An Economic Evaluation of Gold Mining Tax Regimes in the Kyrgyz Republic

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JUNE 2018

Natural Resource Governance Institute

Contents

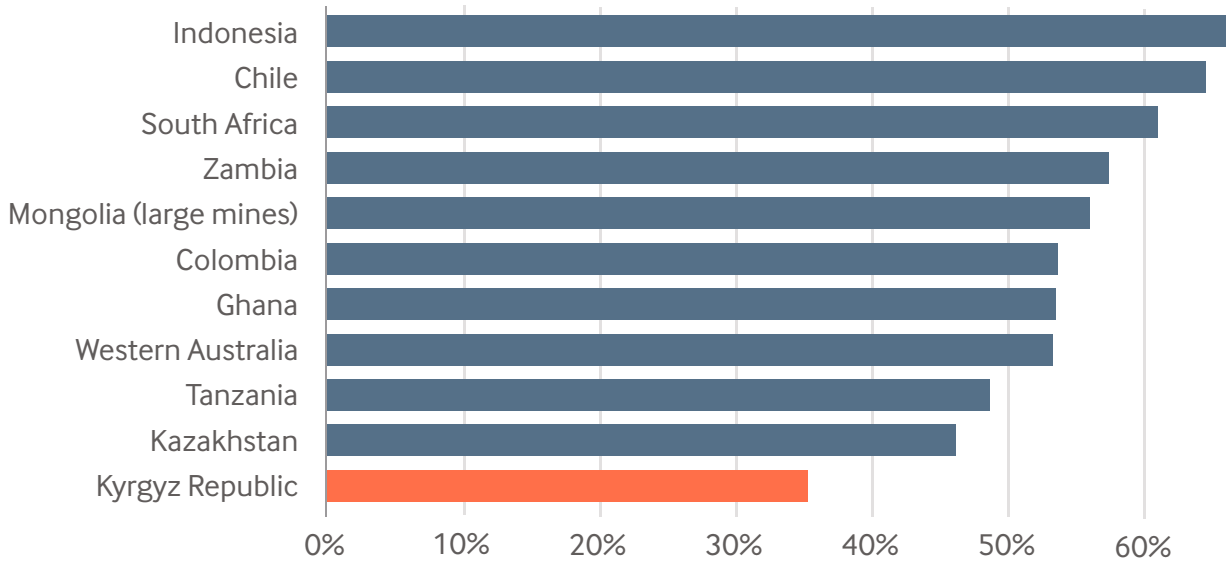
Summary

This report responds to requests from the government of the Kyrgyz Republic and follows the Draft Kyrgyz Republic Fiscal Policy Concept 2017-2040 which advises establishing a "tax system on the basis of rent using research on international leading practices in taxation" and the exploring "feasibility of applying a corporate income tax with levying windfall tax elements."

Without more investment in the mining industry, mineral production in the Kyrgyz Republic will decline over the next decade. New mines slated to start production soon might slow this decline, but the future strength of the industry is in doubt. The projected decline in gold production comes at a difficult time for the government. It is highly indebted, paying 17 percent of its national budget to creditors. Moreover, borrowing additional funds is likely to significantly increase borrowing costs. Generating more revenue from the mining industry can be an important way to strengthen the government's budget. However, if the government wishes to maintain tax revenues from mining, or preferably to increase them, the country needs a tax regime that attracts investment while generating revenue. For this purpose, I have evaluated a range of ideas offered by the government to reform the current gold mining tax regime.

The most significant barrier to attracting safe and efficient mining is probably not the Kyrgyz Republic's tax regime, but the high political risk and other difficulties of doing business in the country. In fact some evidence suggests that, as with many developing countries, these non-tax issues are such a concern that even setting a low tax rate on new investments would not be sufficient to compensate for them.[1] Addressing corruption and other governance problems are necessary conditions for many investors.

