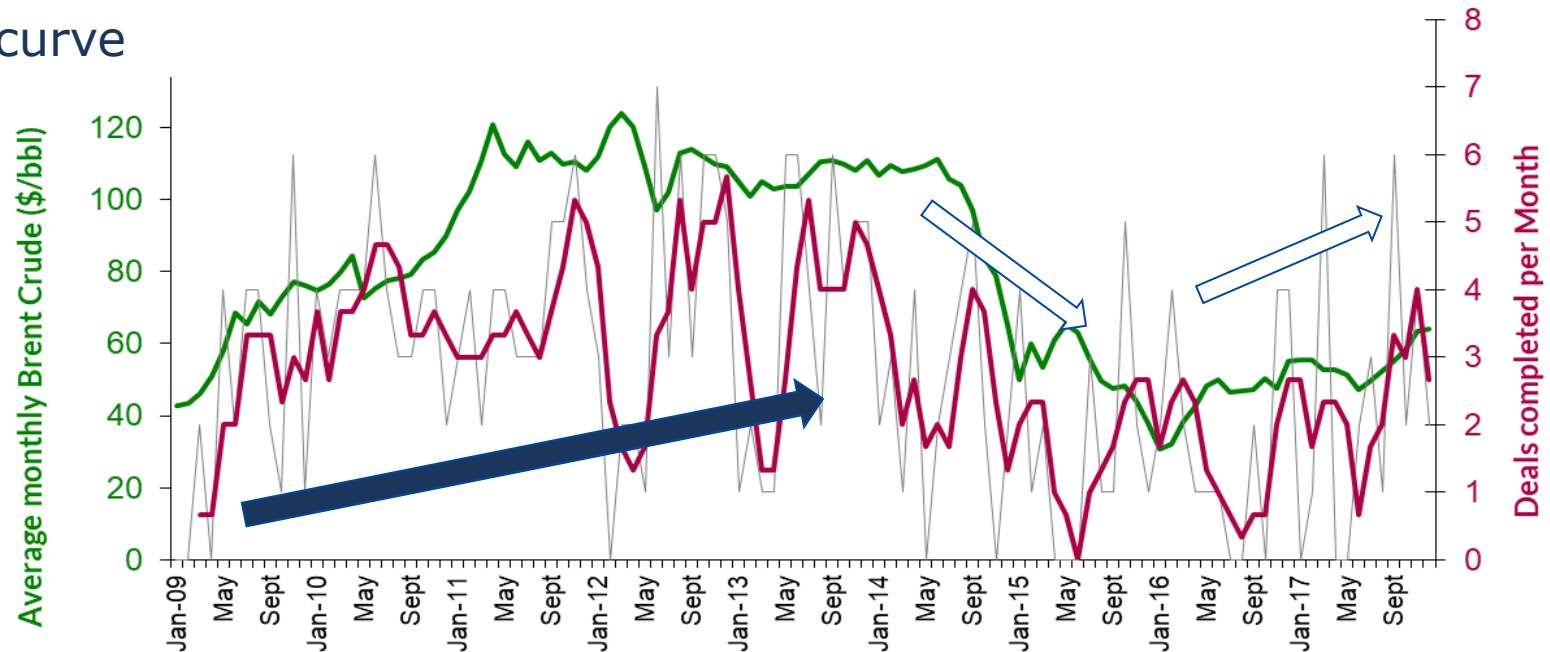
Announced deep water deals



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Water depth > 500m

Smoothed
Deals curve



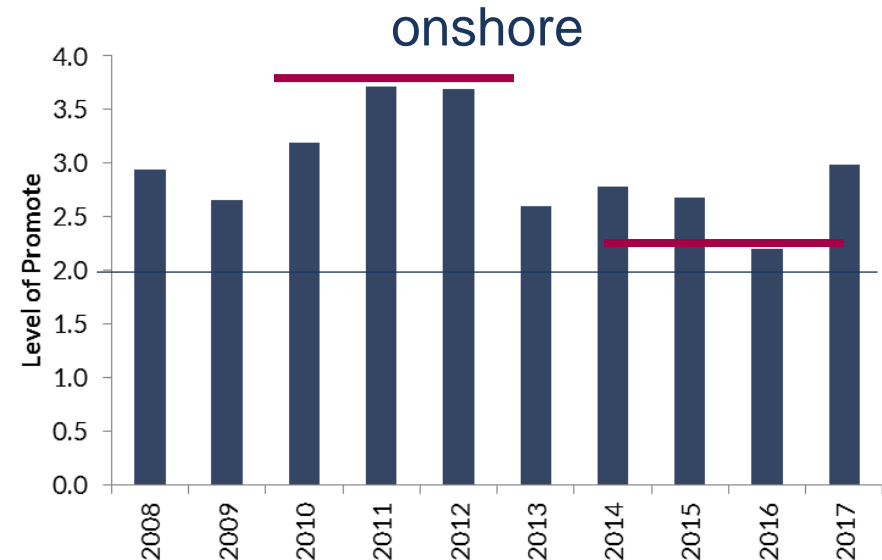
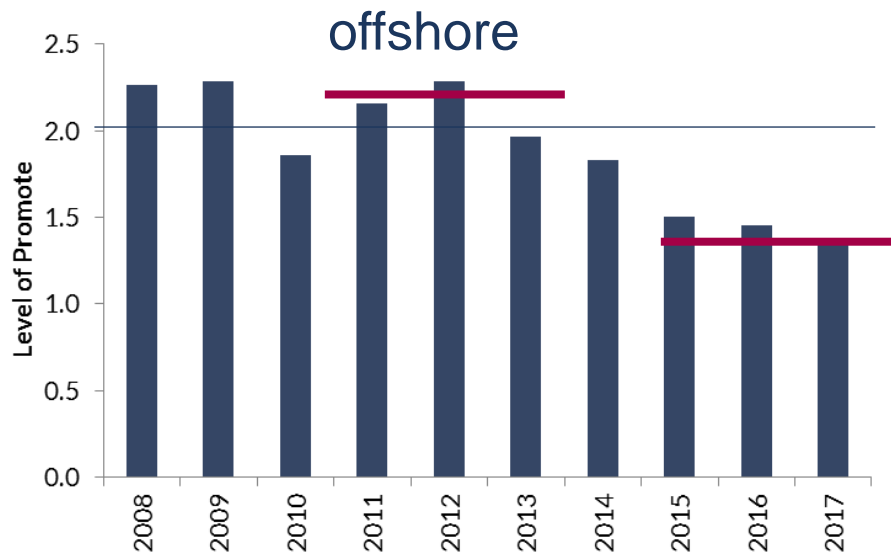
Since 2009 deep water deal making had increased until 2013

