

**Breaking Brent:
Norway's response to the recent oil-price shock**

Jonathon W. Moses and Bjørn Letnes
Norwegian University of Science and Technology
NTNU

jonathon.moses@ntnu.no

bl@centerpm.com

ABSTRACT

Many petroleum-producing countries find themselves in dire financial straits after oil's recent price fall. This article looks at how Norway has responded to the price shock. Norway's response is particularly interesting in that the country is broadly admired for its capacity to avoid the Paradox of Plenty. As a small, open, economy, Norway has always had to respond quickly to changes in the global marketplace. To do this, the country developed a number of institutions and policies to facilitate rapid adjustment to international price shocks—and many of these institutions and policies predated Norway's discovery of oil. In particular, Norway's flexible exchange rate regime, its corporatist wage-bargaining framework, and its responsible fiscal policies (along with its ability to tap into a deep sovereign wealth fund) have helped the country minimize the nation's economic pain, but also encouraged a slow transition away from oil and into other export sectors.

“I am both happy and relieved to find that the expected improvement in Norway’s economy seems to have arrived. Economic growth is on the rise, supported by a powerful economic policy. The depreciation of the krone in recent years has provided a foundation, upon which the tradeables sector can grow. Low interest rates and an active fiscal policy have stimulated domestic demand. The price of oil is higher now than it was in the winter, and the risk of a more serious recession in the Norwegian economy seems lower now than it was earlier in the year.” –Norway’s Minister of Finance, Siv Jensen¹

There is broad recognition of the difficulty facing oil-dependent countries in the wake of a significant oil price shock. During the last part of 2014, and the early months of 2015, international oil prices fell by roughly one half. While the new price of oil is not especially low, in light of longer historical trends, many producer countries had come to depend on (and expect) higher oil revenues after 2010. Their expenditures and investment priorities changed accordingly. In the aftermath of a rapid and significant drop in the price of oil, producer countries now need to change policy gears, and do so quickly.

Readers of *JWELB* should be concerned with the ability of states to manage the economic and political costs of lower oil prices. How countries respond to this new price environment will determine how it affects their broader national economies. For petroleum-producing countries, low oil prices threaten to reduce economic growth, expand government budget deficits and national trade deficits, and increase the risks of financial and macroeconomic instability. Countries such as Venezuela, Angola, and Algeria find themselves in dire economic straits. A

¹ S Jensen, ‘Et budsjett for flere jobber, bedre velferd og trygg hverdag’ Press release no. 43/2016, 6 October 2016; <<http://www.statsbudsjettet.no/Statsbudsjettet-2017/Satsinger/?pid=73013#hopp>> accessed 24 October 2016.

recent report in the pages of this journal documented the challenges and opportunities that this new price environment place on Nigeria.² Even countries that have managed to store away some of their oil revenues, such as Russia and Kuwait, face difficult economic and political choices.

This article examines how Norway has responded to the recent oil-price shock. Norway's response may be especially noteworthy in that Norway is broadly admired for its capacity to avoid the Paradox of Plenty.³ As we shall see, Norway has proven quite effective in responding to the new price environment: its officials have been able to isolate the international price effects on the Norwegian economy and encourage a slow transition to a post-petroleum economy. In particular, Norway's flexible exchange rate regime, its corporatist wage-bargaining framework, and its responsible fiscal policies (along with its ability to tap into a deep sovereign wealth fund) are allowing the country to accommodate the new price environment and slowly begin the transition out of oil.

While the particular institutions and policies employed by Norway may not be exportable to other oil-dependent countries, the willingness of Norwegian authorities to manage the economic transition, and the effectiveness of that response, should draw our attention and interest. Norway's experience (both now and since discovering oil in the 1960s), and that of other petroleum-rich countries, has taught us a great deal about how to manage resource wealth effectively. Governments in petroleum-producing countries need to learn from these experiences,

² A Akinrele, 'The current impact of global crude oil prices on Nigeria—an overview of the Nigerian petroleum and energy sector' (2016) 9 *Journal of World Energy Law and Business*, 313-345.

³TK Karl, *The paradox of plenty: Oil booms and petro-states* (University of California Press, 1997); MC Thurber, DR Hults and PRP Heller, 'Exporting the "Norwegian Model": The effect of administrative design on oil sector performance' (2011) 39 *Energy Policy* 5366-5378; and JW Moses and B Letnes, *Managing Resource Abundance and Wealth: The Norwegian Experience* (Oxford University Press, forthcoming).

and amend them to fit their own institutional frameworks, so that they can secure the rewards of effective resource management.

NORWAY IN CONTEXT

Before we consider Norway's response to the crisis, it is important to understand that Norway is not an outlier case. While Norway's reliance on oil and gas is less than the most dependent countries, Norway still leans heavily on petroleum for income, exports and even jobs. Of course, Norway is aware of this dependence and has been actively trying to maintain a diversified, broad-based, economic footing.

This level of petroleum dependence can be measured in a number of different ways. As is evident in the first three figures below, oil and gas represent a sizable share of Norwegian GDP and exports, and petroleum rents constitute a significant part of the Norwegian economy—but there are many other countries that are both more and/or less dependent on the resource.

Figure 1 about here

In Figure 1 it is possible to categorize petroleum producing countries in terms of three levels of petroleum dependence (since the 1990s): On the top are countries such as Angola and Saudi Arabia, where petroleum production represents a sizeable share of GDP (60-90%), over much of the time period covered. In the middle lies countries such as Nigeria, Algeria, Venezuela, and Russia, where between 20% and 50% of GDP is generated by petroleum production. Norway, then, finds itself in the bottom group, along with Malaysia, Mexico and Brazil—where petroleum production is an important, but not an overriding, source of economic activity. More focused studies suggest that oil and gas extraction and pipeline transport

represented about 21% of Norway's GDP in 2013.⁴ We note, however, that all three groups of countries experienced a rapid fall in the share of petroleum production, following the recent (post 2014) drop in prices.

Figure 2 about here

A similar pattern is evident in Figure 2, where Norway's reliance on oil and gas rents (in 2013) is significant, but not at the same level as, say, Kuwait, Equatorial Guinea or Saudi Arabia. In a recent comparison of national responses to the new petroleum price environment, Dabrowski notes that Norway—along with countries such as Bolivia, Canada, Indonesia, Malaysia, and Sudan—are among the least dependent oil producers, as their oil rent share was around 10%—even before the recent price drop.⁵ Norway's share in 2013 was just 10.5%. When measured as a share of government revenue, we find that the petroleum sector was responsible for just under 30% of the Norwegian state's revenues in 2013.⁶

Figure 3 about here

When we consider the relative size of petroleum exports, however, Norway's dependence on petroleum becomes more evident. In Figure 3 we can see that Norway finds itself in mid-field: the country's petroleum exports correspond to almost 67% of merchandising exports, when

⁴ Å Cappelen, T Eika and JB Prestmo, 'Virksomheter på norsk økonomi av et kraftig fall i oljeprisen' (2014) 3 *Økonomiske analyser* 31.

⁵ M Dabrowski, 'The Impact of the Oil-Price Shock on Net Oil Exporters' *Bruegel Blog* 24 November 2015; <<http://bruegel.org/2015/11/the-impact-of-the-oil-price-shock-on-net-oil-exporters/>> accessed 25 October 2016.

⁶ Norwegian Petroleum Directorate, *Facts 2014: Norwegian Petroleum Sector* (Ministry of Petroleum and Energy and the Norwegian Petroleum Directorate, 2014) 12.

averaged over a five-year period (2010-14). In 2013 alone, petroleum exports accounted for roughly half of all Norway's export revenues.⁷

While the employment footprint from the petroleum industry tends to be relatively small, recent studies have suggested that as much as nine percent of Norwegian jobs are directly or indirectly related to petroleum activities.⁸ More significantly, Norway's earlier deployment of local content policies has resulted in a web of connected indigenous supply industries.⁹ Indeed, Hungnes et al. estimate that about 82% of the Norwegian petroleum industry's demand for investment goods in 2013 was supplied domestically. This corresponds to more than 230,000 Norwegian workers who could be linked to the petroleum industry.¹⁰

Finally, Norway is unique in one very important way: Norwegian petroleum is very expensive to access, as it is located offshore, under very harsh weather and costing conditions (given Norway's latitude and high salaries). *Ceteris paribus*, a low global price environment

⁷ Ibid.