Average effective tax rate for a model mine with gold price of USD 1,300 per ounce and operating costs of USD 500 per ounce[2]



1 World Bank Group, *Global Investment Competitiveness Report 2017/2018: Foreign Investor Perspectives and Policy Implications* (2018); International Monetary Fund, *Options for Low Income Countries' Effective and Efficient Use of Tax Incentives for Investment* (2015).

2 Natural Resource Governance Institute, NRGI Gold Mining Tax Model v1, 2018.

Based on my financial modeling, which models the tax burden over the entire life of a hypothetical mine from development to closure, the tax burden on mines in the Kyrgyz Republic appears much less than on mining projects in other peer countries. (This result is based on the tax regime generally applicable to mining projects and not the tax regime specific to the Kumtor Gold Mine, which has a much heavier tax burden.)

This result suggests that the government has some room to increases taxes. However, careful design of the tax regime is still crucial. It is very easy to radically overshoot and charge a particularly high tax burden that forces projects to close, that is too difficult to administer or that fails to tax windfall profits. As such, alongside an evaluation of the current regime, I evaluated four ideas for reform suggested by the government.[3] In all but Regime B, for which the government has provided a specific proposal, I chose the tax design and rates. These therefore give an illustration of some options available to the government, with the opportunity for specific changes to any of these regimes if necessary. The five regime types that I evaluated are:

- **Regime A.** Current regime
- **Regime B.** Increase the revenue tax rates at each price threshold by three percentage points on mines that export concentrate.
- **Regime C.** Apply a corporate income tax of 10 percent to gold mining companies (corporate income tax is already applied to other mining companies).
- **Regime D.** Introduce a corporate income tax of 10 percent and replace the revenue tax with a windfall tax on operating profits (similar to the tax levied in Chile and Peru).
- **Regime E.** Replace the revenue tax with a variable rate profit tax, similar to the tax levied in South Africa on gold companies.

I evaluated these regimes against four criteria that represent common concerns of governments like the Kyrgyz Republic:

1. The simplicity of the tax bases used in the tax regime; significant in determining whether the tax authority can limit tax avoidance amongst companies.
2. The reliability to generate some level of revenue for the treasury even when company profits are low.
3. The ability to progressively tax companies; meaning to tax more as company costs decline and to tax less as costs increase. This is relevant to whether the tax regime will be attractive to a large range of investors with different types of mines, and will be able to tax windfall profits from low cost companies.
4. The ability to progressively tax companies as prices rise. This provides an indication that the tax regime will be attractive to investors in different economic conditions, and tax windfall profits when prices are high.

The third and fourth criteria both relate to different aspects of progressivity. This can be evaluated as one—in terms of the change in profits—however, here I treat progressivity separately with respect to costs and prices because variable rate gross sales taxes (like the revenue tax) behave differently in each case.

3 The first tax regime type is an official proposal by the government. The others form options based on the Draft Kyrgyz Republic Fiscal Policy Concept 2017-2040, article 11.1. XI. "Subsoil Use. Consider establishing the tax system on the basis of rent using research on international leading practices in taxation and production of a mine model. Also consider the feasibility of applying a corporate income tax with levying windfall tax elements."

Evaluation of Kyrgyz mining tax reform ideas against common tax design criteria

	1. Tax base simplicity	2. Government revenue reliability at low profit levels	3. Progressivity as costs change	4. Progressivity as prices change
A. Current regime	Very good	Poor	Poor	Fair
B. Current regime with revenue tax increase by 3%	Very good	Very good	Very poor	Fair
C. Current regime plus corporate income tax	Fair	Fair	Fair	Very good
D. Current regime less revenue tax, plus CIT and operating profit tax	Poor	Good	Very good	Good
E. Current regime less revenue tax, plus variable rate profit tax (South Africa profit tax)	Very poor	Very poor	Good	Poor

The results in the above table indicate that it is not possible to design a tax regime that performs well across all of these criteria. There are advantages and disadvantages in each of the ideas proposed. The government must therefore make a compromise in some areas. Choosing which areas to compromise on will depend on what the government believes is most important.