Though erratic there was a fall in deep water activity in 2014-16 with a pick up in 2017

Promote level



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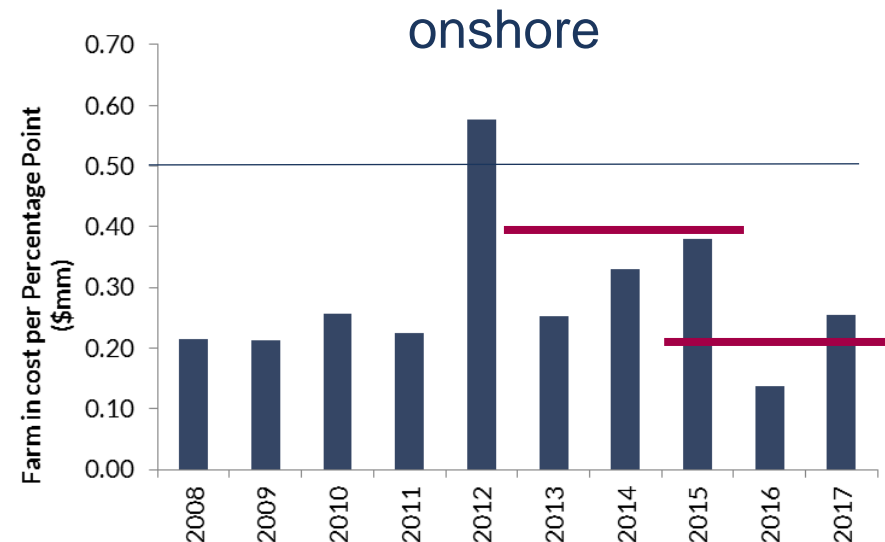
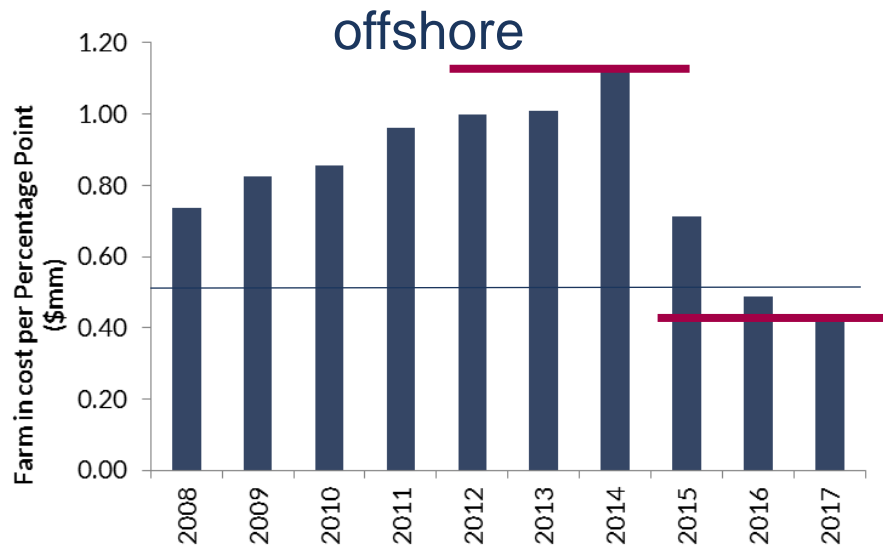
Offshore promote levels have fallen 40% from 2011-12