⁸ Eika et al. calculated that the direct and indirect employment of this activity represented about 8% of total employment in 2009, and it may have gone a little beyond 9% in 2014. T Eika, J Prestmo and E Tveter, 'Etterspørselen fra petroleumsvirksomheten—Betydningen for produksjon og etterspørsel i Norge' (2010) 3 *Økonomiske analyser* 30-39. See also Cappelen et al., op. cit, 31.

⁹ See Moses and Letnes, op. cit., Chapter 8.

¹⁰ H Hungnes, D Kolsrud, J Nitter-Hauge, JB Prestmo and B Strøm, 'Ringvirkninger av petroleumsnæringen i norsk økonomi. Basert på endelig nasjonalregnskapstall for 2013' (2016) 17 *SSB Rapporten*. It is the service industries that have the largest share of deliveries to the petroleum industry's purchase of investment products. The service industries deliver 40.9% of the investment products, of which 9.0% is delivered by service activities incidental to oil and gas. The manufacturing industry accounts for 12.7% of the deliveries; 38.8% of investments in the petroleum industry are imported from abroad. JB Prestmo, B Strøm and HK Midsem, 'Ringvirkninger av petroleumsnæringen i norsk økonomi' (2015) 8 *SSB Rapporten*, abstract.

discourages new investments and activity in Norway, relative to cheaper alternatives.¹¹ This means that Norway comes under significant pressure to re-think its dependence on petroleum revenues in a low-cost environment.

THE INITIAL IMPACT

The price of oil affects the Norwegian economy in three distinct ways: 1) through its effect on employment and investment in the Norwegian oil services industry; 2) through the government's (petroleum-derived) revenues, and how they are spent; and 3) on the impact on the country's exchange rate and stock market. Hence, lower oil and gas prices affect the Norwegian economy through these three channels.

The most politically pressing and evident effect was on the demand for petroleum products and services, as the Norwegian petroleum industry began to scale back future activities almost immediately. Petroleum investment and employment in Norway is mostly located in Southern and Western Norway, so the economic effects were felt hardest in these areas—whereas economic activity remained largely unaffected in other parts of the country, including the capital city, Oslo. As can be seen in Figure 4, the overall level of unemployment in Norway remained almost untouched by the 2014 price drop—staying just under 3%. But in those counties where the oil industry is most active (Hordaland, Møre og Romsdal, Rogaland and Vest Agder), the unemployment rate began to rise significantly. Overall, it is estimated that somewhere between 25,000 and 39,000 Norwegians lost their job as a result of the price drop (Norway's population is

¹¹ Of course, the Norwegian government works hard to minimize these costs for producers by offering conditions that are more attractive than can be found in low-price environments, such as greater stability and transparency in the framework conditions (e.g. policies, tax levels, etc.).

roughly 5 million).¹² Investments in the oil sector continue to fall, and the country is struggling with record-low order levels.

Figure 4 about here

As with other petroleum-producing countries, Norway relies on oil revenues to help fund its expenditures. These revenues are generated mostly from income taxes, but also through a number of other forms of taxes, state ownership, and dividends from the National Oil Company (Statoil).¹³ In 2013, the Norwegian government's revenues from the petroleum industry totalled 345.6 billion NOK; and can be broken down as follows: 58% came from the petroleum tax; 36% came from the state's direct financial interests (SDFI) offshore; 4% came in the form of a Statoil dividend, and the remainder came from diverse fees and taxes.¹⁴ The current government estimates that the fall in oil prices, since 2014, has reduced the state's income stream from petroleum-related activities by about 60%.¹⁵ Critically, and as we shall see later, this reduction in petroleum-related income has not yet undermined the ability of the state to pay for an expansive set of fiscal policies that are buffeting the potential effect on the national economy.

¹² Hungnes et al., *op. cit.*, use input-output calculations to estimate that employment related to the petroleum industry decreased by about 25,000 between 2013 and 2015. This corresponds roughly to the increase in unemployed in the same period. DNB Markets, in turn, estimates that 38,745 people have lost jobs in the oil sector in recent years. See J Schultz, '39.000 oljejobber er skrellet vekk' *DagensNæringsliv* 21 September 2016, 5. Of course, many of these people have subsequently found jobs elsewhere in the Norwegian economy.

¹³ For a more detailed account of how oil revenues find their way to the Norwegian state, see Moses and Letnes, *op. cit.*, Chapter 5.

¹⁴ Deloitte, 'Extractive Industries Transparency Initiative. Cash Flows from the Petroleum Industry in Norway 2013' December 2014; <http://www.eiti.no/files/2015/02/2014_EITI_rapport_engelsk_for_2013.pdf> accessed 18 April 2015, 21 and 28.

¹⁵ *Meld. St. 1 (2016-2017)*, 'Nasjonalbudsjettet 2017' Det kongelige finansdepartementet, 37.

Finally, international markets are well aware of the importance that oil plays in Norway's economy. As Norway maintains a flexible exchange rate regime (since 2001),¹⁶ the international value of the Norwegian krone (NOK) closely tracks the price of oil, as is evident in Figure 5. When the price of oil fell dramatically in 2014, so too did the NOK—although it slowly began to appreciate in 2016.

Figure 5 about here

GOVERNMENT RESPONSES

What options are available to states that rely on petroleum revenues, in a context of a sudden and deep drop in prices?

The answer to this question depends upon a number of factors, many of which are determined long before a given price shock hits the economy in question. Generally speaking, however, a country's policy response depends on some basic economic characteristics, such as:

- The degree of economic diversification in the economy;
- The amount of savings or wealth that the country has managed to accumulate (when the price of oil was higher);
- The capacity of the country to restrain inflationary pass-through (i.e., are there policies, laws, institutions and traditions in place that can inhibit the development of inflation in response to different policies?);
- The exchange rate regime (floating or fixed); and
- The political will to make difficult decisions.

¹⁶ The Norwegian government has defined an inflation target for Norwegian monetary policy, where the central bank (Norges Bank) is expected to conduct a monetary policy that is oriented towards producing low and stable inflation.

In terms of particular responses, states can choose from the following set of policy tools:

- Increase the government's source of revenue from non-oil sources (e.g., raise taxes);
- Reduce government expenditures;
- Tap into national savings (or increase borrowing):
 - Countries with fixed exchange rate regimes need large foreign exchange buffers to maintain confidence in that regime, given adverse shocks;
 - Countries with sovereign wealth funds can withdraw assets to absorb the initial price shock and encourage necessary adjustments;
- Depreciate the currency (this increases international (price) competitiveness, but at the risk of sparking inflation).

While some of these options may not be available to every country, the most common response is the most politically expedient: *reduce government expenditures*. While politically expedient, however, this option is economically detrimental in the long-run (in that it undermines domestic demand and makes it difficult to transition to an alternative economic footing). Worse, it tends to deliver a number of very damaging side effects, including increased economic inequality and the threat of political and social unrest.

The Norwegian Response

The Norwegian authorities have managed to respond to the price drop in a way that has avoided a cut in government expenditures and encouraged Norwegian producers to move out of the petroleum sector. They have done this by allowing established institutions to dampen the price blow, and by employing a handful of targeted incentives and tax relief policies. The detrimental impact of low petroleum prices has not been as severe as many feared, due to a favourable

exchange rate, moderate wage demands, and the government's deep pockets (in the form of its sovereign wealth fund). In particular, a string of moderate wage demands (delivered by Norway's corporatist bargaining framework), combined with a weak krone (driven down by the price of oil and low interest rates), have improved the international competitiveness of Norwegian producers. At the same time, the government's expansionary fiscal policy has stimulated domestic demand and encouraged economic restructuring.

This policy response was hardly a surprise, as an earlier Norwegian Official Report,¹⁷ had anticipated a significant fall in oil prices, and focused the authorities' attention on the three most important relationships relevant for Norway's economic recovery: a) flexible exchange rates and inflation targeting; b) the role that incomes policy will play in facilitating structural adjustment (by way of modest wage demands); and c) an effective fiscal policy that employs the fiscal rule [*handlingsregel*]. This section examines the role played by each of these three important instruments.

