Fossil Fuel Taxation in the President’s 2013 Budget

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For each tax change proposed by budget:
- Current law
- Proposed change
- Compare to neutral tax system

Overall taxation of fossil fuel production:
- Types of taxes
- Calculating tax rates
- Our estimates
### Revenue Estimates of Proposed Changes for 2013-22

<table>
<thead>
<tr>
<th>Proposed Change</th>
<th>JCT</th>
<th>Treasury</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeal LIFO inventory accounting for all sectors</td>
<td>66,872</td>
<td>73,782</td>
</tr>
<tr>
<td>Repeal percentage depletion for fossil fuels</td>
<td>13,409</td>
<td>13,209</td>
</tr>
<tr>
<td>Modify tax rules for dual capacity taxpayers</td>
<td>9,571</td>
<td>10,724</td>
</tr>
<tr>
<td>Repeal expensing of intangible drilling costs</td>
<td>9,529</td>
<td>13,902</td>
</tr>
<tr>
<td>Repeal the domestic manufacturing deduction</td>
<td>3,662</td>
<td>0</td>
</tr>
<tr>
<td>Geological and geophysical amortization</td>
<td>957</td>
<td>1,400</td>
</tr>
<tr>
<td>Repeal capital gains treatment of coal royalties</td>
<td>612</td>
<td>422</td>
</tr>
<tr>
<td>Increase Oil Spill Liability Trust Fund financing rate</td>
<td>462</td>
<td>717</td>
</tr>
<tr>
<td>Coal exploration and development</td>
<td>279</td>
<td>440</td>
</tr>
<tr>
<td>All other fossil fuel specific provisions</td>
<td>141</td>
<td>182</td>
</tr>
</tbody>
</table>

Notes: Values are in millions of nominal dollars
LIFO Current Law

Deduction for cost of goods sold allowed under corporate income tax

Method for deducting cost of good sold when good was bought in earlier period (inventory)

- Last-in, First-out (LIFO): when a unit is removed from inventory, the price of the last (most recent) unit put into inventory is used
- First-in, First-out (FIFO): when a unit is removed from inventory, the price of the first (oldest) unit put into inventory is used
LIFO Analysis

Difference between LIFO and FIFO:

- When price increases, such as from inflation, cost of goods sold is higher under LIFO than FIFO
- Lower cost of goods sold from older goods is not used until and unless inventories are drawn down
- If never draw down, it is never used and inventory items’ appreciation is never taxed

Proposed Change: repeal LIFO for income tax purposes. Must use non-inflation indexed FIFO

Neutral Tax System:

- Gains from inflation should not be taxed, but non-inflationary gains should be
- Inflation indexed FIFO achieves this
Percentage Depletion

Depletion is a method of capital recovery like depreciation. It applies to capital costs like the expense of purchasing a lease to extract minerals from a property.

Cost Depletion: taxpayer deducts a percent of lease cost equal to percent of resource in property recovered that year.

Percentage Depletion:
- Taxpayer deducts a constant percentage of gross income from the property.
- Percentage varies from 5-22% depending on material.
- Not allowed for integrated oil companies.

Proposed Change: repeal percentage depletion for fossil fuels (but retain for other materials). All firms would use cost depletion method instead.
Percentage Depletion Analysis

Non-neutral in a first best world:
- Percentages chosen are based on material
- Eligibility varies based on organizational form
- Deduction not linked to cost of actual capital invested

Offset other distortionary features:
- 35 states impose severance tax on natural resource extraction
- Federal government charges 12.5 to 16.6% royalties on value of oil extracted from federal land and $0.15 to $1.75 per ton for coal
- Percentage depletion offsets these distortions
Dual Capacity Taxpayers

Worldwide tax system:
- The US taxes foreign source income of domestic corporations
- Also known as a residential tax system
- Since host countries may also tax, to avoid double taxation, firms are allowed to credit certain foreign levies (taxes) against their US tax liability

A foreign levy is creditable if it:
- Is compulsory
- Is not compensation by firm to host nation for a specific economic benefit

A dual-capacity taxpayer is a taxpayer subject for a foreign levy who also receives a specific economic benefit from the host nation
Dual Capacity Apportionment

Tax apportionment: need to decide what fraction of payments are for specific economic benefit and what fraction are not

- **Facts and Circumstances Method**: levy is creditable to extent that able to prove not for specific economic benefit
- **Safe Harbor Method**: taxpayer may credit an amount equal to host country’s generally imposed income tax rate

Proposed Change: firms may only credit an amount equal to host country’s general income tax rate for other industries
Dual Capacity Analysis

Accuracy of apportionment methods:

- Facts and circumstances seems ideal
- Tax rates can vary by sector for reasons unrelated to dual capacity

Should foreign source income be taxed at all?