For example, Regime B, which increases the revenue tax by three percentage points, will still maintain a relatively simple tax regime for the State Tax Service (STS) to administer. Moreover, according to my modeling analysis, such a rise in the revenue tax rate would not overly burden mining projects with average costs ($500 per ounce) given current prices of $1,300. In fact, the burden would still be lower than most other mining countries I evaluated. However, the option's relative lack of progressivity as costs and prices change means that for companies with higher costs, or if gold prices fell, the tax burden would be particularly high. This might deter some investors, or encourage them to ask for substantial investment incentives from the government. It might also force mines to close operations earlier than they would otherwise plan. This could result in the government collecting much less revenue in the long-term.

Conversely, introducing a corporate income tax, as with Regimes C and D, brings a different trade-off for the government. Because measuring profit is generally more difficult than measuring gross sales, the STS may find that it does not collect as much corporate income tax as the statutory rate of 10 percent implies. In other words, it would increase the risk of companies avoiding the tax. The government could potentially reduce this risk by reviewing the current terms of the corporate income tax to close significant loopholes and ensuring that the STS can grow its capabilities. While the risk of tax avoidance might increase with a corporate income tax, levying a corporate income tax along with a windfall tax, as with Regime D, is likely to result in a tax regime that can progressively tax companies as their profits increase.

According to our evaluation Regime E would be least appropriate for the Kyrgyz Republic, because it would expose the government to significant tax abuse risk and would result in much less progressivity than the current regime.

If the government wants to increases taxes, I think Regime C, which levies a corporate profit tax while maintaining the revenue tax, is the most practical because both these taxes already exist in the country (a corporate income tax is already charged on non-gold mining companies). Therefore, increasing the tax rate by using a profits tax rather than the revenue tax is likely to be more acceptable to companies and is consequently more likely to be implemented. Regime C would also provide a reasonable balance between the various concerns of the government as per the criteria specified above. I suggest however that the government review particular aspects of the revenue tax to ensure it functions well.

What is the best course of action for the government? That depends on the priorities of the government and on what it is willing to compromise. This report cannot say what is best and is focused on the tax regime design, without going into detail on other important considerations such as the environmental and social impacts of mining and the broader business context issues relevant to investors.[4] Further consultation and debate with relevant stakeholders, including mining companies in the Kyrgyz Republic, prospective investors, advisors, academia and civil society, is crucial. I nevertheless hope that this study can inform policy makers about the consequences of the choices and trade-offs to be made as part of reforming the mining tax regime.

4 We cover these broader issues in Natural Resource Governance Institute, *Improving Resource Governance in the Kyrgyz Republic: 12 Priority Issues for the Mining Sector* (2017).

1. Introduction

The Ministry of Economy and Mining Authority of the Kyrgyz Republic asked NRGI to evaluate the current mining tax regime and their ideas for reforming this regime. This request is, in part, to follow the Draft Kyrgyz Republic Fiscal Policy Concept 2017-2040 which advises establishing a "tax system on the basis of rent using research on international leading practices in taxation" and the exploring "feasibility of applying a corporate income tax with levying windfall tax elements."

In this report, I first establish design criteria specific to the Kyrgyz situation that most closely represents the objectives of the government. I use this criteria to evaluate the current mining tax regime and four other proposed tax regimes.

At present, the Kyrgyz regime for gold mining companies relies heavily on taxing inputs and gross sales. Table 1 summarizes the tax regime for mining companies other than Kumtor. Kumtor is excluded its tax regime is determined by a contract, separate to the legislative that determines the tax regime for all other gold mines. This generally applicable tax regime is heavily reliant on taxes based on gross sales and the value of inputs. For mines that produce gold, corporate income tax is not applicable. Furthermore, in many cases, depending on the multinational corporate structure of a mining company, double taxation treaties between the Kyrgyz Republic and other tax jurisdictions may significantly reduce the effective rates of withholding taxes.