Flexible Exchange Rates

As we've already seen in Figure 5, the first (and almost immediate) effect of the falling oil price was a depreciation in the value of the NOK.¹⁸ The krone remained weak for three years, until it slowly began to strengthen in the first four months of 2016 (again, alongside a moderately rising

¹⁷ NOU 2013:13, *Lønnsdannelsen og utfordringer for norsk økonomi*. Also known as the Holden III report.

¹⁸ For a recent critical look at the relationship between the NOK exchange rate and the price of oil, see S ter Ellen, 'Nonlinearities in the relationship between oil price changes and movements in the Norwegian krone' (2016) Norges Banks Staff Memo No. 18; <<http://www.norges-bank.no/en/Published/Papers/Staff-Memo/2016/Staff-Memo-182016/>> accessed 26 October 2016.

price for oil). Norway's nominal effective exchange rate, as measured by the I-44,¹⁹ fell by some 19% between 2013 and 2016,²⁰ although the krone has rebound (by roughly 5%) in 2016.²¹ This weak krone was also the result of the central bank's interest rate policy, responding to low international interest rates, as its key policy rate [*styringsrenta*] was cut by one percent in 2014 and 2015. The effect of this cheap money, and the depreciated krone, is three fold:

- Lower interest rates stimulated domestic investment, especially in the housing sector, but also in other (export-oriented) sectors;
- The depreciated exchange rate improved international competitiveness for Norwegian producers in the tradeables sector. All of a sudden, Norwegian exporters found their exported goods and services were markedly cheaper than their competitors, and the result was an increase in non-petroleum related exports by 8.1%, from 2013 to 2016.²²

Domestic producers enjoyed a comparable advantage vis-à-vis importers, and this also contributed to the overall strength of the economy.²³

¹⁹ The I-44 index is a nominal effective exchange rate index based on NOK exchange rates as measured against the currencies of Norway's (44) most important trading partners. The index is set at 1995 = 100. A rising index indicates a depreciating krone. See http://www.norges-bank.no/en/Statistics/exchange_rates/Calculated-rates---explanation/.

²⁰ NOU 2016:15, *Lønnsdannelsen i lys av nye økonomiske utviklingstrekk*. Preliminary version from 20 September 2016, 54, Table 4.1.

²¹ SSB, 'Konjunkturtendensene' (2016) 4 *Økonomiske analyser* 16.

²² NOU 2016:15, op. cit., 54, Table 4.1.

²³ Despite real improvements in competitiveness, exports in traditional goods fell by 0.4% in Q2, after falling by 4.6% in the previous quarter. Much of this fall reflects a decline in refined products and reduced international demand for petroleum-based products. By contrast, non-oil based exports are doing well. SSB, op. cit., 16.

- Because of the depreciation, the krone value of the country's sovereign wealth fund, the Government Pension Fund, Global (GPF_G)²⁴ actually increased—providing even more money for the government to stimulate domestic demand (i.e., facilitating a more expansive fiscal policy).

While the benefits from a depreciated currency are clear and almost immediate, many policymakers are unwilling to let their currency fall in value, because of its potential to create excess inflation (through easy money and the increased wage claims that often result from improved competitiveness in the exposed sector); or because the economy relies heavily on imports (which consequently become more expensive). Indeed, when countries become overly dependent upon oil, and lack alternative engines of economic activity, then a consequent boost in international competitiveness will have little effect.

But Norway is long accustomed to dealing with the need to adjust to exogenous price shocks, and has developed institutions that can insulate and protect the national economy from the inflationary consequences of a currency depreciation.²⁵ The nature of those institutions will be described in more detail in the section that follows, but their effectiveness is evident in Figure 6, where Norway's inflation level has remained low and stable over a long period of time, even in the wake of the recent depreciation.

Figure 6 about here

²⁴ Although it is called a pension fund, the GPF_G does not entail any formal pension liabilities. Indeed, there has never been an explicit political decision as to how the money in the fund will be used in the future. See Moses and Letnes, *op. cit.*, Chapter 7.

²⁵ See JW Moses, *OPEN States in the Global Economy. The Political Economy of Small State Macroeconomic Management* (Macmillan, 2000).

Incomes Policy

Long before it discovered oil and gas, Norway needed to develop institutions that allowed its economy to adjust quickly to changes in global markets.²⁶ As a small open economy, Norway developed a social corporatist arrangement, where worker and employer organizations (e.g. the LO and NHO, respectively) are highly organized, hierarchical, and influential in policy-making. As a result, Norwegian incomes policies are able to respond quickly to changing economic conditions in a way that can limit the inflationary consequences of a devaluation.²⁷

In particular, Norway's corporatist institutions have helped to secure increased productivity, lower unemployment trends and smoother income distributions.²⁸ Several international studies have demonstrated how employment levels are higher, and unemployment levels are lower, in countries that enjoy coordinated wage policies (relative to those that don't).²⁹ One reason for this can be that the labour market partners, through coordination, are able to pay greater attention to how wage increases affect employment and unemployment in the overall

²⁶ P Katzenstein, *Small States and Open Markets* (Cornell University Press, 1985).

²⁷ See, e.g., J Moses, 'Devalued Priorities: The Politics of Nordic Exchange Rate Regimes Compared' PhD Dissertation, UCLA, 1995.

²⁸ See NOU 2016:15, op. cit., 8; see also Moses and Letnes, op. cit., Chapters 3 and 6.

²⁹ The most famous and influential is probably L Calmfors and J Driffill, 'Bargaining Structure, Corporatism and Macroeconomic Performance' (1998) 6 *Economic Policy* 13-62. But see also L Calmfors, *Wage Formation and Macroeconomic Policy in the Nordic Countries* (Oxford University Press and SNS, 1990); RJ Flanagan, KO Moene and M Wallerstein (eds), *Trade Union Behaviour, Pay Bargaining and Economic Performance* (Clarendon Press, 1993); and JE Dølvik and AH Steen (eds.), *Making Solidarity Work? The Norwegian Labour Market Model in Transition* (Scandinavian University Press, 1997).

economy.³⁰ Because Norwegian wages are set by a system of highly coordinated agreements that include employer organizations, labour unions and (often) the government, the labour market partners are able to secure lower levels of unemployment, relative to an uncoordinated (or free market) arrangement.³¹

Most importantly, in light of the inflationary consequences that often result from a depreciation/devaluation, this sort of collective bargaining arrangement can be used to restrain wage developments, post depreciation, in the tradeables sector, such that export industries can improve their international competitiveness.³² Several recent studies have demonstrated that this is exactly what has happened in Norway after the fall in oil prices (and the value of the NOK): Norway's incomes policies managed to restrict wage growth, improving competitiveness for Norwegian exporters.³³

³⁰ See, e.g., L Calmfors, A Booth, M Burda, D Checchi, R Naylor and J Vissler, 'The Future of Collective Bargaining in Europe' in T Boeri, A Brugiavini and L Calmfors (eds), *The Role of Unions in the Twenty-First Century* (Oxford University Press, 2001) 1-151.

³¹ R Nymoen and V Sparrman, 'Equilibrium unemployment dynamics in a panel of OECD countries' (2015) 77 *Oxford Bulletin of Economic and Statistics* 164-190; and NOU 2016:15, op. cit., 17.

³² The Scandinavian inflation model (or the Aukrust model, in Norway), recognizes the need to prioritize wage developments in the exposed sector, to secure international competitiveness, and restrict wage developments in the sheltered sector accordingly (to avoid inflationary pressure, and eventual appreciation, that can undermine the country's international competitiveness). See O. Aukrust, 'Inflation in the Open Economy' in LB Krause and WS Salant (eds), *Worldwide Inflation. Theory and Recent Experience* (Brookings Institution, 1977) 107-53.

³³ See, for example, Bjørnstad's depiction of the Cappelen Committee report (NOU 2016:15, op. cit.), and its focus on the importance of the exchange rate and wage moderation. S Bjørnstad, 'Fire grafer som viser at krisene var verre før' *Aftenposten* 20 September 2016; <<http://www.aftenposten.no/okonomi/Fire-grafer-som-viser-at-krisene-var-verre-for-604970b.html>> accessed 28 October 2016.

