



ELSEVIER

Contents lists available at ScienceDirect

Energy Policy

journal homepage: www.elsevier.com/locate/enpol

Russian petroleum tax policy – Continuous maneuvering in rocky waters



Daniel Fjaertoft, Lars Petter Lunden*

Sigra Group, Akersgata 1, 0158 Oslo, Norway

HIGHLIGHTS

- Petroleum tax revenue is the Russian government's largest single source of revenue.
- Tax legislation has not maximized government revenue from the petroleum industry.
- The December 2014 tax reform is just one in a long line of reforms and amendments.
- Russian petroleum taxation is set to change perpetually.

ARTICLE INFO

Article history:

Received 11 June 2015

Received in revised form

26 September 2015

Accepted 29 September 2015

Keywords:

Russia

Tax policy

Petroleum

Government revenue

ABSTRACT

This article maps and analyses petroleum taxation policy in Russia to investigate the extent to which it reaches the goal of maximizing government revenue from new petroleum field developments. Expected cash flows from four real-world fields in Russia are modeled in four real-world tax regimes in an attempt to determine whether the so-called 'tax maneuver' of December 2014 helps the government to reach its goal. Russia's tax policy is further analyzed in terms of the desirable tax system design features of simplicity, flexibility, stability and competitiveness. The article concludes that the changes to the tax system introduced additional incentives for field developments but failed both to improve tax system design *per se* and to maximize government tax revenue.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

As of December 2014, Russia has introduced yet another amendment to its petroleum taxation legislation. In what has come to be known as the 'tax maneuver', the mineral extraction tax was set to be increased and the export tax reduced. In addition, a large number of existing geographical exemptions from the mineral extraction tax have been replaced by coefficients that reduce the MET payable on a field-by-field basis, while a new formula reduced export taxes for a range of fields.

At first glance the reform appears to rectify two major deficiencies of Russian petroleum taxation. First, it addresses the destructive optimization in the refinery sector by creating incentives for refining crude to inferior petroleum products. Second, it seemingly signals an end to the field-by-field haggling for tax holidays that has complicated petroleum sector development for years.

The objective of this article is twofold. First, Russian petroleum

taxation policy is reviewed and analyzed in terms of its strengths and weaknesses. Second, we ask whether Russian petroleum taxation has now found its final form, or whether the latest step is still deficient, carrying the seeds of yet another reform in the near future.

The analysis is conducted by investigating research questions such as: are tax breaks necessary to induce investment? Does field-by-field taxation maximize government revenue? Have the adjustments to taxation policy jeopardized the tax system's initial virtues of simplicity, low risk, and early timing of government revenue? Could Russia gain in terms of total tax revenue by choosing another design for petroleum taxation?

To shed light on these questions we use a standard cash flow model to analyze four real Russian field developments under four different tax systems. Two tax systems reflect current Russian taxation, of which the first builds on the current base-case without field-by-field MET calculation and reduced Export Taxes (Russia General), and the second applies field-by-field MET and reduced export taxes (Russia Individual). The Sakhalin-II PSA and Norwegian Petroleum Taxation are included as points of reference for an assessment of current Russian petroleum taxation in relation to the design criteria: competitiveness, simplicity, flexibility and

* Corresponding author.

E-mail address: lars.lunden@sigragroup.com (L.P. Lunden).

stability (Tordo, 2007; Goldsworthy and Zakharova, 2010).

The following section discusses resource taxation from the perspective of economic theory and thereafter describes Russian practice. Section 3 provides necessary field data and information about taxation while Section 4 presents results. Section 5 discusses the results, and Section 6 presents the conclusions.

2. Principles and practices of resource taxation in Russia

An informed analysis of Russia's taxation policy must be founded on the theory of optimal petroleum resource taxation. Therefore, we provide a brief summary of key principles of natural resource taxation before Russia's tax policies are described.

Petroleum extraction, like other extractive industries, often generates economic rent, i.e., income above the profits that can be expected from the same capital investments in other industries at the same risk. For this reason, the petroleum industry is generally subject to specific taxation and can be a significant source of income for the government. In order to maximize total government revenue from the industry, the government should collect resource rent while leaving the economic profit to the companies in order to incentivize developing the country's resource base.

According to economic theory, optimal taxation policies have a non-distortive, or neutral, effect on investment decisions by keeping relative profitability estimates such as the internal rate of return the same before and after tax (Sandmo, 1989). The neutrality condition implies that the tax system does not undermine marginally profitable projects, and at the same time does not make uneconomic investments profitable by stimulating projects that would not have been developed in a tax-free world. Accordingly, neutrality in the tax system protects against both over- and under-investment (Lund, 2002).

Since rent is pure surplus, it can theoretically be taxed without creating distortions, thereby maximizing total revenue for the government by allowing for development of all economically viable projects. However, collecting the full resource rent without creating distortions is often difficult in practice. For example, Lloyd (1984) argues that taxation must be project-specific to maximize tax receipts since the nature and magnitude of risks vary from project to project. However, this approach requires the government to possess sufficient information *ex-ante* to justly discriminate between projects, which may be challenging, particularly since a project's true nature is more often revealed only *ex-post*.

In practice, countries' choice of tax system is often a matter of political preferences. Impatient countries prefer so-called front-end loaded tax regimes, i.e., systems with early tax revenue collection most often at the cost of total tax revenue, whereas patient

countries can increase total tax receipts by utilizing back-end loaded tax systems (Smith, 2012). Risk-averse countries tend to prefer more predictable revenue through signature bonuses and gross income taxes, for example. But the government can increase its total tax receipts if it accepts higher risk and greater revenue volatility by leaning on profit-based tax systems, for example Tordo (2007) and Goldsworthy and Zakharova (2010) point out that in addition to appropriating resource rent, governments may give preference to job creation, technology transfer as well as local infrastructure development. See Table 1 for an inventory of typical tax mechanisms available to the host government.