- Worldwide vs. Territorial
- No consensus
- Exacerbates deferral problem of foreign source income taxation
Overall Tax Treatment of Fossil Fuel Production

Neutrality of individual tax changes depends on not just their own effects on neutrality, but how they interact with the rest of the tax system.

Is fossil fuel production under-taxed?
- What are the optimal tax rates for fossil fuel production?
- What are the actual tax rates for fossil fuel production?
Capital Taxes

Marginal Effective Tax Rate (METR) on investment is the effective tax rate on the rate of return of the marginal investment.

Estimates of METR for fossil fuel production:

- Ernst & Young (2007): 21.6% METR for petroleum refining
- Metcalf (2009): 15.2%-19.1% METR for oil drilling by integrated firms, petroleum refining, and natural gas gathering pipelines
<table>
<thead>
<tr>
<th>Asset Type</th>
<th>METR</th>
<th>Share of Corporate Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall businesses</td>
<td>24.2</td>
<td></td>
</tr>
<tr>
<td>Overall corporations</td>
<td>26.3</td>
<td></td>
</tr>
<tr>
<td>Capital income of C corporations, by asset type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Petroleum and natural gas structures</td>
<td>9.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Mining structures</td>
<td>9.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Mining and oil field machinery</td>
<td>21.9</td>
<td>0.2</td>
</tr>
</tbody>
</table>
Other Taxes

Previous research has focused on capital taxes that affect investment and do not include production taxes. But fossil fuel production faces general sales, property, severance, and excise taxes too.

Total Tax Payments by Industry, 1998-2009

<table>
<thead>
<tr>
<th>Sector</th>
<th>Corporate Income Taxes</th>
<th>Other Production Taxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and gas extraction</td>
<td>43</td>
<td>226</td>
</tr>
<tr>
<td>Petroleum and coal products manufacturing</td>
<td>213</td>
<td>278</td>
</tr>
<tr>
<td>Pipeline transportation</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>All fossil fuel</td>
<td>260</td>
<td>273</td>
</tr>
<tr>
<td>All sectors</td>
<td>4,107</td>
<td>11,076</td>
</tr>
</tbody>
</table>

Notes: Values are in billions of 2008 dollars
Average Effective Tax Rate

METR: calculate effective tax rate on marginal investment using a formula that includes specific features of the tax code.

Average Effective Tax Rate (AETR) is actual taxes paid divided by tax base.

AETR v. METR:
- Less assumptions about effects of features of code
- Includes effect of entire income tax, not just specifically chosen provisions
- METR on investment does not include effect of production taxes
- Average burden instead of marginal
Methodology

Capital Taxation: corporate income tax payments divided by capital income

All Taxation: capital taxes + production taxes
- Total income base
  - All tax payments as a fraction of total income (value of output)
  - Forward shifting (tax born by consumers)
- Value added base
  - All tax payments as a fraction of value added
  - Backward shifting (tax born by inputs)
### Average Effective Tax Rates on Capital by Sector, 1998-2009 (%)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Capital AETR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and gas extraction</td>
<td>4.5</td>
</tr>
<tr>
<td>Petroleum and coal products manufacturing</td>
<td>21.5</td>
</tr>
<tr>
<td>Pipeline transportation</td>
<td>6.5</td>
</tr>
<tr>
<td>All fossil fuel</td>
<td>13.0</td>
</tr>
<tr>
<td>All sectors</td>
<td>7.5</td>
</tr>
</tbody>
</table>
## Average Effective Tax Rates of All Taxes by Sector, 1998-2009 (%)

<table>
<thead>
<tr>
<th>Sector</th>
<th>Value Added Base</th>
<th>Total Income Base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and gas extraction</td>
<td>19.3</td>
<td>12.0</td>
</tr>
<tr>
<td>Petroleum and coal products manufacturing</td>
<td>20.4</td>
<td>5.1</td>
</tr>
<tr>
<td>Pipeline transportation</td>
<td>16.5</td>
<td>7.2</td>
</tr>
<tr>
<td>All fossil fuel</td>
<td>19.6</td>
<td>7.3</td>
</tr>
<tr>
<td>All sectors</td>
<td>10.8</td>
<td>5.9</td>
</tr>
</tbody>
</table>
Summary

Pro-Neutral: Repeal capital gains treatment of coal royalties, increase G&G amortization period

Anti-Neutral: Oil Spill Liability Trust Fund, domestic manufacturing deduction, dual capacity rules, Superfund

Unclear: LIFO, percentage depletion, expensing of IDCs and coal exploration

Can not make statements about optimal level of taxes on fossil fuel production

But for actual taxes paid: capital, value added, and total income AETR higher for fossil fuel production than other sectors
Thank You

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