This comparative advantage is clearly shown in Figure 7, where we can see that Norwegian labour costs, measured in a common currency, have dropped significantly since 2014. Indeed, Norwegian wage growth has fallen continually since the end of 2011, and it is set to reach record low levels this year. The main labour market organizations (the NHO and the LO) believe that industrial wage growth will be about 2.4% this year, and the overall wage growth level may even be lower. With the threat of unemployment and a stalled petroleum sector, there is much understanding of the need for moderation; hence it is estimated that real wages will fall by a little more than 1% in 2016.³⁴

Figure 7 about here

In short, Norway's coordinated system of wage formation helped the authorities to insulate the effect of a rapid and significant fall in oil prices. The labour market partners delivered moderate wage agreements in the wake of these price falls. Consequently, the weak krone has not resulted in higher nominal wage growth, and this has helped provide an improvement in competitiveness for Norwegian firms. In addition, moderate wage growth has generated slow growth in the purchasing power of Norwegian households, after many years of high growth. In short, lower relative wage costs have facilitated the sort of transformation that is necessary in a global context characterized by lower oil prices and lessened demand in the petroleum sector.

Fiscal Policy

When faced with a significant drop in the price of oil, most oil-producing states find themselves facing a serious reduction in government revenues. This development, in turn, will demand a

³⁴ SSB, op. cit., 18.

corresponding reduction in government expenditures, or a search for new revenues (to replace those that were lost to falling oil prices).

In the Norwegian case, the authorities pursued a strongly expansive fiscal policy, which was paid out of the world's largest sovereign investment fund: the Norwegian Government Pension Fund, Global (or GPFG). While the size of the GPFG (and the ethical guidelines that direct it) often grabs the most international attention, the effectiveness of Norwegian resource management lies less in the GPFG, and more in how the Norwegian economy (and government spending levels) are insulated from the significant revenues generated by this fund. In particular, Norwegian political parties have agreed to a fiscal rule [*handlingsregel*] as a long-term guide for how returns from the GPFG should be used. To understand this fiscal rule, it is first important to note that the state's net cash flow from the petroleum industry *does not* go directly to the government—but is diverted offshore to the GPFG. The fiscal rule, then, allows the government to transfer from the Fund to the central government budget an amount of oil revenues that correspond to the expected real rate of return on the Fund (e.g., between three and four percent). The government then uses this transfer as a means to balance its budget. In this way, the government's revenue stream is de-linked from the short-term volatility of oil prices, and the risk of overspending.

By diverting its oil revenues offshore, the Norwegian economy was spared the appreciation affects that usually come from increased oil revenues (during times of rising and high prices). The money simply wasn't allowed to enter the Norwegian economy—but was kept offshore, invested in global assets. As the Fund grew, the returns from its investments generated a substantial income on their own—and these were re-invested in the GPFG (offshore). To ensure that all this money didn't create unwanted inflationary pressure, Norway's political parties came

to an informal agreement where they would only skim off the top of the fund, at the expected natural, long-term rate of return.

As the price of oil surged, so too did the state's net cash flow from the petroleum sector, as seen in Figure 8.³⁵ In the past three years, however, as the price of oil has fallen substantially, this cash flow has dropped, even as the value of the GPFG (in NOK) has actually increased (due to the depreciated value of the krone vis-à-vis dollars, and because of investment returns that are independent of oil). By September of 2016, the GPFG was valued at about 2.5% of Mainland GDP.³⁶

Figure 8 about here

As the price of oil fell, investment in Norwegian petroleum activities dropped, as did employment and tax revenues that are generated by that activity. The weakened krone encouraged investors to move their money into other industries in the exposed sector, while the depreciation concomitantly increased the NOK-value of the GPFG. This made it easier for the state to pay for an expansionary fiscal policy, in order: to buoy domestic demand; to help workers and capital find their way to new opportunities; and to provide public investments in maintenance and infrastructure projects in the hardest hit areas. As a result, the 2016 government produced a deficit for first time in 25 years, paid for with money taken out of the GPFG.

³⁵ For an English description of Norway's fiscal framework, see Appendix 1 to Finance Ministry, 'The National Budget, 2017: A Summary'; http://www.statsbudsjettet.no/upload/Statsbudsjett_2017/dokumenter/pdf/summary_nb2017_engelsk.pdf accessed 23 October 2016.

³⁶ Finance Ministry, op. cit., 16.

Since 2013, Norwegian fiscal policy has been increasingly expansive.³⁷ Between 2013 and 2015, the Norwegian government's use of oil-based revenues and those transferred from the GPFG (as measured by the structural, non-oil, budget deficit) have increased by almost 60 billion kroner. The increase, when measured as a percentage of Norway's mainland (non-petroleum) GDP, constituted 0.7% in 2014 and 0.5% in 2015.³⁸

On 6 October 2016, the Solberg government announced its 2017 budget. Over the past three years in power, this government has spent more of the country's "oil money" than has been used over the ten previous years combined. In its 2017 budget, the government expects to rely on 256 billion kroner of petroleum revenues, 121 billion of which need to be transferred from the GPFG to balance the government's budget. This is a phenomenal increase above what previous (Labour) governments were willing to spend, even if it falls below the 4% spending rule that politicians have agreed to respect.

We should end this section by pointing out this sort of expansionary fiscal policy is embraced by parties from across the political spectrum. While a conservative coalition government has been in power since the recent price fall began, a Labour Party government would have pursued a very similar policy.³⁹

³⁷ SSB, op. cit., 18.

³⁸ NOU 2016:15, op. cit., 32; see also SSB, op. cit., 18.

³⁹ Although the sitting government has used GPFG money to pay for tax relief for some of Norway's wealthiest inhabitants, the Labour Party (in opposition) has complained that this money should have been spent on more direct measures for job creation in the hardest hit parts of the country. The government's riposte in the 2017 budget came in the form of 4 billion kroner worth of targeted support for affected workers, and an increased budget for roads and railways (by some 6.1%, or 13.5 billion kroner).

LOOKING FORWARD

The oil slump may have cost as many as 39,000 Norwegian jobs, and investments in the petroleum sector continue to fall, but the sector's unemployment and investment figures will stabilize in 2017. The government (through its infrastructure investments) and the private sector have absorbed many or most of these unemployed workers. The biggest increase in unemployment happened early in the recession, and the 2016 increase has been modest. Still, unemployment levels remain the highest Norway has seen in 20 years (even if they remain low from a comparative, or international, perspective). The projected average unemployment level for 2016 is 4.7%, and the government's prognosis for 2017—even after its stimulus effort—shows only a slight decline, to 4.6%. Before the release of the government's budget, the national statistical bureau (SSB) predicted unemployment would fall to 4.5% in 2017, and to 4.3% in 2018 and 2019.