Onshore promote levels had fallen the same but picked up in 2017 with a few high value deals

Farm in price paid



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Combining lower promotes with lower rig rates farm in the price paid has fallen significantly

Offshore prices have fallen 70%

Onshore the change is less dramatic with a rise until 2015 then fall of around 40% with levels returning to 2008-11 levels

Price paid per risked boe

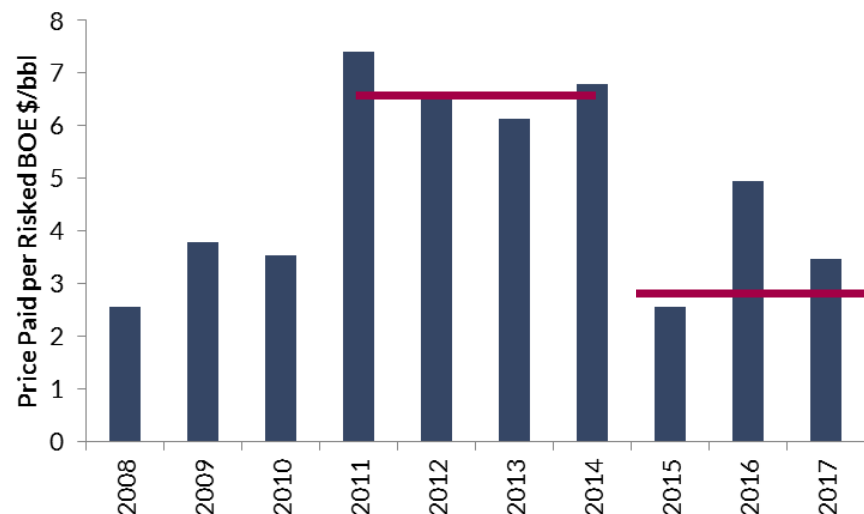


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offshore



onshore



Using estimated risks and volumes these graphs show the fall in price paid per risked boe

Offshore prices have fallen from around \$4/boe to \$1 per boe

Onshore prices have fallen from around \$6/boe to \$3 per boe. This still seems a high price to pay

Summary of terms from 2012 to present



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Offshore

- Promote is down 40%

- Price paid is down 70%

- Price paid per risked boe is down 75%

Onshore

- Promote is down 40%

- Price paid is down 50%

- Price paid per risked boe is down 50%

The market may not remain this cheap

Farm in discovery size



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Sample size for 2016-17 discoveries is small (4 oil, 19 gas)

2016-17 oil discoveries are mostly onshore and average 24mmboer

2016-17 gas discoveries average 246mmboer (c.1.5tcfr)



The rise in discovery size has been influenced by a few large discoveries each year and fewer onshore wells