Furthermore, countries with limited institutional capacity are more prone to gross taxes due to their apparent simplicity from a collection perspective (Lovas and Osmundsen, 2009). However, as pointed out by Goldsworthy and Zakharova (2010), administering gross income taxation may be more challenging than at first glance since companies and governments attempt to re-negotiate conditions to reflect changing production costs and oil prices, thus complicating tax administration down the road. Lovas and Osmundsen (2009) find that the government's strive for simplicity in fact leads to an administrative complexity of the fiscal system that is inversely proportional to the government's administrative capacity.

2.1. Petroleum taxation in Russia

Russia's petroleum tax system has undergone numerous changes since it was introduced following the demise of the Soviet Union. The 1990s were characterized by field-specific taxation and poor revenue collection abilities (Dyachkova, 2011). Moreover, imperfect cost monitoring, a symptom of the country's institutional weakness at the time, allowed companies to report high costs with resulting low taxable profits, which lead to low tax receipts in the 1990s (Kryukov and Moe, 2007).

In order to increase tax revenue, the government reduced the number of taxes levied and shifted the tax burden to 'easy to monitor' gross income taxes in the early 2000s. The main elements of the new system were the mineral extraction tax (a royalty) and export taxes, while other elements such as the standard company profit tax, property tax and lease auctions were also maintained. The new system was in line with theory stating the rationality of combining net and gross taxation in environments with limited capacity to accurately monitor costs (Lund, 2002).

The initial simplification enabled the Russian state to increase tax receipts, but due to the inevitable distortionary effects of gross taxation, Russian authorities have been forced to introduce an increasing variety of tax breaks and custom-made adjustments to incentivize investments in the petroleum industry (Dyachkova, 2011; Gustafson, 2012; Lunden, 2014). This tendency has

Table 1
Tax tool inventory.

Tax	Description	Advantages	Disadvantages
Royalty (Gross Tax)	Taxes per unit of production, percent of production or percent of gross revenue.	Easy to monitor and collect	Regressive and insensitive to costs they quickly distort investment decisions.
Profit Taxes	Tax on net revenue	Less distortionary	More complex to manage – need cost monitoring capabilities
Rent Taxation	Taxation commences after investor has received return on capital	Neutral and hence non-distortionary	Difficult to approximate rent – too much risk shifted toward governments
Government Equity	State companies participate in projects on par with private companies	Full offset for windfall revenue and possibly enhanced local revenue creation	Conflicts of interest as states become both regulators and benefactors
Export Taxes	Levy on exported products	Easy to administer	Creates foreign/domestic price wedges (subsidies) and insensitive to costs (a gross tax)
Import Duties	Levy on imported products.	Early government revenue	Increased project cost and risk for companies
Other Taxes	Signature and production bonuses, property taxes, VAT etc.	Similar to Import Duties	Similar to Export Taxes

accelerated as production decline in heritage fields has necessitated the employment of a more diverse and costly-to-develop resource base. Consequently, a myriad of exceptions and frequent alterations make a system that was meant to be simple increasingly complex and unstable; according to [Angevine and Cervantes \(2011\)](#), Russia is considered one of the 10 least attractive regions for investment in petroleum projects worldwide.

The question therefore arises whether Russia has chosen the right tools to tax its petroleum resources. The increasing reliance on tax breaks undermines the simplicity argument of gross taxes while also reducing tax receipts; Russia could perhaps benefit from another tax system design. Introducing profit-based and more neutral taxation mechanisms has been a topic of regular discussion. A lack of confidence in the state's ability to monitor costs, however, has induced the influential Ministry of Finance to insist on gross income taxation for fear of sudden revenue decline in a budget that has become increasingly dependent on petroleum revenues ([Dyachkova, 2011](#); [Kryukov and Moe, 2007](#)). Nevertheless, especially new field developments could benefit from another taxation design as they have limited influence on current budget revenue.

The authorities nevertheless continue to fine-tune Russia's gross-based system with amendments and reforms. A reference point in this fast changing environment can be difficult to find, but for the ensuing analysis, Russian petroleum taxation after the major amendment (i.e., the 'tax maneuver' of December 2014) is utilized as a base taxation level.

The following section provides a brief overview of some of the most important of the numerous changes to Russian petroleum taxation. As of March 2015, the tax system consisted of the following main elements:

1. Mineral Extraction Tax (MET) regulated by Chapter 26 in the [Tax Code \(2014\)](#).
2. Export Taxes regulated by the [Law on Customs Duties \(2014\)](#).
3. License auction payments regulated by the [Law on Subsoil Resources \(2014\)](#).

2.2. MET

At its inception in 2001, the mineral extraction tax started as a 16.5 percent ad-valorem tax on all hydrocarbons ([Tax Code, 2001](#)). In 2003, it was increased to 17.5 percent for condensate and turned into 147 rubles per mcm specific tax for gas ([Tax Code, 2003](#)). In 2006, the MET on oil was changed into a specific tax, but adjusted by formula in response to the changes in the export price and field depletion factors ([Tax Code, 2006](#)). In 2010, MET rates for oil and gas started to increase, and by the end of 2011, condensate had followed suit and was subject to a specific tax of 556 rubles per tonne ([Tax Code, 2010, 2011](#)). At that time, the base oil MET rate had risen to 446 rubles per tonne, albeit adjustable to account for field size. The gas MET had risen to 506 rubles per mcm, but non-Gazprom producers were granted slightly more than a 50% rebate ([Tax Code, 2011](#)). In mid-2013, base rates for gas and oil were increased, while two other factors were added to the oil MET so it was now to be adjusted for price, field depletion, field size, extraction difficulty and deposit-level depletion ([Tax Code, 2013a](#)). Several months later, ad-valorem MET rates were re-introduced, albeit only for offshore fields ([Federal Law, 2013](#)). At the end of 2013, the condensate MET for 2013 was increased to 590 rubles per tonne and prescribed to rise further in years to come ([Tax Code, 2013b](#)).