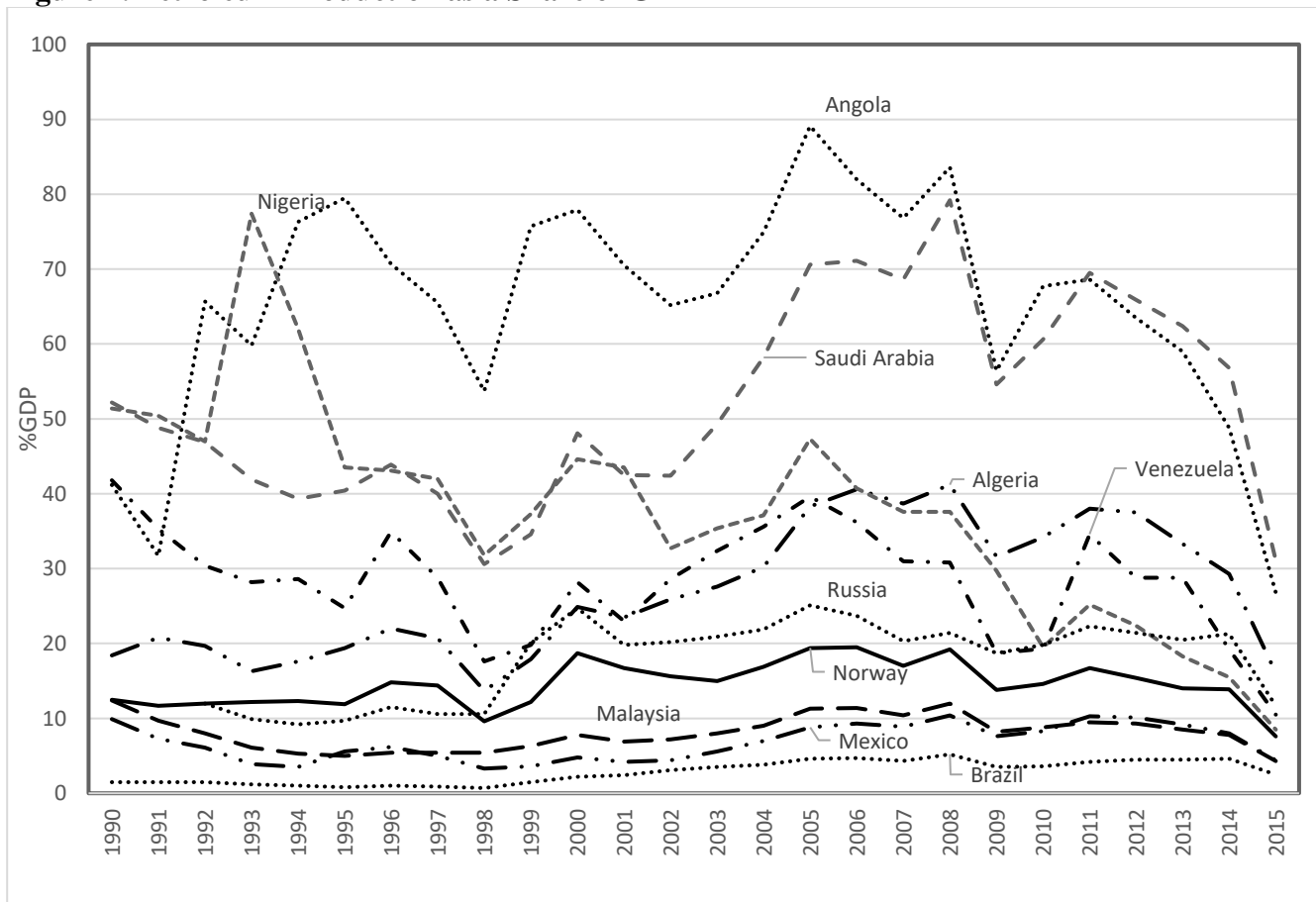
While the Norwegian economy seems to be recovering from a slump that started two years ago, it faces a changed international context. The future promises continued low prices for oil, lower levels of economic growth (for both Norway and its trading partners) and a low interest rate environment globally, which will translate into lower returns on investments in the GPF. These three developments necessitate a quicker transition away from oil. While the current government is lucky to have a deep pool of oil money from which it can draw to fund this transition, future governments cannot continue draining the GPF. Indeed, we think it is unlikely that the government will continue with its current spending level over a longer period of time.

This article has aimed to show how petroleum-producing states can adjust to significant price shocks, given sufficient knowledge about the nature of the challenge, and appropriate institutions, policies and political willpower. What is perhaps most surprising about the

Norwegian case is that its recovery relied less on targeted policy responses, and more on established institutions and policies to secure the necessary adjustment to the price shock. While some of these institutions precede Norway's petroleum era (flexible exchange rates, coordinated wage bargaining system, democratically accountable officials), others were specifically designed to meet exactly these sorts of challenges (e.g. the GPF and the fiscal rule).

One of the central components in Norway's response has been a reliance on a highly organized and influential systems of labour relations, with representatives who were willing to cooperate for the good of the country. These characteristics and others we have pointed to (e.g. politicians that are democratically accountable, a flexible exchange rate regime, deep pools of national wealth) are not available to many petroleum-producing countries—at least not at the time of crisis, nor delivered on short order. But given a better understanding of the nature of the economic challenge, and a political willingness to address it, the Norwegian case demonstrates that it is possible to devise institutions and policies that can help states respond in ways that can minimize the economic, political and human costs of a dramatic fall in prices.

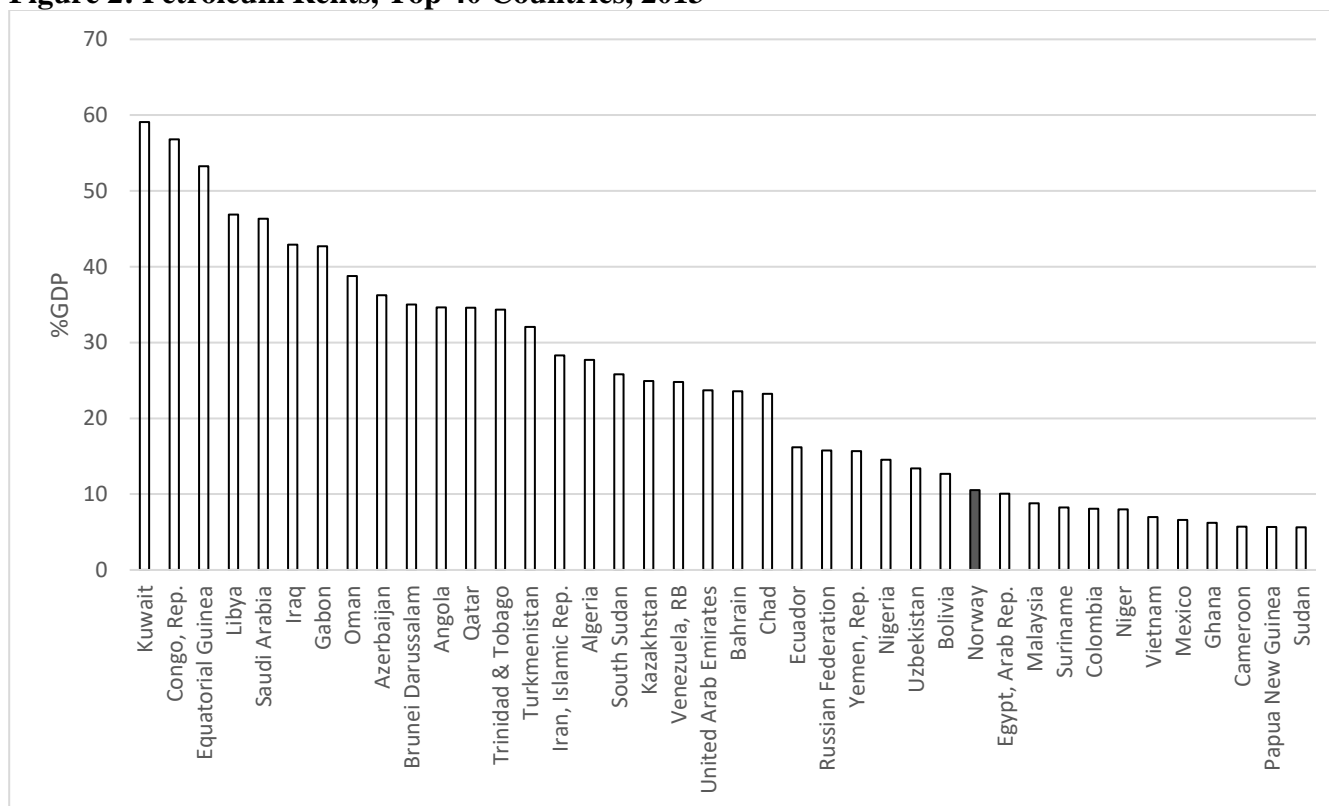
Figure 1: Petroleum Production as a Share of GDP



Notes: Following Fahey, the production of crude oil, NGPL and other liquids in thousand barrels per day data comes from the US Energy Information Administration (EIA); the Brent crude oil prices, annual average price comes from FactSet, and the GDP in current US dollars comes from World Bank's World Development Indicators [NY.GDP.MKTP.CD]. The value of oil production is calculated as the annual oil production, times the average oil price, divided by GDP. The sample of countries is those used in Thurber et al., op. cit.