Wildcat W40 discovery sizes



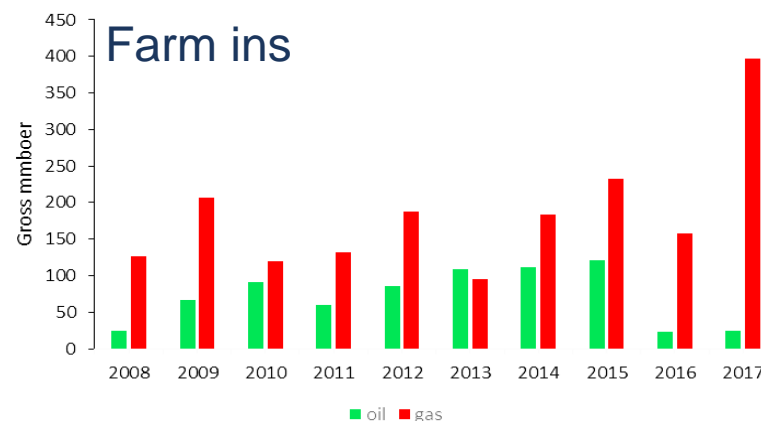
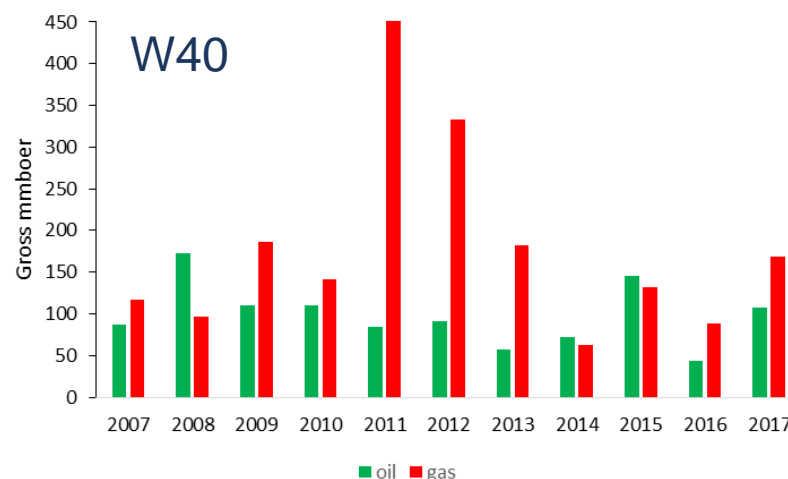
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Large gas discoveries in 2011 and 2012 dominate the volumes

Apart from this there is no pattern to the average size of discoveries

By contrast the farm in wells show a pattern of general increase in size

This may suggest the industry has been using farm ins to access larger volumes through time



Farm in drilling results 2008-2017



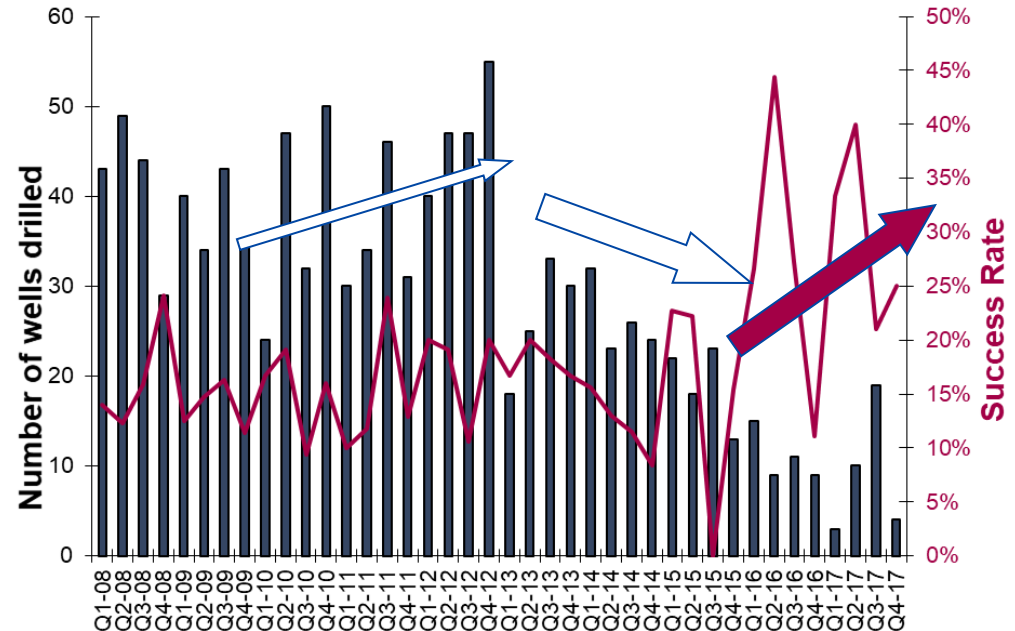
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General increase in drilling activity through 2010-12 then reverse in 2013-17 – down nearly 75%

