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The Economic Impact of Producing Oil and Gas from OCS Leases under the Deep Water Royalty Relief Act of 1995

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Table of Contents

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Summary of Results

The American Petroleum Institute (API) commissioned IHS Global Insight to analyze the economic impacts of producing oil and gas from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act (DWRRA). The DWRRA was enacted in 1995 to encourage the exploitation of the sizeable, but costly to develop, oil and gas resources in deep water federal offshore areas.

IHS Global Insight has conducted a historical simulation for the period 1999-2008, and a forward-looking simulation for the period 2010-2030 to assess the impacts on the U.S. economy of oil and gas production from Gulf of Mexico Outer Continental Shelf (OCS) leases[1] issued between 1996 and 2000 under the Deep Water Royalty Relief Act.

IHS Global Insight determined that the historical impact on the U.S. economy of oil and gas production from 1999 to 2008 was:

- an increase of real GDP by $4.5 billion per year, on average, between 1999 and 2008,
- an increase of total employment in the economy by a peak of 91,000 jobs in 2005, and by 31,000 jobs in 2008.

IHS Global Insight further determined that the impact of future production from these leases from 2010 through 2030 would:

- increase real GDP by $6.5 billion per year, on average, between 2010 and 2015,
- increase total employment by 46,000 jobs in 2010, and by a peak of 72,000 jobs in 2011.

[1] OCS leases only represent a fraction of total Gulf of Mexico (GOM) leases.

Methodology

Using its U.S. Macroeconomic Model, IHS Global Insight estimated:

- the historical impacts of oil and gas production to date for the Gulf of Mexico Outer Continental Shelf (OCS) leases issued between 1996 and 2000, and

- the future impacts of oil and gas production from these OCS leases from 2010 through 2030.

For the historical simulation, IHS Global Insight employed Advanced Resources International's (ARI)[2] historical oil and gas production data to date for OCS leases issued between 1996 and 2000, and historical energy prices were used.

For the forward-looking simulation, IHS Global Insight employed Advanced Resources International's estimates of future oil and gas production from OCS leases issued from 1996 to 2000 under the Deep Water Royalty Relief Act. In order to estimate future oil and gas production from these leases, ARI first looked at historical oil and gas production to date for these leases. From this production data, ARI then derived historical production decline rates, which were used to estimate future production from these leases. The forward-looking simulation was performed assuming the oil and gas price projections from EIA's *Annual Energy Outlook 2010*.

The historical and forward-looking simulations were performed separately. The forward-looking baseline assumes actual historical oil and gas production from these leases, but no production from 2010 onwards. In the forward-looking simulation with the extra production, the full economic impact peaks in 2011 rather than 2010 (even though production from the leases is lower in 2011 than 2010) because the multiplier effects of higher production take time to ripple through the economy.

[2] "*Understanding Outer Continental Shelf Leasing Under the Deep Water Royalty Relief Act*", Advanced Resources International, January 29, 2010