Taxes on gross sales and inputs	Profit-based taxes
Royalty (max 5%)	Withholding tax on dividends and interest
Infrastructure payment (2%)	Corporate income tax (only applicable if no gold produced, 10%)
Revenue tax (variable rate based on price of gold, see Table 2)	
Customs duties (average 5% for internal Eurasian Economic Union (EEU) goods, 9.4% external to EEU)	
Other small-scale taxes (licenses, etc.)	

Table 1. The current tax regime levied on mining companies, categorized by tax base[5]

The Kyrgyz regime includes a tax on gross sales called the revenue tax the rate of which depends on the prevailing gold price.

LME gold price (USD per ounce)	Revenue tax rate
1,300 or less	1%
1,400	3%
1,500	5%
1,600	7%
1,700	9%
1,800	11%
1,900	13%
2,000	14%
2,100	15%
2,200	16%
2,300	17%
2,400	18%
2,500	19%
2,600 or more	20%

Table 2. Price-rate schedule for the revenue tax[6]

5 See appendix for details on each of these taxes.
6 Ernst and Young (EY), Non-ferrous metals production and processing: the sector's contribution to the economy of the Kyrgyz Republic and the effects on it of fiscal initiatives, (International Business Council, 2018).

I use an adapted version of the International Monetary Fund's (IMF) Fiscal Analysis of Resource Industries (FARI) economic model to evaluate this regime.[7] Evaluating a tax regime using an economic model is useful in a number of ways. The government is choosing a tax regime that will apply to mining companies in the future. No one can tell for sure what the economic conditions will be—for instance, gold prices have varied from $700 to $1,700 per ounce over the last 10 years, while mining costs are also subject to uncertain factors like energy prices. Furthermore, a significant objective for tax policy is establishing the right conditions for new mines to begin production. Given all these variables, the characteristics of these future mines are inherently unknown.

Economic models help clarify how a tax regime might perform given these uncertainties. The model allows me to stress test each regime in different scenarios to understand how each one might fare under different conditions. Another benefit of our economic model is that I can model the effect of the entire regime rather than only individual components. This is important in modeling practice since changing one tax in a regime can affect other aspects in ways that are not easily anticipated without a economic model.

Our approach to economic modeling also corresponds with emerging leading practices for the evaluation of tax regime and the design of tax regimes employed by companies, investors, policy advisers and institutions such as the International Monetary Fund.[8] Government departments also increasingly use these models across the world.[9]

The data and model I use are available on our website: www.resourcedata.org/dataset/Kyrgyz-Republic-mining-tax-analyses. The appendix also contains a summary of the main current terms of the Kyrgyz mining tax regime.

7 A template of the FARI manual and a user guide that explains all the concepts and workings of the model are available here: www.imf.org/external/np/fad/fari/.

8 Diego Mesa Puyo and Oana Luca. Fiscal Analysis of Resource Industries (FARI). (International Monetary Fund, 2016).

9 African Natural Resource Center, *Running the Numbers. How African Government Model Extractive Projects, Analytical Report* (2017).

2. Mining tax challenges for the Kyrgyz government

The mining industry is an important source of revenue for the government and in recent years contributed 5 to 10 percent of government revenues. While government is not overly reliant on the mining sector for revenues, its absence would be felt strongly. There are potentially significant opportunities to collect greater revenue if the industry develops and is taxed effectively. Now however, even this current amount of revenue is threatened. The industry is currently dominated by one mine, Kumtor, which contributes 90 percent of all mining revenue.[10] Unfortunately, unless there is new investment into this mine, Centerra, the mine operator, forecasts production will stop in 2026. (See Figure 1.)

