

From: **Peters, Sarah** <sarah.peters@boem.gov>
Date: Mon, Jun 16, 2014 at 2:28 PM
Subject: Re: Drilling Pause Questionu
To: "Rose, Marshall" <marshall.rose@boem.gov>

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Marshall - Here are answers to the questions and a few sources. I can try to provide additional clarification and more background if you think it would be helpful.

Sarah

In your drilling pause study, I you used a multiplier of 2.46 applied to direct employment effects to obtain the estimated sum of direct, indirect and induced employment effects of idling workers. Please explain the basis basis for multiplier that you used and its validity.

The multiplier is 2.46 is for direct employment to total employment. It represents the other jobs associated with the creation of intermediate inputs into the production process and from household spending from the employment of the direct and indirect employments. This number came from runs from our Mag-Plan model. Mag-Plan is an in-house socioeconomic input-output model that estimates the scales and distributions of economic impacts that arise from offshore oil and gas activities. Built into the Mag-Plan model is data from IMPLAN. IMPLAN is an off-the-shelf input-output modeling product used extensively in these types of analyses. Rather than use multipliers directly out of IMPLAN, Mag-Plan calculates composite multipliers designed to more accurately represent offshore oil and gas activities than any one sector in IMPLAN.

The analysis conducted for the drilling pause was not the same usual analysis that Mag-Plan is designed to calculate impacts from. Because we could not run the model directly, we had to use outputs from the model to calculate multipliers. We used existing model runs, calculated the multiplier from direct to total and applied it to this analysis.

I can't provide a specific source or reference specifically to the multiplier of 2.46, but the version of Mag-Plan used for this model is available here:

<http://www.data.boem.gov/PI/PDFImages/ESPIS/3/3518.pdf>

Your paper mentions other available multiplier measures of higher magnitudes, but does not cite their amounts or sources. Please provide that information.

A study from the Louisiana Mid-Continent Oil and Gas Association (attached) used a multiplier of 4 in calculating the total employment impact.

Other studies use an employment ratio of total jobs per million dollars in direct spending. To calculate that ratio for our analysis - we take our estimate of total employment (23,247) and divide by our estimate of direct spending of \$4.7 billion. This generates a ratio of 4.9 jobs per million dollars spent.

"The Economic Cost of a Moratorium on Offshore Oil and Gas Exploration to the Gulf Region" by Joseph R. Mason (attached) in 2010 uses the BEA RIMSII multiplier of 8.2985 jobs per million dollars of direct spending. While the analysis calculated is different than what we calculated, the employment multiplier is still close to twice what our ratio was.

The Department of Commerce/Inter-Agency (attached) report "Estimating the Economic Effects of the Deepwater Drilling Moratorium on the Gulf Coast Economy" from September 2010 used a ratio of 10.85 total jobs per million dollars spent (assumed \$92,136 per job, $\$1,000,000/\$92,136 = 10.85$). They scale their number by 40 to 60 percent to represent the fact that these job losses will likely be temporary.

You also mention the short-term nature of the employment effects as justifying a more conservative multiplier such as the one you used. This seems logical, but can you cite a source or further justify this rationale?

This was an assumption used in the estimation process. It's impossible to be able to estimate the true economic impact in a situation like this, so our justification of a conservative multiplier with the short-term nature of these impacts was an attempt to balance some of the many uncertainties in this calculation. When input-output analysis is used, unless otherwise stated, the result of "jobs" is almost always just that a job, not a full time equivalent position. A clarification we made in discussions on the Inter-Agency Report was that jobs in this sense is very different from full time equivalents or job-years. Using *job-years* is the same as saying full time equivalents or 2,080 hours worked per year. A job means one person employed, which could be full time or part time, for a whole year or part of a year. Even with the short-term nature of the moratorium, the number of people affected by the moratorium for that short period would be the same and shouldn't be scaled down to represent the shortened time frame. If a study was estimating the number of *job years* affected by the moratorium, then that number would be scaled to represent the fact that the unemployment was only for a portion of the year.

Other studies of these effects have observed that in practice only about 20% of the rig workers were actually laid off. In retrospect, how would knowledge this information have changed the methodology you used to compute the employment and spending effects?

Given what we know now about the number of rig-workers who were actually laid off and the number of rigs that left the GOM, we would have calculated the employment and spending effects differently and definitely would have added more explanation to the analysis. There are a lot of different nuances to this calculation that would have to be considered.

If we had the chance to revise this analysis we definitely would have made the distinction between jobs and job-years in a discussion of the temporary nature of this employment.

If the vast majority of employees retained their jobs through the moratorium, we would have changed our analysis by assuming most of the direct employees retained their jobs. However, we would have had to consider what those employees were doing. Were they paid to stay home or were they in the office working on other things? This would affect the multiplier effects of the employment. This would also affect how we calculated the impact of delayed/lost spending. If activities continued repairing drilling rigs or vessels, there would still have been an economic impact, but if employees were just paid to stay home much of the

impact would be different as companies are not buying intermediate supplies, etc. We would have done more work to try to tease out the spending that would have remained (e.g., employees were retained and drilling contractors were still paid) and that that wouldn't have been spent (e.g., steel and supplies used for drilling). I would want to research and find sources to support this, but I would imagine much of the spending would have direct and induced effects because employees retained their paychecks, but the indirect impacts from spending on supplies and input goods would have been reduced. Even if most direct employees retained their jobs, there would still be an impact from reductions in spending. Additional layers of assumptions would need to be made to come up with an estimate.

Thanks,

Marshall Rose, Ph.D.
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