Background and Key Assumptions

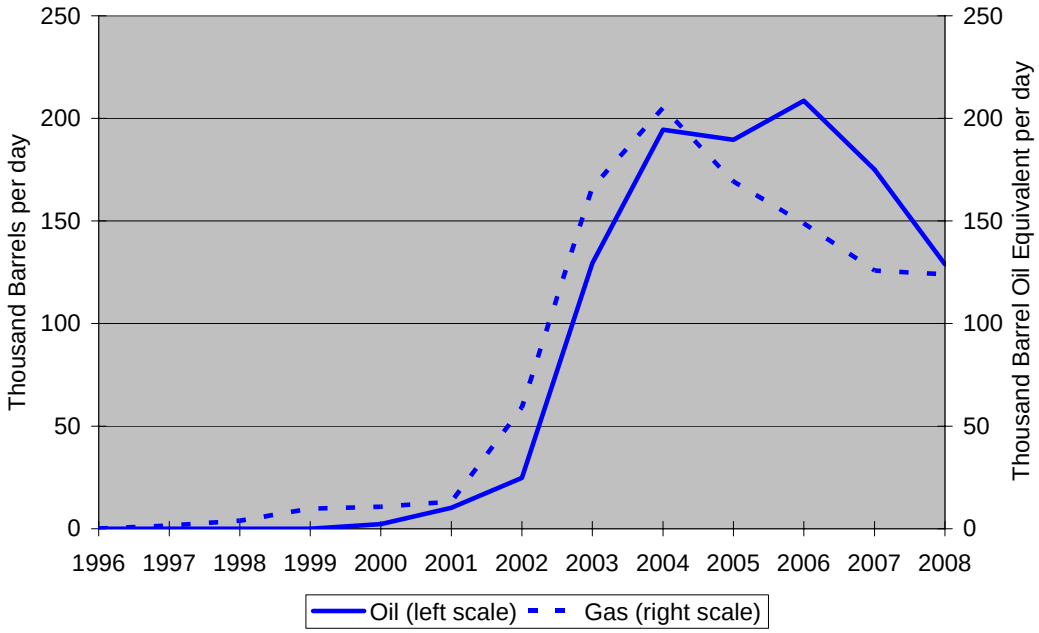
Deep water areas of the Gulf of Mexico contain sizable oil and natural gas resources, but they present some of the greatest challenges in terms of cost and technology that face the U.S. oil and gas industry in the 21st Century. Exploration for deep water prospects presents increased geologic complexity and hence increased uncertainty relative to oil deposits in the shallower Gulf waters. A sizable effort is required to even begin to evaluate the economic viability of resource development in this environment. Platforms and operating techniques in deep waters require technologically advanced and specialized designs that are generally more expensive than those used in shallow waters.

In order to encourage the exploitation of these resources, the federal government exempts some of the oil and gas produced in deep water federal offshore areas from royalty payments. This royalty relief is subject to various limitations based on level of output, vintage of lease, and/or prevailing oil and gas price levels. Some of these limitations have been the subject of debate, including discontinuation of royalty relief.

The American Petroleum Institute (API) has commissioned IHS Global Insight to analyze the economic implications of producing oil and gas from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act. IHS Global Insight analyzed the historical economic impact of oil and gas production from 1999 to 2008, and the impact of estimated future production from these leases from 2010 through 2030.

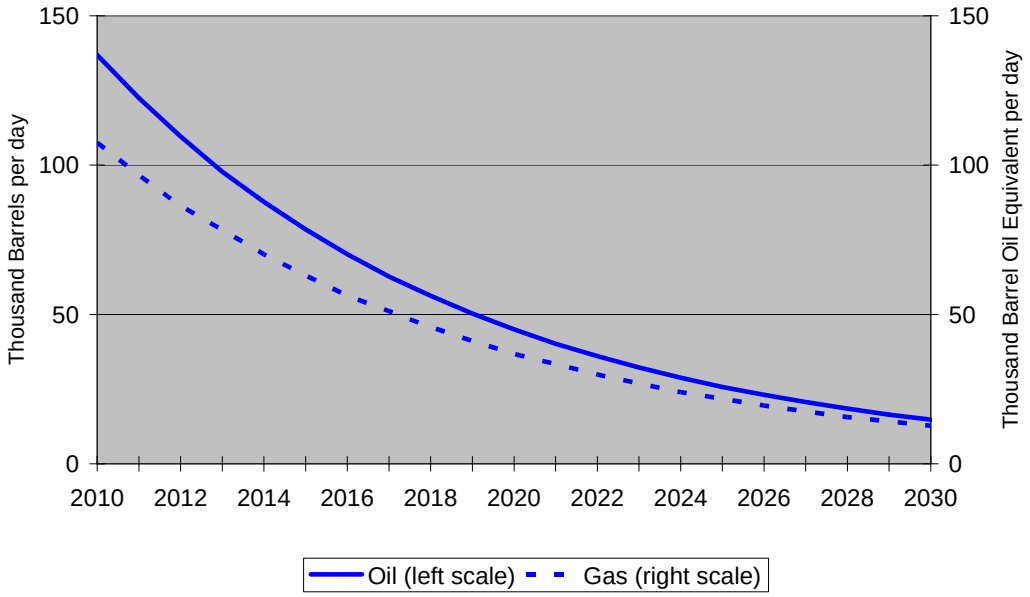
The economic impact of estimated future production from these leases through 2030 was based on a simulation of IHS Global Insight's U.S. Macroeconomic Model that incorporated the Department of Energy's Energy Information Administration's outlook for crude oil and natural gas prices published in the *Annual Energy Outlook 2010*.