Average success rate (red line, right hand scale) was stable at an average of 15% in 2008-15

In 2016-17 the success rate has risen to 28%

For the W40* companies the success rates are 30% and 41% respectively



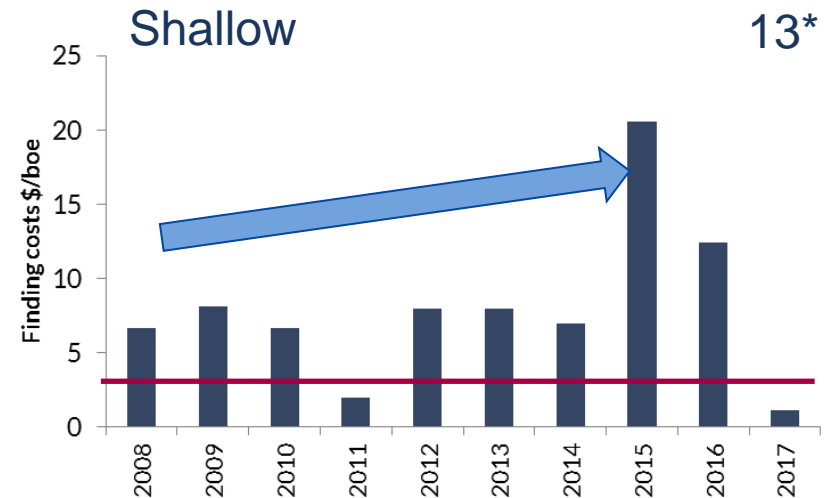
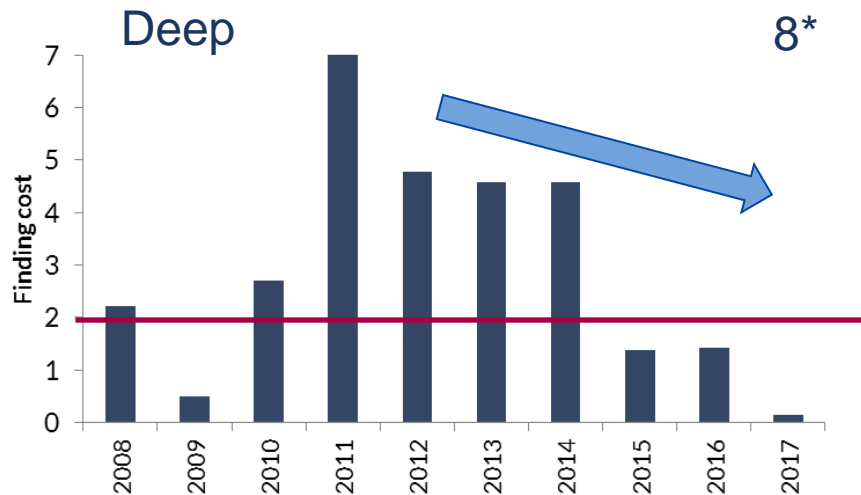
* W40 = Westwood Global Energy Group 40 active companies

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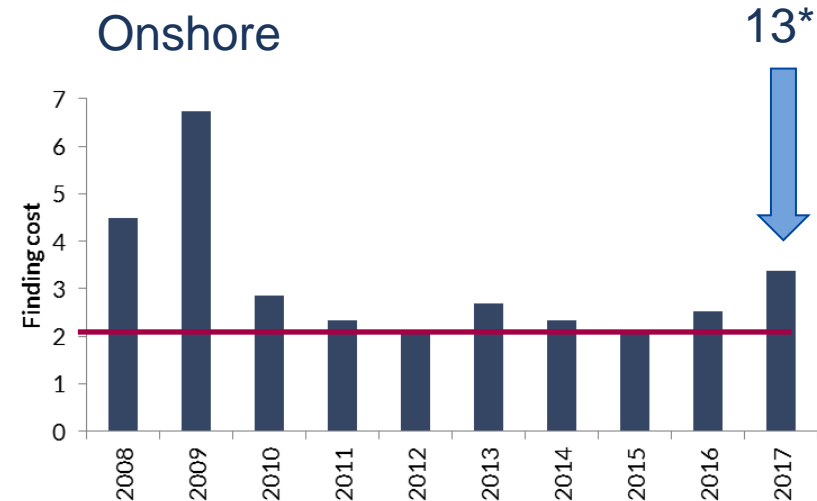
Farm in finding costs