At the end of 2014, further alterations were made, and MET for oil, condensate and gas were now specific taxes subject to a range of formulae-based adjustments ([Tax Code, 2014](#)). The latest innovations implied that MET rates for each product had to be

calculated for each field individually. The period of continuously fine-tuning the MET rates and formulas also saw a range of MET holidays come and go. Specifically, the following categories presumed a zero percent MET for varying time periods and production volume limits. These tax breaks were all introduced and received great attention in the period 2008–2011 (see e.g., [Lunden and Fjaertoft \(2013\)](#)):

1. The East Siberian holidays.
2. The offshore holidays for fields north of the Polar Circle (including the Prirazlomnoe holiday).
3. The offshore holiday for Azov and Caspian fields.
4. The holidays for fields in the Nenets and Yamal-Nenets Autonomous Regions
5. The holidays for oil from Black and Okhotsk Sea fields and fields north of 65 N in the Yamal-Nenets Autonomous Region.

The tax holidays were nonetheless annulled at the end of 2014 as Russia shifted to the new formulae for calculating MET. However, zero-MET was not completely discarded and still applies to gas and condensate related to production of LNG on Yamal, high-viscous oil, re-injected gas as well as tight-oil from the Bazhenov, Abalkansk and Khadumsk formations.

2.3. Export tax

Government resolutions initially regulated the crude oil export tax, which coincides with the tax on condensate. However, in 2003, a formula was introduced linking the export tax to export prices by law. Several minor adjustments were made to the formula, but for a decade, the underlying idea remained the same, as did the rate applicable to oil from almost all fields. Starting in 2009, export tax holidays were granted on a field-by-field basis by government resolution. However, the arrangement soon proved to be unstable and the flagship Vankor field, for instance, was first granted, and then deprived of zero-tax privileges ([Lunden, 2014](#)). When new offshore fields, were exempted from export taxes in 2012, this privilege was enshrined in law.

Despite the introduction of tax breaks in the Law on Customs Taxes, the relevance of government resolution-based breaks has not been reduced. Rather, in its wording the Law on Customs Taxes defines its rates and formulae as upper limits for export taxes that the government may set at its own discretion. In March 2013, the government issued an order that reaffirmed a list of fields eligible for special export tax calculations, but it was still unclear for which special export tax calculations the fields were eligible. The issue was addressed in September the same year when the government issued a resolution stating that export taxes should be adjusted to accommodate an investor internal rate of return of 16.3 percent and apparently that the companies themselves should propose what formulae to apply ([Government Resolution 846, 2013](#)).

This variety stands in contrast to the export tax on gas, which has remained stable at 30 percent, not counting the Yamal LNG project and other potential LNG projects. Special purpose export tax relief for the Yamal LNG project was arranged by government resolution, but not related to product category and specific fields as had been the case for oil fields. [Government Resolution 1029 \(2013\)](#) introduced zero export tax for LNG and condensate with particular mass and sulfur content.

In 2014, further amendments were made to the Law on Customs Duties offering reduced export tax to high-viscous oil, Eastern Siberia, offshore fields and tail-end production in Western Siberia.

In sum, the following general picture has emerged. The [Tax Code \(2014\)](#) and [Law on Customs Duties \(2014\)](#) provide high-viscous oil, all offshore fields, fields in Nenets and Yamal-Nenets

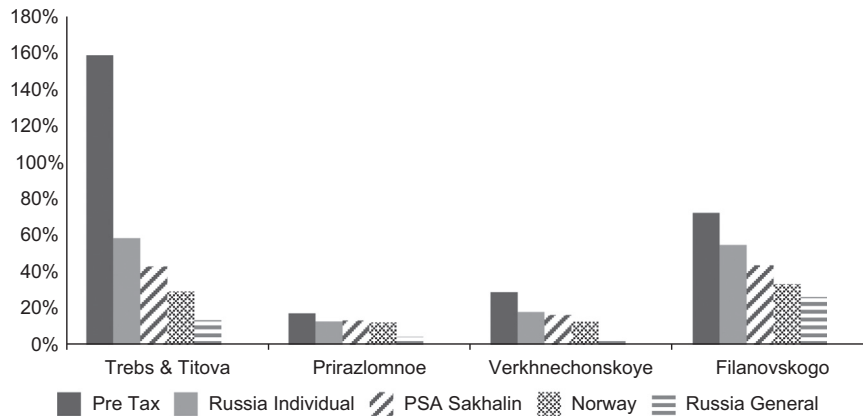


Fig. 1. Field IRR Across Tax Regimes at USD 80/bbl.

Autonomous Regions, Eastern Siberia and the Far East with MET and export tax rebates in one form or another. In addition, tight oil has received MET rebates, and tail-end production in the Tyumen formation has received export tax relief. A total of 24 fields have been announced eligible to apply for special (even more reduced) export taxes; seven of these have been allocated oil volumes that can be exported at reduced rates. However, at which rates the respective volumes can be exported is not openly available and current state of affairs on this point is only indirectly accessible through media reports, which often point in different directions. Appendix 2 gives an overview of MET and export tax regulation as of the end of 2014.

3. Model description and field overview

We assess tax system performance by using the Russian Tax Model (RTM) to analyze a portfolio of four real Russian field developments under four different tax scenarios. The RTM is a simple cash flow model that yields net present values (NPV), internal rates of return (IRR) as well as break-even prices and revenue distribution between the host government and project investor for a range of tax system scenarios. Using real field development data, we assume fixed time frames and field development concepts and thereby employ what Smith (2012) brands a scenario approach; a widely used tool for comparative tax analysis (see for example, Kemp (1992), Bacon and Kojima (2008), and Smith (1997)).