Historical Oil and Gas Production from OCS Leases Issued Between 1996 and 2000 Under The Deep Water Royalty Relief Act



Source: ARI, "Understanding Outer Continental Shelf Leasing Under The Deep Water Royalty Relief Act", January 29, 2010.

Estimated Future Oil and Gas Production From OCS Leases Issued Between 1996 and 2000 Under The Deep Water Royalty Relief Act



Source: ARI, "Understanding Outer Continental Shelf Leasing Under The Deep Water Royalty Relief Act", January 29, 2010.

Impacts on the U.S. Economy

Deep water oil and gas production from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act reduces the U.S. import bill for energy and provides a boost to U.S. economic growth. The direct effects of activity in the oil and gas sector are compounded by second-round "multiplier" effects as the incomes in the energy sector are available to spend on other goods and services.

Historical Simulation

Oil and gas production from leases issued under the Deep Water Royalty Relief Act between 1996 and 2000 account for 0.06% of total U.S. production in 1999 increasing to a peak of 2.56% by 2004. The historical value of oil and gas production from these leases equals $7.4 billion in 2006, and $7.4 billion in 2008 or approximately 0.05% of nominal GDP.

Table 1 illustrates the historical effect of oil and gas production from the 1996-2000 OCS leases on real activity in the U.S. economy. The impact on real GDP reaches a peak of $10.9 billion per year in 2005, a year after oil and gas production from OCS leases[3] peaks. The spending component of GDP most affected (0.46%) is in non-residential fixed investment, both because investment in the energy sector is up and because business investment spending is highly sensitive to the growth of overall demand in the economy.

Table 1. Historical Economic Impact of Oil and Gas Production From OCS Leases Issued Between 1996 and 2000 under the Deep Water Royalty Relief Act (deviation from Baseline[4], million 2009$)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Economic Activity (million 2009$)										
Real GDP	104	230	406	1,174	6,068	10,112	10,946	10,422	6,472	3,503
Components of Real GDP										
Real Consumption Expenditures	26	73	142	363	1,874	3,973	5,358	6,127	5,079	3,769
Real Non-Residential Fixed Investment	6	24	43	64	462	1,331	1,777	1,762	914	711
Real Residential Investment	2	6	9	19	20	59	32	-34	-33	-239
Real Government Spending	0	0	0	0	1	2	3	6	8	18
Real Net Imports	-34	-63	-138	-520	-2,309	-2,506	-1,780	-787	218	1,466
Real Exports	0	-1	-2	-4	26	10	-132	-310	-618	-1,073
Real Imports	-34	-63	-140	-524	-2,283	-2,497	-1,912	-1,096	-400	393
Real Petroleum Imports	4	-41	-203	-477	-2,506	-3,852	-3,731	-3,993	-3,343	-2,464
Payroll Employment	700	1,850	3,400	8,800	42,575	79,200	90,925	90,400	62,450	30,875

[3] All references to "OCS leases" are direct references to "OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act".

[4] The Baseline case is the case without the oil and gas production from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act.

By 2008, the real GDP impact of oil and gas production from the OCS leases is $3.5 billion. Indeed, during the preceding years, additional investment spending and energy production increased the economy's productive capacity – and therefore the potential level of real GDP.

With oil and gas production from OCS leases, consumer spending gradually increases. The economic impact on consumer spending reaches a peak of $6.1 billion in 2005, and remains at $3.5 billion in 2008.

The increased oil and gas production reduces the reliance on imported energy. By 2006, the reduction in real petroleum imports reaches a peak of $4.0 billion. The overall reduction in real imports is smaller than that because higher real U.S. incomes raise the demand for non-energy imports.

The employment gains associated with the increases in GDP mount to a peak of 91,000 jobs in 2005, when the oil and gas production from OCS leases are at their peak. The impact on employment then eases back to 31,000 jobs in 2008 as the production from OCS leases becomes smaller.