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- Deep offshore finding costs have been falling since 2012, halving from 2014 to 2016 and very low in 2017
- Shallow offshore finding costs had risen and were 4x deep water costs but in line in 2017
- Onshore costs have risen in 2017 unlike the offshore



*numbers refer to number of wells drilled in 2017

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Is farming in good business practice?



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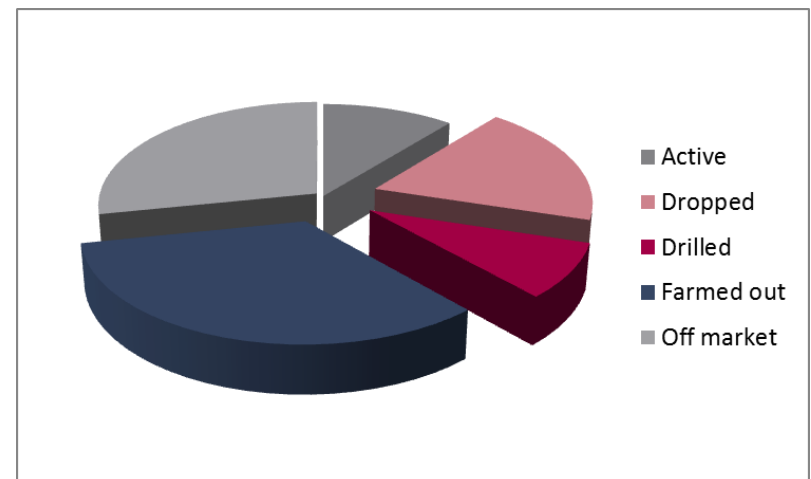
Most companies review 100+ deals for each one they eventually sign

But c.50% of deals are farmed out historically

Therefore there must be many different models for picking acreage to farm in to

Few companies seem to have better results farming in than drilling held acreage

Summary of JSI Database



1391 Farmed out

354 Drilled

786 Dropped

% Farmed out = 55%

Drilling results for farm ins will be compared with the Westwood 40 companies

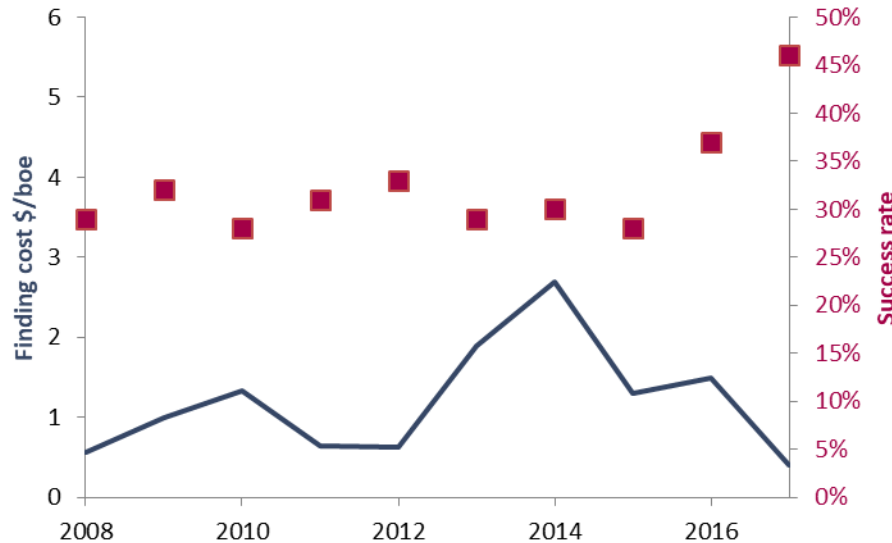
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Wildcat exploration results