Sources: EIA, 'International Energy Statistics' Beta browser <<http://www.eia.gov/beta/international/data/browser/>> accessed 26 October 2016. EIA (2017); World Bank Development Indicators, various years <<http://data.worldbank.org/indicator/>>; and M Fahey, 'Oil prices and budgets: The OPEC countries most at risk' CNBC, 3 December 2015 <<http://www.cnbc.com/2015/12/03/oil-prices-and-budgetsthe-ope-countries-most-at-risk.html>>.

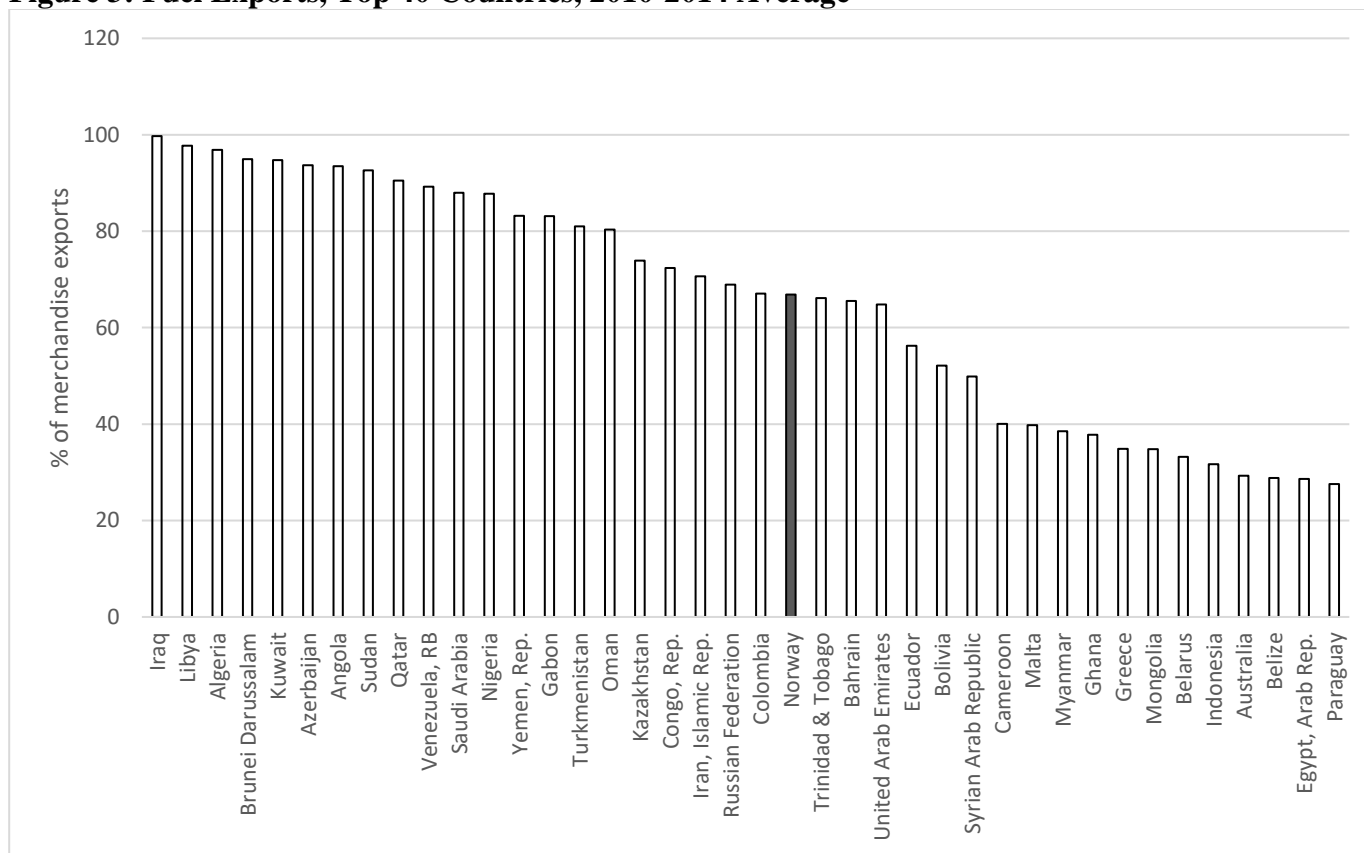
Figure 2: Petroleum Rents, Top 40 Countries, 2013



Note: Top 40 countries, oil and gas rents combined (i.e., natural gas rents [NY.GDP.NGAS.RT.ZS] + oil rents [NY.GDP.PETR.RT.ZS] as % of GDP) in 2013. Rents are calculated as the difference between the value of natural gas production and oil production at world prices, and the total costs of production.

Source: World Development Indicators, op. cit.

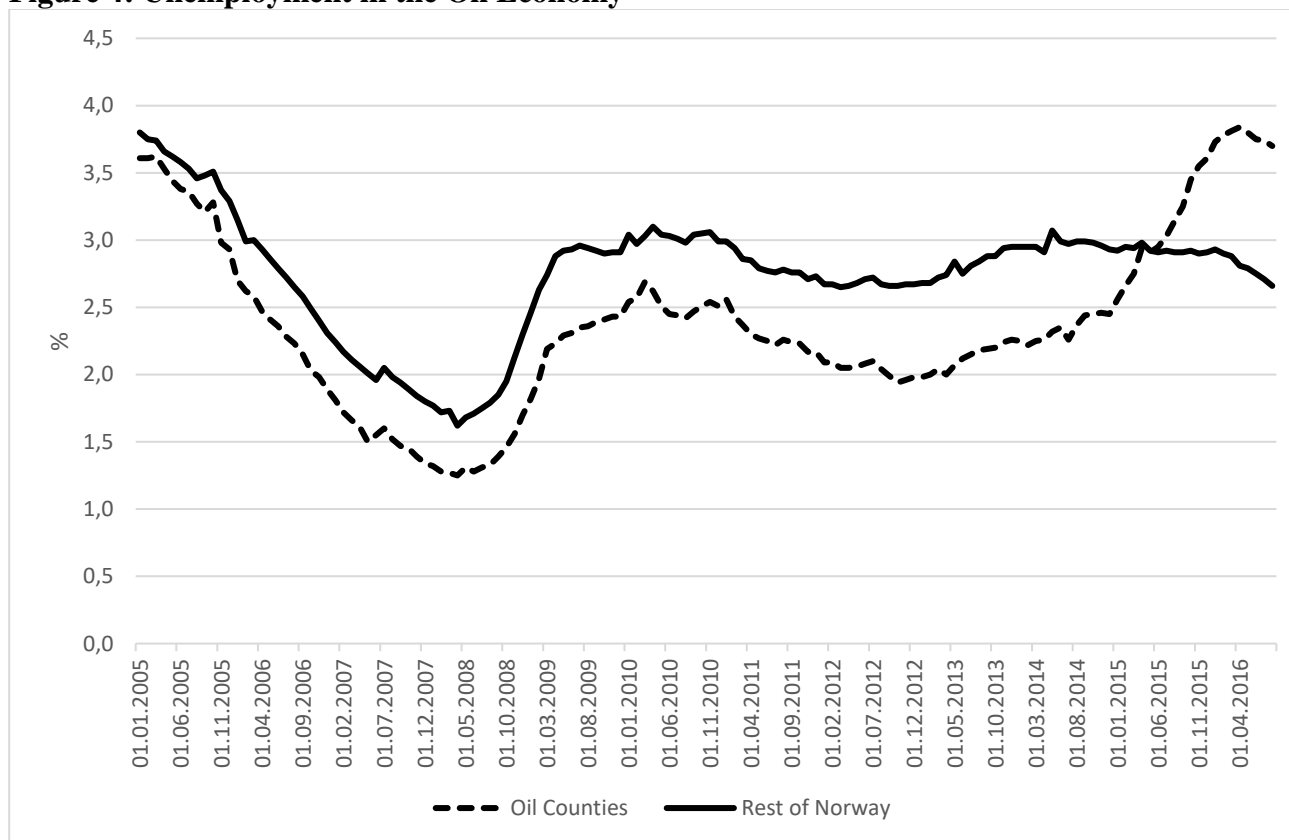
Figure 3: Fuel Exports, Top 40 Countries, 2010-2014 Average