The scenario approach's disadvantage is that it does not take into account how companies would react under different tax regimes. The field developments presented in this paper have been planned and realized by companies to fit the current context of the real world, i.e., under the prevailing taxation policies applicable to the relevant fields. However, a company could very well have opted for a different field development plan under another tax regime. In fact, the behavioral response to changes in taxation changes is an integral part of analysis of tax policy and tax reform (Poterba, 2010). Hence, investment size and timing, production start, enhanced oil recovery investments and field abandonment decisions all depend on taxation and when tax assumptions change these decisions should be altered accordingly. However, while static field development plans may be subject to justified theoretical critique, their alternative, dynamic modeling is often accused of lacking practical application. More advanced models developed by e.g., Helmi-Oskoui, et al. (1992) offer theoretical insight, but at times produce results that are difficult to interpret and diverge from real world experience (Smith, 2012).

Importantly, since tax changes may alter optimal field development schemes, dynamic modeling convolutes the direct effects

of the tax changes themselves. Since our objective is to evaluate the performance of the taxation systems *per se*, we give preference to analyzing how petroleum fields with fixed development paths perform under various taxation assumptions rather than how field development paths could be optimized as taxation is altered.

The quality of the analysis necessarily reflects the quality of underlying data. Although crude information on gross production volumes and cost levels can be found, detailed timing of costs and production has not always been readily available. A number of assumptions have therefore necessarily been made and are listed in Section 3.1 below.

The multitude of applicable adjustment coefficients implies that taxation has to be calculated for each field and the potential number of taxation categories may be infinite. In this analysis, fields have been chosen for analysis in an attempt to cover important traits of the tax rebate categories and capture how these affect field economy compared to a baseline taxation scenario. The four following cases have been selected:

- Trebs and Titov represent two fields that constitute one large combined project that has received MET and export tax reductions based on its location in the Nenets Autonomous Area.
- Prirazlomnoe has received MET and export tax reductions as an Arctic offshore field.
- Verkhnechonskoe has received MET and export tax reductions as an Eastern Siberian field.
- Filanovskoe has received MET and export tax reductions as an offshore field in the Caspian Sea.

The selected fields therefore allow comparison of two onshore and two offshore oil fields, but the analysis lacks high-viscous and tight oil projects. However, project development within these categories has not yet progressed enough for cost and production estimates to appear in public sources, preventing their inclusion.

3.1. Field overview and tax assumptions

Fig. 1 gives an overview of the fields included in this analysis and MET and Export Tax modeling assumptions. Each field is licensed to a different company, which allows for differences in cost efficiency as well as tax break lobbying power. They are located onshore (Trebs and Titov, Verkhnechonskoe) as well as offshore (Prirazlomnoe and Filanovskoe) and they are also of different size (ranging from 539 to 3095 BOE).

Production and cost data, as well as their time distribution profiles, are gathered from open sources. With a few exceptions, information has been drawn from financial reports, presentations and other material published by license holders. In the few cases

Table 2

Field overview and input data. Sources: (Lunden and Fjaertoft, 2014), (Lukoil, 2012), (Rosneft, 2015), (Neftyaniki, 2015), (Bashneft, 2012a), (Bashneft, 2012b), (Vesti Finance, 2014), (TNK-BP, 2012).

Variable/Field	Prirazlomnoe	Trebsa and Titiova	Filanovskogo	Verkhnechonskoe
Product	Oil	Oil	Oil/Gas	Oil
Location	Pechora Sea	Nenets Autonomous Area	Caspian Sea	Irkutsk Oblast
Operator	GP-N-Shelf	Bashneft & Lukoil	Lukoil	Rosneft
Discovery	1989	1987/1989	2005	1978
Start project development	2000 (for calculation purposes)	2011	2010	2003
Start production	2013	2013	2015	2008
Reserves/Resources	OIL 72 MTOE (ABC1,2)	OIL 140.1 MTOE (ABC1,2)/732 MBOE (PRMS)	OIL 153 MTOE+GAS 32 BCM (ABC1,2)	OIL 1351 MBOE (PRMS)+GAS 95 BCM (ABC1,2)
Plateau production/year	6 MTOE	4.9 MTOE	6 MTOE	7.8 MTOE
CAPEX	7 BUSD	7.9 BUSD	125 BRUB=4 BUSD @ RUB/USD=30	5 BUSD
MET	Max field-specific reduction on standard for 8 years. Location coefficient=0 up to 35 MT or 2021	Max field-specific reduction on standard for 6 years. Location coefficient=0 up to 15 MT or 2021	15 percent new field offshore rate for 7 years. Then standard.	Standard MET
EXPORT TAX	Reduced rate by formula in Law on Customs Duties.	Reduced rate by formula in Law on Customs Duties	Offshore holiday. 0 percent up to 2031. Then reduced rate by formula in Law on Customs Duties.	Reduced rate by formula in Law on Customs Duties.

where primary sources have not provided necessary information, we have relied on media reports. Data for Prirazlomnoe draw on (Lunden and Fjaertoft, 2014).

All four fields are analyzed within the four tax scenarios presented in Appendix 1. In this table the scenario 'Russia General' refers to the current base case MET and Export Tax regimes, i.e., without any field induced reductions. The scenario 'Russia Individual' introduces field-by-field tax calculation depending on field characteristics. In line with the discussion of Russian petroleum taxation above, this scenario reflects actual taxation practice in Russia today, whereas the former reflects what taxation would have been in the absence of field-specific adjustments. By way of comparison, the Sakhalin-II PSA regime is included based on the exposition of Rutledge (2004) along with the Norwegian system for petroleum taxation.

Field analysis was conducted along different price and cost scenarios to compare each tax system's reaction to volatility along these parameters. Throughout, a 12 percent rate has been applied when discounting cash flows. An overview of fields and input data is provided in Table 2.