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2008-17 data
W40 companies
2017 wells



From the Wildcat database:-

Average finding cost has been around \$1/boe over the last 10 years

Average commercial success rate has been 31%

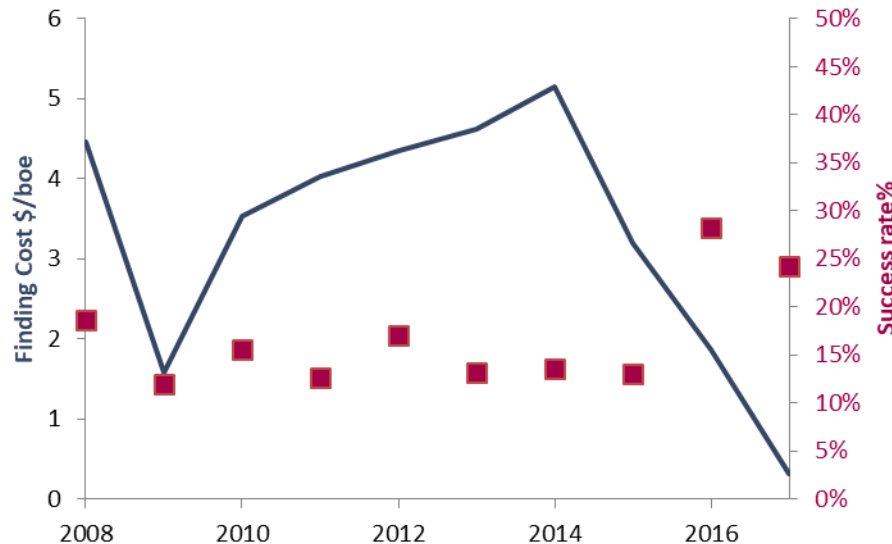
Success and finding costs have improved in the last 2-3 years

Farmed out exploration drilling results



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2008-17 data
769 wells



From the JSI database:-

Average finding cost has been around \$2.4/boe over the last 10 years

Average commercial success rate has been 15%

Average farm in results are around half that found in all exploration wells

Success and finding costs have improved in the last 2-3 years so perhaps the industry is beginning to perform

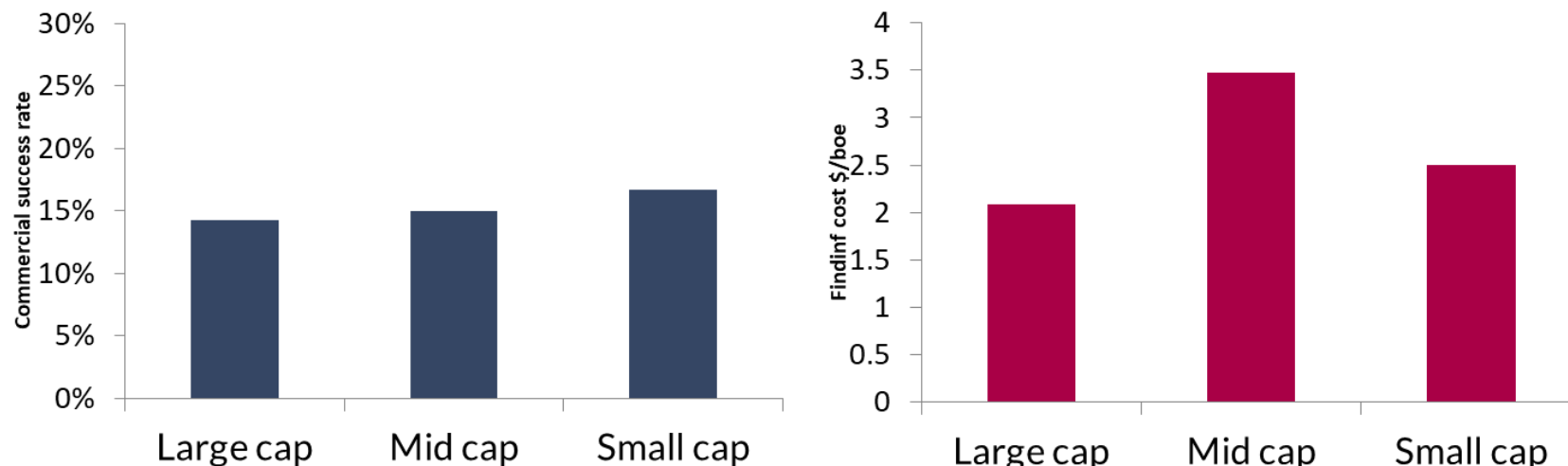
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Exploration farm in wells drilled