Note: Top 40 fuel exporters, as % of merchandise exports, five-year average (2010-2014)

Source: World Bank Indicators, op. cit., [TX.VAL.FUEL.ZS.UN]

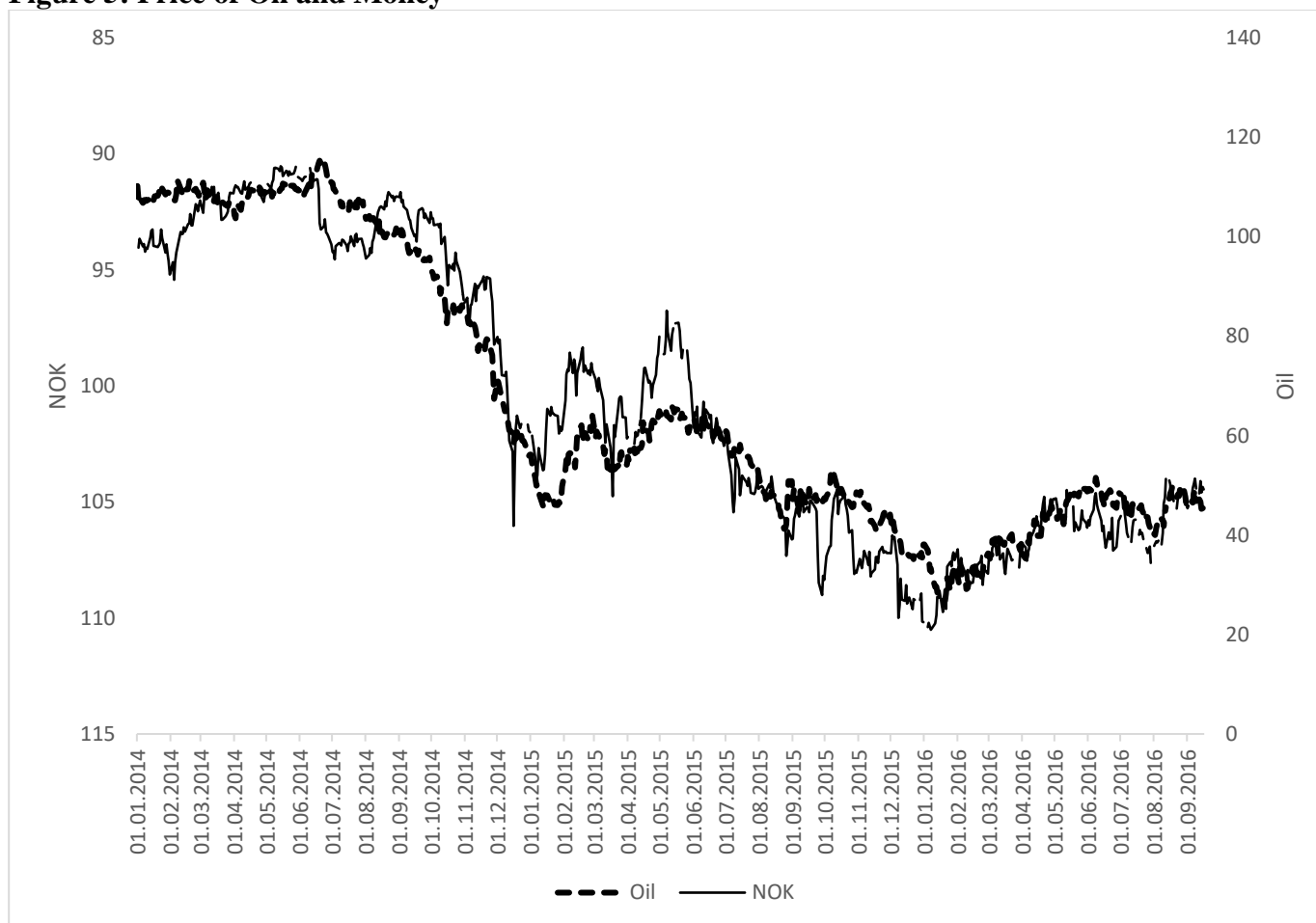
Figure 4: Unemployment in the Oil Economy



Note: Registered unemployment by county; share of labour force; seasonally adjusted; percent. January 2005-August 2016. Oil counties include: Hordaland, Møre og Romsdal, Rogaland and Vest Agder.

Sources: Norwegian Labour and Welfare Administration (NAV) and Norges Bank, as collected in Norges Bank, *Monetary Policy Report with Financial Stability Assessment 3/16* September (Norges Bank, 2016), Chart 1.23.

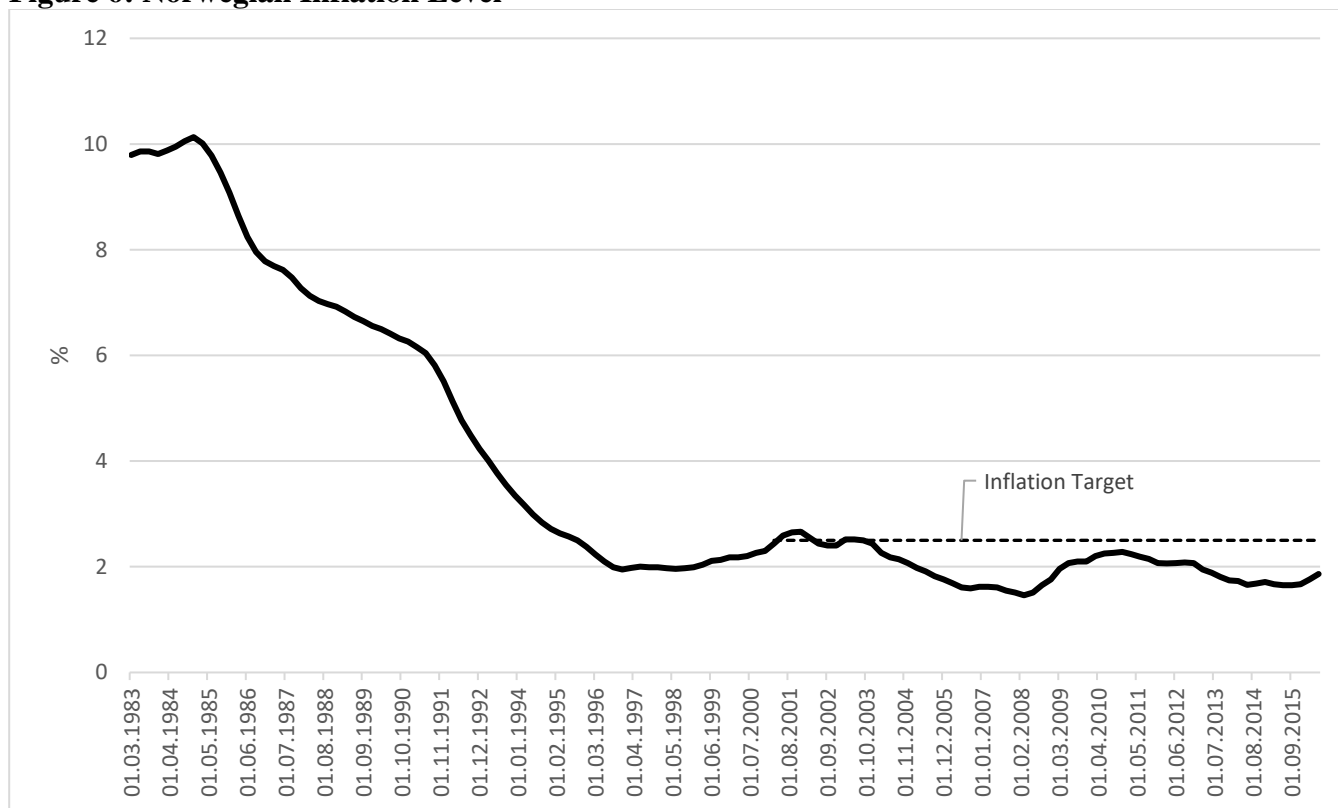
Figure 5: Price of Oil and Money



Note: The Norwegian krone (NOK) exchange rate is measured by the central bank's import-weighted exchange rate index (I-44), as shown on the left axis. A positive slope indicates a stronger NOK exchange rate. The price of oil is for Brent blend (USD/barrel), as shown on the right axis.