4. Model results

4.1. Tax effects on profitability

Fig. 1 shows each field's IRR at USD 80/bbl. None of the tax regimes leads to an IRR above pre-tax levels, implying that they do not have a subsidizing effect on field economics.¹

'Russia General' yields the lowest IRRs, which is in line with expectations and reflects the challenges related to raising investments in the current base-case gross tax system. At USD 80/bbl. both Prirazlomnoe and Verkhnechonskoe fail to yield IRRs (4 and 2 percent, respectively) above the 12 percent hurdle rate despite positive pre-tax economics (17 and 29 percent pre-tax IRR, respectively). More so, Trebs and Titov, notwithstanding a solid 158 percent pre-tax IRR, reaches an only marginally sufficient 13 percent IRR post-tax. When individual MET and Export Tax adjustments are introduced, however, 'Russia Individual' yields the

highest post-tax IRR for all fields. The Sakhalin-II PSA yields somewhat higher IRRs compared to Norwegian Petroleum Taxation.

4.2. Government take

While field-by-field taxation seemingly succeeds in stimulating investments by increasing field profitability for investors compared to base case taxation, Fig. 2 shows that this achievement comes at the price of reduced government take. 'Russia General' shows the highest government take, but as mentioned above fails to incentivize Prirazlomnoe and Verkhnechonskoe and leaves Trebs and Titov on the margin. 'Russia Individual', on the other hand, exhibits the lowest rate of government take, except for Prirazlomnoe, which due to a low pre-tax IRR never reaches the Sakhalin-II PSA profit oil stage. Norwegian Petroleum Taxation yields a stable government take on par with the Sakhalin-II PSA for all fields except Prirazlomnoe, where the latter performs poorly as mentioned above.

4.3. Timing of government revenue

Fig. 3 shows total government tax revenue for all four fields over the time period analyzed in the model. In 'Russia General', 'Russia Individual' and 'PSA Sakhalin', revenue is initially zero and then starts to climb as fields come on-stream. 'Norway' is initially negative due to consolidation opportunities and a long investment period for Prirazlomnoe before production starts (2002–2013).

In line with Fig. 2, 'Russia Individual' captures far less revenue than its peer tax systems. Moreover, government revenue is delayed and reduced compared to 'Russia General' due to time contingent tax reductions. 'Sakhalin PSA' yields first higher income than 'Russia Individual', then temporarily lower income before reaching substantially higher income levels. 'Russia General' shows the highest government income. However, as mentioned above, tax income from 'Russia General' is hypothetical as two fields would not be developed under this tax scenario due to negative project economics (see Table 3). Of the four tax scenarios, 'Norway' yields the highest total income. In addition, it also captures revenue earlier than 'Russia Individual', although profit-based systems are considered to accommodate more patient host governments and gross taxation to be a tool to secure early government revenue. Thus, Fig. 3, shows how the corrective measures in 'Russia Individual' undermine key merits of gross taxation.

¹ For a discussion of tax subsidies and distortions see (Lund, 2002) as well as (Lunden and Fjaertoft, 2014) for the Russian context.

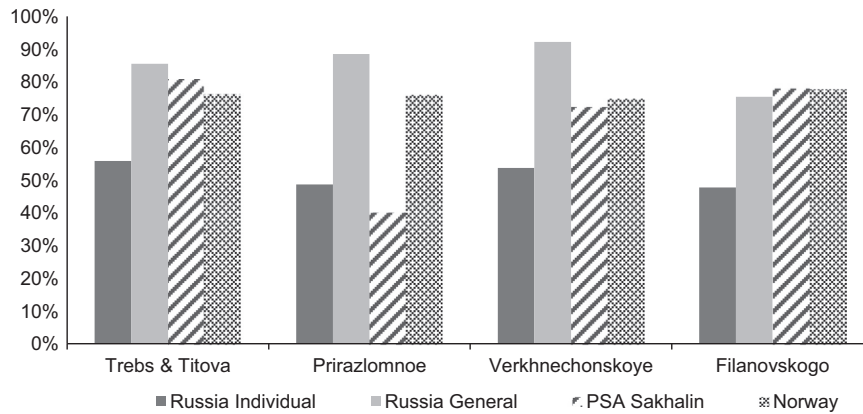


Fig. 2. Government take from specific fields across tax regimes at USD 80/bbl.

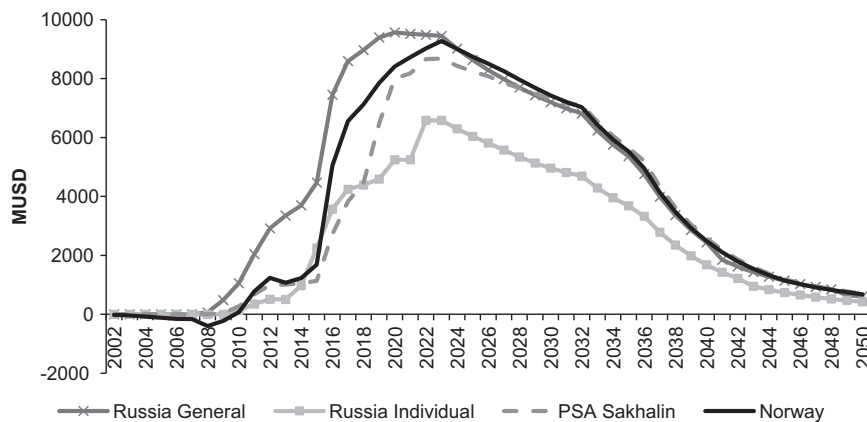


Fig. 3. Government revenue over time from the four projects.

Table 3
Economic fields per tax scenario.