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2008-17 data
769 wells



Small caps have the best success rate (16.7%) and moderate finding costs(\$2.5/boe)

Large caps have lower success rate (14.2%) but better finding costs (average \$2/boe)

Public farm outs - exploration farm in wells drilled



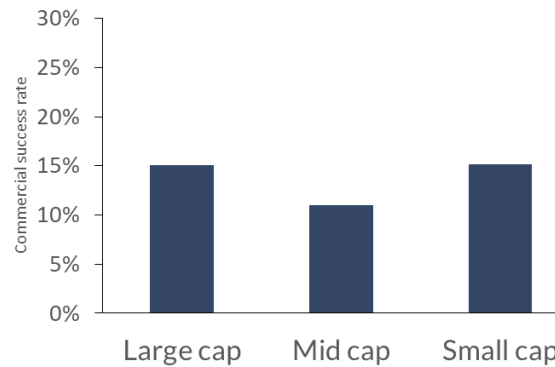
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Large cap public finding costs better than private farm outs (\$1.47 vs \$3.7/boe) and success rate better (15% vs 13.5%)

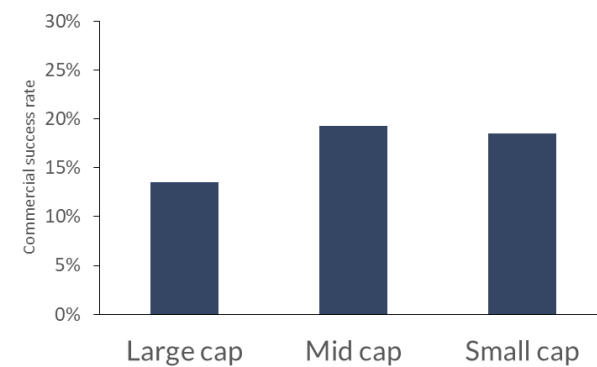
Small cap public finding costs better than private farm outs (\$1.79 vs \$5/boe) but success rate poorer (16.5% vs 18.7%)

Mid caps are the reverse and favour private deals – why?

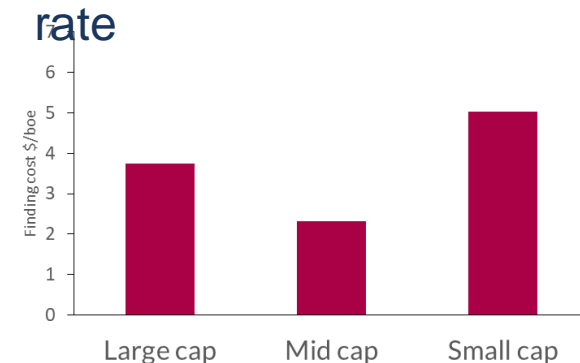
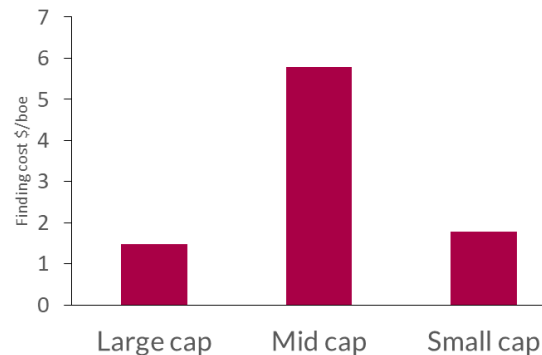
Public deals 402 wells



“Private” deals 367 wells



Commercial success rate



Finding cost \$/boe

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There are many reasons for farming in but the fundamental reason should be to make money.

Drilling held acreage for most companies seems to be statistically more profitable than farming in

Small and mid cap companies are best at low risk prospects. Large cap companies are best at high risk prospects

Only the top quartile of companies are achieving good results from farm in drilling



Assuming oil price stability

Farm in activity will increase

Drilling activity will increase

Discovery sizes will be stable

Drilling success rate will decline

Unconventional deal making will recover a little

There will be swings in commodity prices in 2018