Hence, oil and gas production from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act have had positive effects on real economic activity through more consumer spending, more investment spending, higher employment, and higher real net exports.

Forward-Looking Simulation

The oil and gas production estimates from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act starts at a peak 1.53% of total U.S. oil and gas production in 2010. It gradually decreases to reach 0.88% in 2015, and 0.18% of total U.S. oil and gas production in 2030. The historical value of oil and gas production from these OCS leases[5] starts at $4.9 billion in 2010, and then gradually diminishes to $4.0 billion in 2015, and $1.3 billion in 2030.

Table 2 illustrates the estimated likely effects on real activity in the U.S. economy of future estimated oil and gas production from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act. By the year 2011, the impact on real GDP is estimated to reach a peak of $9.4 billion. The largest percentage increase (0.29% higher than in the case without oil and gas production from OCS leases) in the spending components of GDP is projected to be in non-residential fixed investment, both because investment in the energy sector is up and because business investment spending is highly sensitive to the growth of overall demand in the economy, which is higher.

As the projections for oil and gas production from OCS leases issued from 1996 to 2000 decreases relative to total oil and gas production in the U.S., its projected economic impact on real GDP fades.

[5] All references to "OCS leases" are direct references to "OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act".

Table 2. Estimated Economic Impact of Future of Oil and Gas Production From OCS Leases Issued Between 1996 and 2000 under the Deep Water Royalty Relief Act (deviation from Baseline[6], million 2009$)

	2010	2011	2012	2015	2020	2025	2030
Economic Activity							
Real GDP	6,839	9,413	8,403	4,815	-1,158	-1,383	115
Components of Real GDP							
Real Consumption Expenditures	1,874	3,468	3,951	2,993	-33	-143	-58
Real Non-Residential Fixed Investment	249	1,062	933	444	128	199	277
Real Residential Investment	126	190	37	-130	-224	156	326
Real Government Spending	0	-1	0	0	4	11	14
Real Net Imports	-3,228	-2,139	-1,994	-756	1,800	3,530	2,618
Real Exports	125	115	-71	-548	-2,056	-2,678	-1,536
Real Imports	-3,104	-2,024	-2,065	-1,304	-255	852	1,082
Real Petroleum Imports	-2,547	-2,231	-2,006	-1,437	-898	-592	-386
Payroll Employment	45,700	71,600	69,875	36,600	-10,850	-18,200	-11,650

Real GDP and employment estimations run very slightly below baseline levels in the period 2020 to 2030 because the path of the assumed extra oil and gas production (strong at first but gradually fading) sets off a very mild cycle in the economy. In the early years, higher economic activity levels are estimated to push the price level and interest rates slightly higher. Their lagged effects drag on the economy in the later years, and combine with declining production from the leases to pull activity down slightly below the baseline.

The impact on consumer spending follows the same pattern as real GDP. The consumer spending impact from OCS drilling is estimated to reach $3.9 billion by 2012, and slowly diminish as production rates fall. The impact is not likely to be significant past 2020.

As in the historical simulation, these estimated projections show increased oil and gas production reduces energy imports. Real petroleum imports are reduced by $2.5 billion in 2010 below their baseline level. The reduction in petroleum imports then gradually lessens through time as oil and gas production from the leases declines.

The estimated employment gains associated with the increases in GDP mount to a peak of 72,000 jobs in 2011, when future oil and gas production from OCS leases should be at their peak. Employment then falls marginally after 2020 as the impact of additional oil and gas production on the economic activity fades.

Hence, estimated future oil and gas production from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act should continue to have a positive effect on real economic activity through more consumer spending, more investment spending, higher employment, and lower real net imports.

[6] The Baseline case is the case without the estimated future oil and gas production from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act.