	40	80	120
Russia individual	2	4	4
Russia general	1	2	2
PSA Sakhalin	2	4	4
Norway	2	4	4

4.4. Total tax receipts and price flexibility

Fig. 4 shows total government tax revenue from all fields that are economic (have a positive NPV) within each tax system for three different oil price assumptions. While 'Russia General' nominally levies a higher tax burden, it fails to incentivize as many fields as the three other tax scenarios. Consequently, due to the limited tax burden of 'Russia Individual' (Fig. 2), 'PSA Sakhalin' and 'Norway' outperform both 'Russia General' and 'Russia Individual' for all the price scenarios included in the analysis.

In other words, had the current gross income tax system been replaced with a PSA analogous to Sakhalin-II arrangement, total tax receipts to the Russian government would have been higher while still supporting development of the same projects. That the Sakhalin PSA over time would be a better solution is perhaps a surprising, given the amount of criticism it has received in Russia on being too generous for the companies. However, also for Sakhalin PSA there could potentially be scope for increasing tax

receipts, by for example eliminating the guaranteed-return clauses in profit oil provision (e.g. Rutledge (2004)).

Furthermore, the different tax scenarios display different ability to pick up windfall income from price increases. The linear trend lines for 'Russia Individual' and 'Sakhalin PSA' in Fig. 4 shows how for comparative price increases the latter system displays greater progressivity and facilitates a greater increase in tax receipts.

Table 3 shows how many fields are economic per tax scenario. 'Russia Individual', 'Russia General' and 'PSA Sakhalin' all incentivize the same number of field developments at the various price assumptions while 'Russia General' implies only one field development evaluated at USD 40 per barrel and two fields in the other scenarios

5. Assessing tax policy performance

This article asked whether the adjustments to Russian petroleum taxation made toward the end of 2014 are an adequate response to Russian petroleum taxation's challenge of meeting criteria for efficient taxation design: simplicity, flexibility, stability and competitiveness.

5.1. Simplicity

Petroleum taxation in Russia still relies on gross income taxation, which preserves the simplicity of calculating how much tax is due once the respective tax rates have been determined. However,

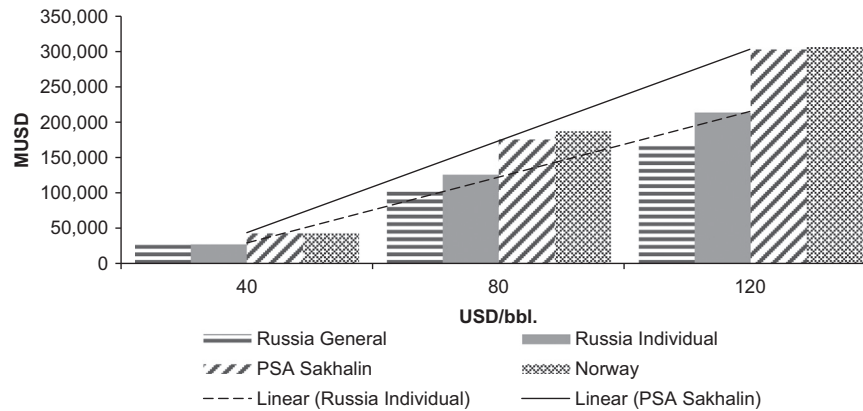


Fig. 4. Government revenue given positive NPV.

because of the field-by-field approach to tax exemptions, complexity in Russian taxation is increasing and it has become increasingly cumbersome to determine the correct rate. Moreover, the large number of exemptions as well as the large variation in the form of these exemptions implies that one tax regime and profitability calculation has limited transfer value from one field to another. In particular, the authorities, who are required to monitor all fields, have an increasingly challenging task of both keeping track of payments and predicting future tax revenue for planning purposes. From a company perspective, the field-by-field approach to tax exemptions makes it hard to predict ultimate tax rates since negotiation for tax breaks has shown a tendency to intensify as a field approaches investment decision (as well as, for example in the case of Prirazlomnoe, even up to and beyond production start). In addition, it is challenging for the government to determine the 'right' tax rate, which has caused tax breaks to be issued once investments have been made and hence project costs finally determined (Prirazlomnoe) and export taxes readjusted after commencement of field development (Vankor). Amendments introduced toward the end of 2014 apparently try to integrate previous tax breaks in a coherent system, but determining a field's tax rate still has to be done field-by-field and chances are that changes will come in the future as well. In other words, numerous tax breaks and other tax maneuvers still undermine the simplicity of gross income taxation as the main virtue of the 2001 petroleum tax reform.

5.2. Flexibility

A petroleum tax system's flexibility refers to its ability to capture additional resource rent arising from improvements in project economics, for example as a result of oil price increases. If the tax system is sufficiently flexible, the majority of such windfall revenue will be accrued by the government. Transversely, the tax burden should not make a field unprofitable should prices drop. Current Russian petroleum taxation does incorporate oil-price dependent coefficients in both MET and Export Tax calculations and is therefore more flexible now, than when rates were flat.

However, the results above show that 'Russia General' is inflexible 'downward' in the sense that even at USD 120/bbl. only two out of four fields are developed. 'Russia Individual' allows the same number of field developments as 'Sakhalin PSA' and 'Norway', but captures rent at low prices and less of the additional income as prices increase.

'Russia Individual', moreover, postpones tax income through time and volume delimited tax reductions and thereby compromises the second most important virtue of gross taxation in addition to simplicity, i.e., securing early revenue for the

government. Gross taxation is a suitable tax collection tool for risk-averse and impatient governments and should collect revenue early and relatively independently of project profitability (costs and the oil price), albeit most often at the expense of total government revenue compared to what is feasible under profit-based taxation.