Sources: Thomson Reuters and Norges Bank, as collected in Norges Bank, op. cit., Chart 1.10.

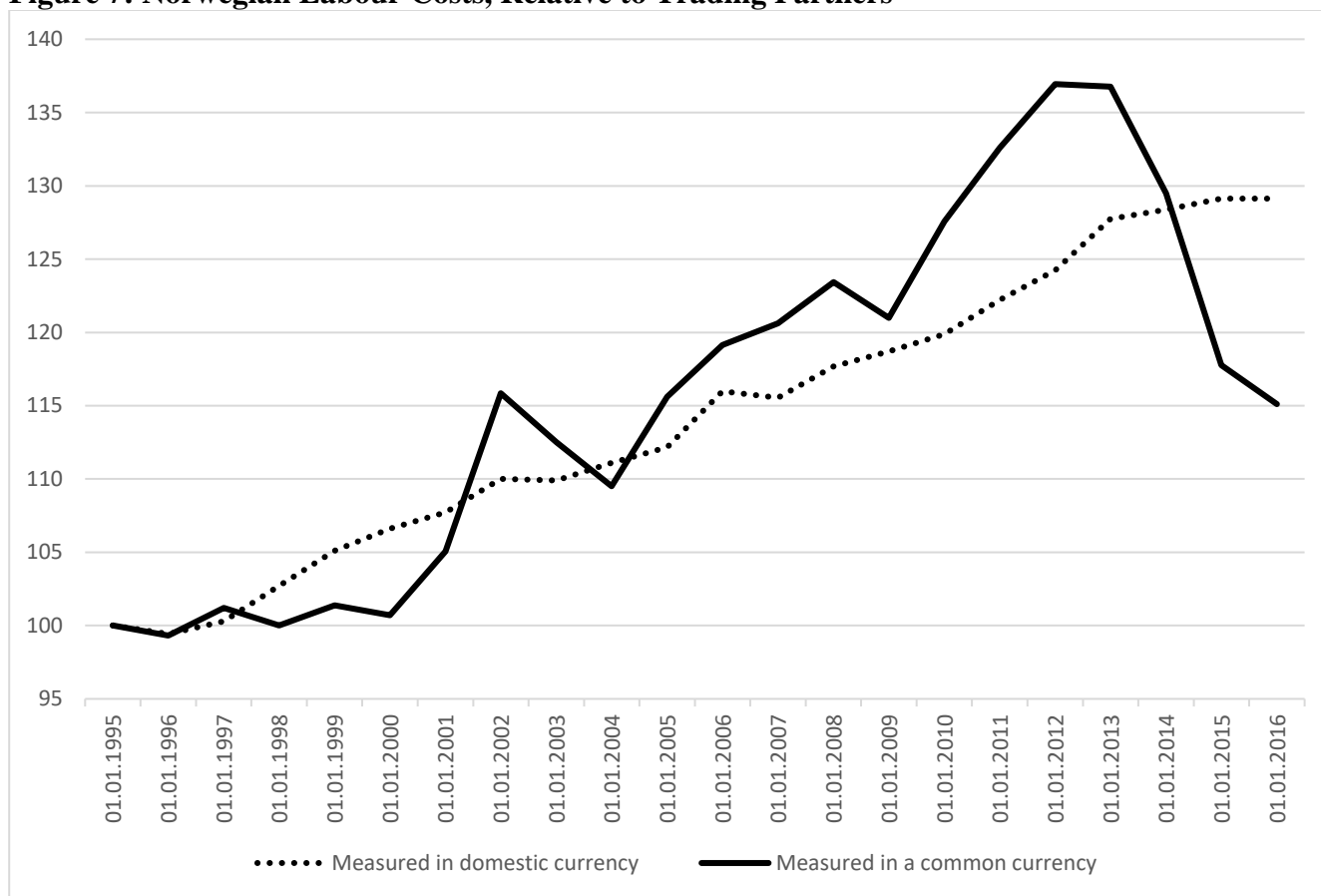
Figure 6: Norwegian Inflation Level



Note: CPI, 5-year moving average, four-quarter change, 1983Q1-2016Q2

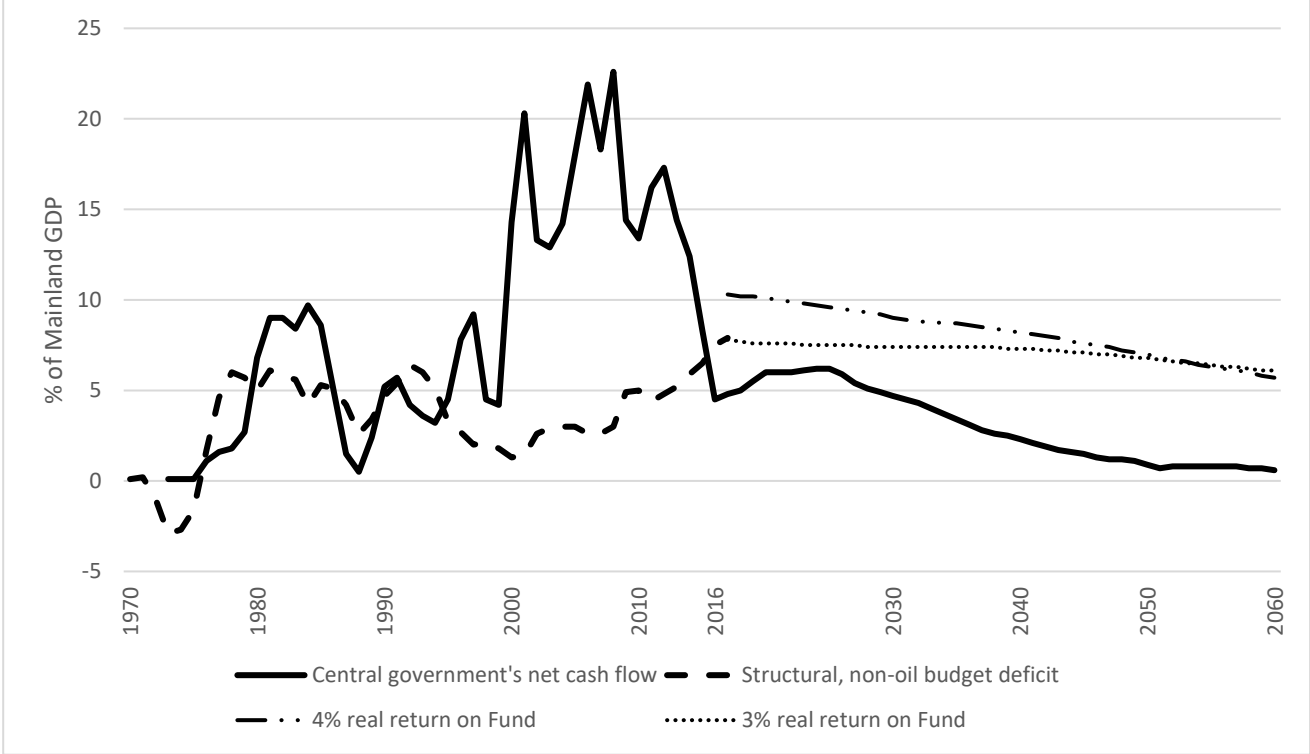
Sources: Statistics Norway and Norges Bank, as collected in Norges Bank, op. cit., Chart 2.1.

Figure 7: Norwegian Labour Costs, Relative to Trading Partners



Sources: Norwegian Technical Calculation Committee for Wage Settlements (TBU), Statistics Norway and Norges Bank, as collected in Norges Bank, op. cit., Chart 2.17.

Figure 8: Government Net Cash Flow from Petroleum Activities



Note: The state's net cash flow from the petroleum sector; the structural, non-oil deficit and different return scenarios (3%, 4%) on the Government Pension Fund Global (GPF). Per cent of trend-GDP for mainland Norway.

Source: Finance Ministry, op cit., 15.