EFFECTS OF TAX CUTS AND JOBS ACT IN THE UPSTREAM OIL AND GAS INDUSTRY

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Overview
The Tax Cuts and Jobs Act (TCJA) is a tax reform applied in the U.S. in 2017 that reduced permanently the corporate tax rate from 35 to 21 percent, included limitation to interest deductions, and provided 100% bonus depreciation until 2022. The oil and gas industry, particularly the unconventional kind, is capital intensive and depends heavily on financing sources such as debt and equity. We want to know how does the listed tax reform policies impact the upstream companies’ investment decisions, capital structure, and long term profitability. The idea is to measure the trade-offs of the tax reform, and identify which type of companies could benefit more from it.

To our knowledge, there is no quantitative estimation of the effects of the Tax Cuts and Jobs Act in the oil and gas industry. The study is relevant for the industry to compare the results with their decisions. It is also important for the government and the public to know the effect on the profitability of upstream companies, and hence their production outlook in the near future.

Methodology
To answer the question, we built a partial equilibrium model for a representative upstream company which includes investment financing through debt and equity, and chooses its optimal level of capital. The model is calibrated using data from companies that produce from unconventional resources in the Permian Basin.

The analysis is done considering the production of the company in a basin, in contrast to analysis realized at a well or pad levels. Also, the model applies only to new investments, capital and production; it does not include legacy wells. We abstract from the labor input in the production function, given that the upstream sector is capital intensive. We also assume that there are no constraints on acreage, and that the objective function is the value of the company, obtained using a condition of no-arbitrage.

In terms of the tax reform, we include the following to approximate the changes from the benchmark equilibrium: i) reduction in the corporate tax rate from 35 to 21 percent, ii) repeal of interest deduction, and iii) full expensing of new investment. We assume the economic depreciation for tax purposes is equivalent to the conceptual economic depreciation.

Results
Results were calculated using first a steady state equilibrium approach, reflecting more a long term effect. These show that:

i) In terms of value of the company, the overall the tax reform was positive for the upstream oil and gas companies. The reduction in the marginal tax rate and full investment expensing compensate for the limitations in interest deductions. The value increases by approximately 20 percent; earnings after taxes and interest expenses by 12 percent.

ii) Contrary to our expectations, on average, capital and production decrease due to companies’ reliability in debt financing. The magnitude of this effects depends on the debt to capital ratio of companies. On average new capital reduces by 3.6 percent and new production by 1.6 percent.

iii) Companies that relied heavily in debt finance take a larger burden of the limitations in deductions. Companies with a debt-to-capital ratio of 50 percent (compared with 35) could see their value reduced by 17 percent. Companies with lower debt proportional to their business income have access to larger portions
of deductions (up to 30 percent). In that case, capital can increase to approximately 4 percent, and production 2 percent.

iv) There is also a change in the capital structure; the proportion of equity over debt increases. Debt financing lowers by the same percentage as capital. Equity financing increases by approximately 25 percent.

**Conclusions**

Considering the role that the booming unconventional resource extraction of oil and gas currently has in energy security, transition to natural gas electricity generation, and prospects of future liquefied natural gas exports, it is urgent to understand the scope of TCJA long term effects in the industry. We show that on average the tax reform had a positive effect in the value of the companies, and a negative effect in new capital investment.

However, the devil is in the details, part of the objectives of the analysis is to highlight the heterogeneity (so far) of companies in the upstream oil and gas business sector. Different debt-to-capital ratios can lead to strikingly different results. Larger debt financing could lead to losses after the tax reform, and reductions in the company value. Lower debt to capital could revert the average results and actually increase capital investment and production, additionally to value.

There are important caveats to be mentioned. The most obvious is that the model does not include general equilibrium effects that could enhance or reduce the previously mentioned results. Also the steady state model emphasizes the role of debt over investment and capital accumulation, thus it does not show the short terms effects and transition path which we believe would show an initial increase in capital. That analysis is part of this research, yet to be concluded.

**References**