In contrast, field-by-field tax reductions in the 'Russia Individual' system cause revenues to come later than in 'Norway' and at lower levels than both 'Norway' and 'Sakhalin', which violates the rationality of the trade-off between lower revenue earlier versus higher revenue later in the petroleum project life-cycle. The (lower) revenue post-tax breaks is still relatively risk-free in terms of being less reliant on project profits than the two other systems, but since this revenue is collected late in the project lifecycle there is reason to question whether the Russian government could have fared better sharing more risk and collecting correspondingly more tax revenue through more flexible approaches, exemplified in this article by the Norwegian petroleum taxation and the existing production sharing agreement for Sakhalin II.

5.3. Stability

A stable fiscal framework is a key prerequisite for investments in petroleum development projects, characterized by high costs and long time horizons. Continuous reworking of the tax system gives Russia a low score on this measure. For example, from 2009 to 2011 alone there were 12 changes to Export Tax Legislation and 16 changes to MET legislation (Lunden, 2014). The process continues. Trebs and Titov, for example, had secured a zero MET tax break in 2012 (Bashneft, 2014a), but this was altered in the 2014 'tax maneuver' when several zero-tax categories were removed.

A potential investor, therefore, is very likely to experience changes in one of the key parameters influencing project economics over the project's lifetime.

Tax conditions are especially volatile prior to investment decisions when companies have to lobby for tax breaks in order to secure profitable project development conditions. The resulting field-by-field taxation in place today shows that many Russian companies have been successful in securing beneficial taxation terms, but this comes at the expense of the system's stability, and *per se* lowers the attractiveness of potential petroleum development investments necessitating even lower tax levels to stimulate investments.

5.4. Competitiveness

Competitiveness of the tax system is a function of the tax burden and how it performs in terms of simplicity, flexibility and stability. The 2014 amendments certainly provide a comparatively

low tax burden. MET and Export Tax reductions compared to base case taxation are prescribed for all fields in the analysis, which increases their post-tax IRR well above the levels achieved by the reference tax systems. However, competitiveness is increased only at first glance.

Limited flexibility in the current system and a lower than needed tax burden suggest further changes are due, undermining the system's stability. And indeed, already in March 2015, less than three months after the tax maneuver, the Ministry of Energy announced that it did provide no significant stimulus at USD 60/bbl. (Topalov, 2015) and simultaneously, Deputy PM Dvorkovich called for an experiment with profit-based taxation (Papchenko and Tretiakov, 2015). Moreover, even Rosneft CEO I. Sechin has called for more profit-based taxation, thereby signaling rarely observed joint interest between the government and the companies (Papchenkova, 2015). In May 2015, the Ministry of Energy announced it had approved applications for 12 fields owned by Rosneft, Gazprom Neft and Lukoil to transfer to a Financial Result Tax, including a zero MET rate and 60% tax rate based on the Financial Result. However, numerous such statements and initiatives both pro and con profit based taxation have been made by Russian ministries in the past and it remains to be seen whether these initiatives will be followed up by real change.

6. Conclusion and policy implications

With the 'tax maneuver', Russia's petroleum tax policy has again been partly reformed. This paper has analyzed the effect of the changes on four real petroleum field developments and assessed its performance in terms of the desired tax system characteristics of simplicity, flexibility, stability and competitiveness. We conclude that Russia's tax policy as of spring 2015 performs relatively poorly evaluated along these parameters.

In terms of the research questions stated in the introduction, we conclude that: (1) Tax breaks are necessary to induce investment; hence, both the 'tax maneuver' and numerous other tax breaks are warranted. (2) Field-by-field taxation could theoretically maximize government revenue in a world with perfect information, but Russia's chosen tax breaks do not seem to achieve this goal. (3) The taxation policy changes have jeopardized the tax system's initial virtues of simplicity and early timing of government revenue and (4) Russia could have increased total government tax revenue from new field developments by choosing the Sakhalin PSA model, or any other set up that would increase tax income relative to the set-up chosen.

In sum, we conclude that Russia could be better off by designing another taxation system for petroleum field developments. The success of a new tax system would nevertheless hinge on cost monitoring abilities and the accuracy by which costs have to be monitored in order to support a switch to profit-based taxation. This tradeoff will be explored in future research.

Acknowledgments

This article was financed by the Petrosam 2 Program of the Research Council of Norway (grant number 23237687).

Appendix

See Appendix Table A1 here.

Table A1
Tax scenario assumptions.

Variable/Tax Regime	Russia General	Russia Individual	Sakhalin-2 PSA	Norway
Profit/Cost Oil	NA	NA	No cap on cost oil. 10 percent government share in profit oil for two years after IRR = 17.5%, then 50% until IRR = 24.4%, after which 70%	NA
Royalty	NA	NA	6%	NA
MET	MET Rate x Price Coefficient	MET = (MET Rate x Price Coefficient) - Field Specifics Coefficient.	NA	NA
Export Tax	Basic Formula	Offshore MET for Filanovskogo for 7 years. Reduced Formula. Applicable to all 4 fields.	NA	NA
Tax Holidays	NA	0 MET for Verkhnechonskoe 2008-2014 & Pritazlommoe 2013.	NA	NA
Depreciation	8 years straight line	0 Export Tax for Filanovskogo until 2032.	8 years straight line	6 years straight line
Profit Tax	20 percent	8 years straight line	32 percent	27 percent
Resource Tax	NA	20 percent	NA	51 percent
Uplift	NA	NA	NA	5.5 percent of incurred CAPEX subtracted for four years from tax base for resource tax.