Chart 1. Historical Real GDP with Oil and Gas Production from OCS Leases Issued Between 1996 and 2000 (deviation from Baseline[7], million 2009$)

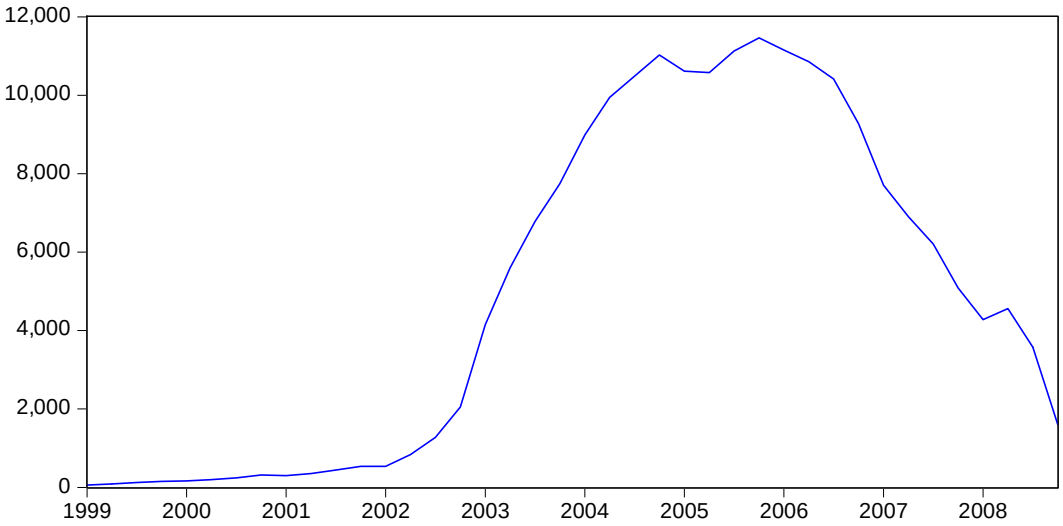
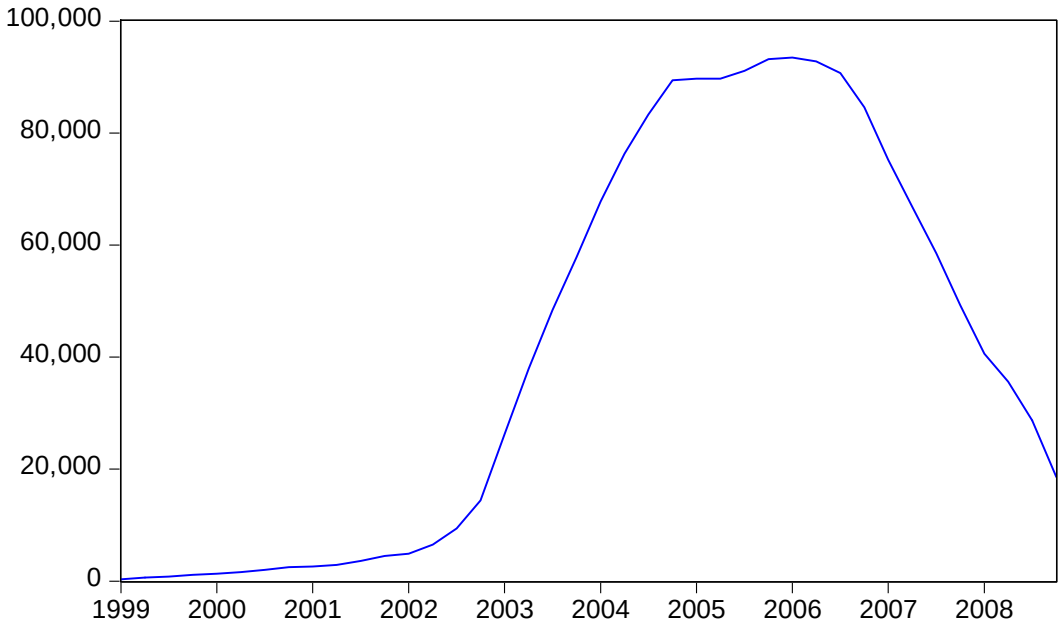


Chart 2. Historical Employment with Oil and Gas Production from OCS Leases Issued Between 1996 and 2000 (deviation from Baseline, thousands)



[7] The Baseline case is the case without the oil and gas production from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act.

Chart 3. Estimated Future Real GDP with Oil and Gas Production from OCS Leases Issued Between 1996 and 2000 (deviation from Baseline[8], million 2009$)

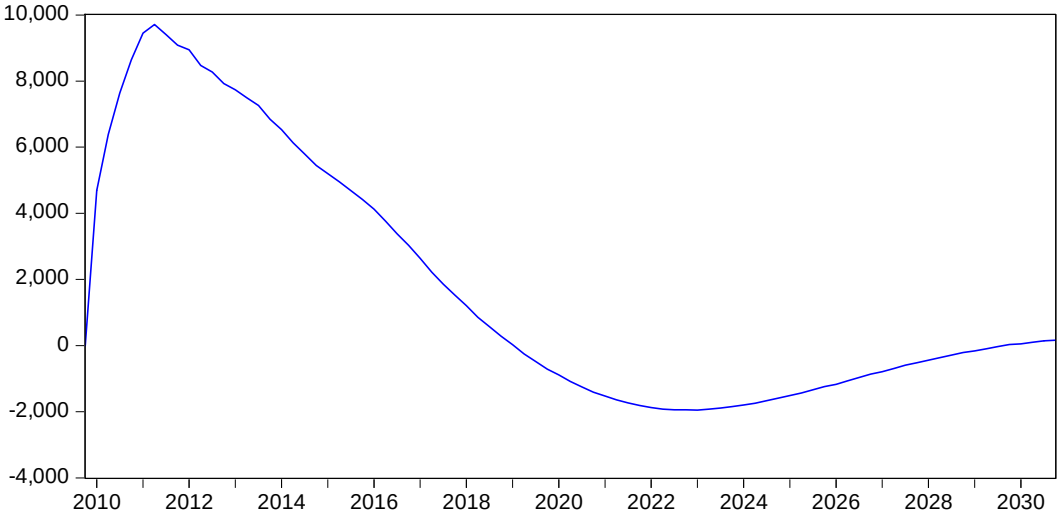
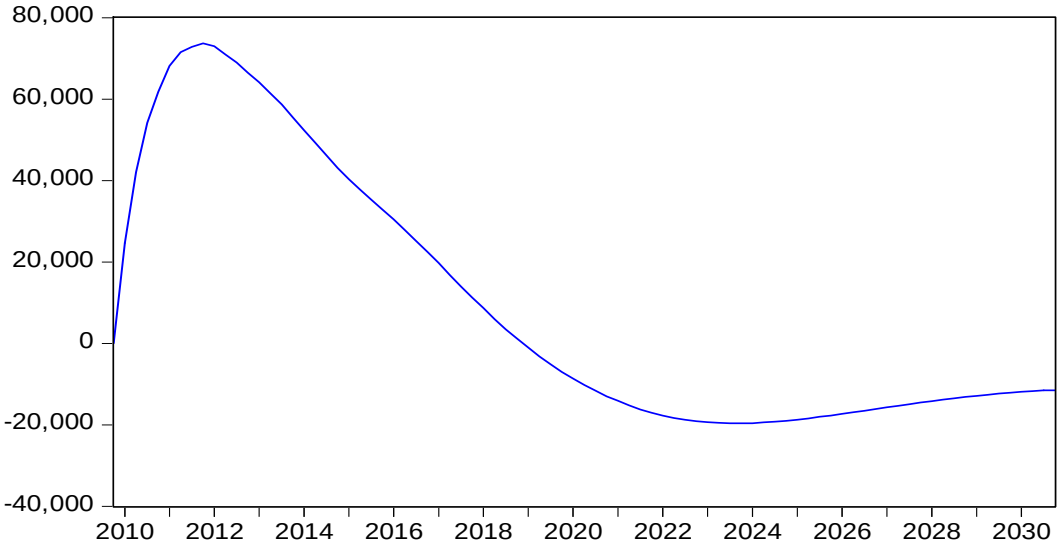


Chart 4. Estimated Future Employment with Oil and Gas Production from OCS Leases Issued Between 1996 and 2000 (deviation from Baseline, thousands)



[8] The Baseline case is the case without the estimated future oil and gas production from OCS leases issued between 1996 and 2000 under the Deep Water Royalty Relief Act.