References

- Angevine, G., Cervantes, M., 2011. Global Petroleum Survey. Fraser Institute, Vancouver.
- Bacon, R., Kojima, M., 2008. Coping With Oil Price Volatility. The International Bank for Reconstruction and Development, Energy Sector Management Assistance Program. The World Bank Group.
- Bashneft, 2012a. Investor Presentation. (http://www.bashneft.ru/files/iblock/ebe/Bashneft_Investor%20presentation_September%202012.pdf) (accessed 17.03.15).
- Bashneft. (2012b). (http://www.google.no/url?sa=t&rct=j&q=&esrc=s&source=web&cad=4&cad=rja&uact=8&ved=0CDYQFjAD&url=ftp%3A%2F%2Fmail.yep-ru.com%2FDariya%2520-%2520Oil%2F%25D0%25E8%25F4.pptx&ei=zyQIVZ_mH8PaOMbygaAJ&usq=AFOjCNHYBok9nX4gB3jPVAMameAbfpj2w&bvm=bv.88198703.d.ZWU) (accessed 17.03.15).
- Dyachkova, E., 2011. Ekonomicheskoye regulirovaniye neftegazovoi otasley v post-sovetskoi Rossii, first ed.. Geoinfomark, Moscow.
- Federal Law No. 268. 2013. Edition of September 30.
- Goldsworthy, B., Zakharova, D., 2010. Evaluation of the Oil Fiscal Regime in Russia and Proposals for Reform. IMF Working Paper. WP/10/33.
- Gustafson, T., 2012. Wheel of Fortune. The Battle for Oil and Power in Russia. Harvard University Press, London.
- Government Resolution 1029. 2013. Edition of November 18.
- Government Resolution 846. 2013. Edition of September 26.
- Helmi-Oskoui, B., Narayanan, R., Glover, T., Lyon, K.S., 1992. Optimal extraction of petroleum resources: an empirical approach. *Resour. Energy* 14, 267–285.
- Kemp, A., 1992. Development risks and petroleum fiscal systems: a comparative study of the UK, Norway, Denmark, and the Netherlands. *Energy J.* 13 (3), 17–39.
- Kryukov, V., Moe, A., 2007. Russia's oil industry: risk aversion in a risk-prone environment. *Eurasian Geogr. Econ.* 48 (3), 341–357.
- Law on Customs Duties, 2014. Edition of November 24.
- Law on Subsoil Resources, 2014. Edition of December 29.
- Lloyd, P.J., 1984. Resource rent taxes. *Aust. Econ. Rev.* 66, 37–46.
- Lovas, K., Osmundsen, P., 2009. Trends and Trade-offs In Petroleum Tax Design. The United States Association For Energy Economics, Working Paper, 09–024.
- Lukoil, 2012. (http://www.lukoil.ru/press_6_5div__id_21_1id_23336_.html) (Accessed 18.03.15).
- Lund, D., 2002. Rent taxation when cost monitoring is imperfect. *Resour. Energy Econ.* 24, 221–228.
- Lunden, L.P., 2014. Rossiyskaya nalogovaya i litsionnaya politika v otnoshenii shelfovykh proektov. *EKO – Vseross. ekon. Zhurnal* 3 (2014), 30–55.
- Lunden, L.P., Fjaertoft, D., 2014. Government Support to Upstream Oil and Gas in Russia: How Subsidies Influence the Yamal LNG and Prirazlomnoe Projects. Global Subsidies Initiative, Geneva.
- Lunden, L., Fjaertoft, D., 2013. Russian Tax and License Policy – Evaluating the New Offshore Setup. *Russcasp Working Paper*.
- Neftyanki, 2015. (http://www.neftyanki.ru/oilfields/russian_oilfields/irkutskaja_oblast/verkhnechonskoe/49-1-0-178) (accessed 18.03.15).
- Papchenko, M., Tretiakov, P., 2015. Neftianikov zhdet nalogovy eksperiment. (<http://www.vedomosti.ru/newspaper/articles/2015/03/11/nalog-na-rezultat>) (accessed 10.03.15).
- Papchenkova, M., 2015. Igor Sechin predlagaet nalogovii eksperiment. (<http://www.vedomosti.ru/economics/articles/2015/05/07/igor-sechin-predlagaet-nalogovii-eksperiment>) (accessed 07.05.15).
- Poterba, J., 2010. The challenge of tax reform and expanding the tax base. *Econ. Soc. Rev.* 41 (2), 133–148.
- Rosneft, 2015. March (http://www.rosneft.ru/Upstream/ProductionAndDevelopment/eastern_siberia/verkhnechonskneftegaz/) (Accessed 18.03.15).
- Rutledge, I., 2004. The sakhalin-II PSA-A production non-sharing agreement. Sheffield Energy and Resources Information Services.
- Sandmo, A., 1989. Om nøytralitet i bedrifts- og kapitalbeskatningen. *Norges Offentlige Utredninger* 14, 319–344.
- Smith, J., 2012. Issues in Extractive Resource Taxation: A Review of Research Methods and Models. International Monetary Fund.
- Smith, J., 1997. Taxation and investment in Russian oil. *J. Energy Financ. Dev.* 2 (1), 5–23.
- Tax Code of the Russian Federation, 2001. Edition of December 31.
- Tax Code of the Russian Federation, 2003. Edition of December 8.
- Tax Code of the Russian Federation, 2006. Edition of December 30.
- Tax Code of the Russian Federation, 2010. Edition of December 28.
- Tax Code of the Russian Federation, 2011. Edition of December 6.
- Tax Code of the Russian Federation, 2013a. Edition of July 23.
- Tax Code of the Russian Federation, 2013b. Edition of December 28.
- Tax Code of the Russian Federation, 2014. Edition of December 29.
- TNK-BP, 2012. (<http://www.webcitation.org/66i40KSvj>) (Accessed 18.03.15).
- Topalov, A., 2015. Neft ne daet manevrirovat. (<http://www.gazeta.ru/business/2015/03/13/6589585.shtml>) (Accessed 25.03.15).
- Tordo, S., 2007. Fiscal Systems for Hydrocarbons: Design Issues. World Bank Working Papers. 123.
- Vesti Finance, 2014. Lukoil vlozhit 125 mlrd rub. v proekt Filanovskogo (<http://www.vestifinance.ru/articles/41935>) (Accessed 18.03.15).