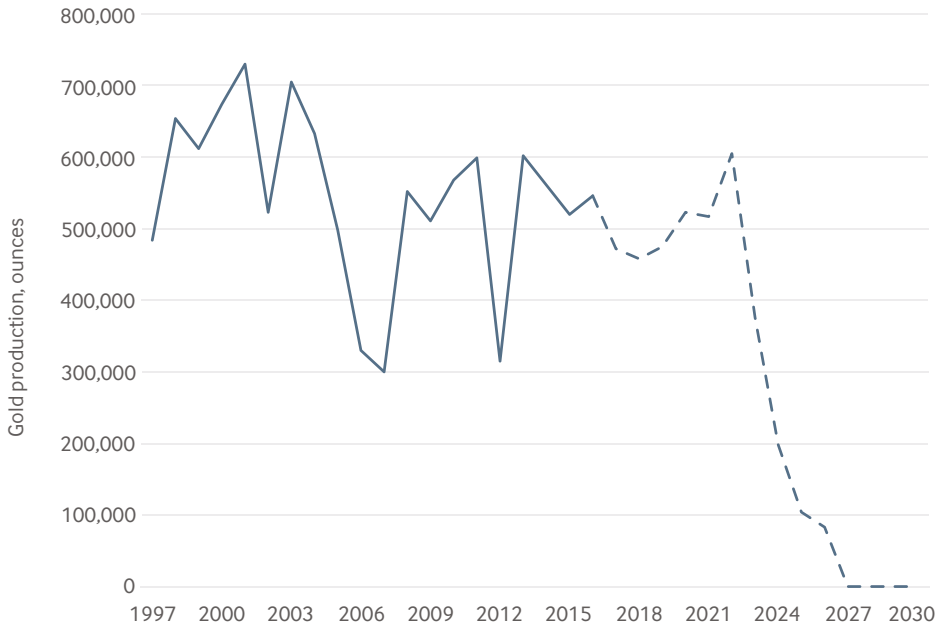


Figure 1. Gold production data and projections from the Kumtor Gold Company[11]

Other mines have recently started or are in development that might replace this decline, however, this is far from certain. Failing to replace the stream of revenues from Kumtor is likely to lead to further financial difficulties for the government. It is highly indebted, paying 17 percent of its national budget to creditors. In fact, if the government were to borrow more, the country may receive a "high risk of debt distress" rating.

These other mines are under a different tax regime than Kumtor, and it is this regime that the government is considering reforming. The challenge for tax policy makers is to maximize revenue by establishing a tax regime that nurtures new mines while also taxing these companies as heavily as they can bear. If not well implemented, the tax regime may hinder revenue by deterring further investment, leading to mines stopping production sooner than they would otherwise and failing to tax windfall profits that the mines might make. These failures can lead to further changes to the tax regime in the future as policy makers try to repeatedly adjust to accommodate changing conditions and political or financial pressures. Investors are wary of such instability, which leads to further problems for the government.

10 Kyrgyzstan Extractive Industries Transparency Initiative, "Kyrgyz Republic," Accessed 14 May 2018: www.eiti.org/kyrgyz-republic#tax-and-legal-framework-

11 Kumtor Gold Company, "Production Data 1997–2016," accessed 30 January 2018, www.kumtor.kg/en/deposit/production-figures; Centerra Gold Inc., Technical Report on the Kumtor Mine, Kyrgyz Republic (2012), 1-19.

Government must also cope with the challenge of maximizing its fiscal return from extracting minerals while avoiding damage to its natural capital—its rivers, forests and glaciers.[12] Given the environmental damage likely caused by some mining in the Kyrgyz Republic, citizens may no longer find the financial returns worthwhile. Even if, in some cases, local citizens and their regional authorities receive some compensatory payments. If the government sets too low a tax on extraction, the country might see its mineral wealth exported and its natural capital damaged without a sufficient financial compensation.

The government therefore faces a difficult balancing act. At present, the tax regime levied on mines other than Kumtor is light relative to most other mining countries.[13] Based on our modeling of a hypothetical gold mine with total development costs of $500 million, per unit operating costs of $500 per ounce, and annual production of 250,000 ounces of gold selling at $1,300 per ounce, I calculate that the government share of company profits is below the 40 to 60 percent range the International Monetary Fund has estimated is "reasonably achievable" for mining countries.[14,15] This is also the lowest government take of all the tax regimes I measured by a significant margin.[16] (See Figure 2.)

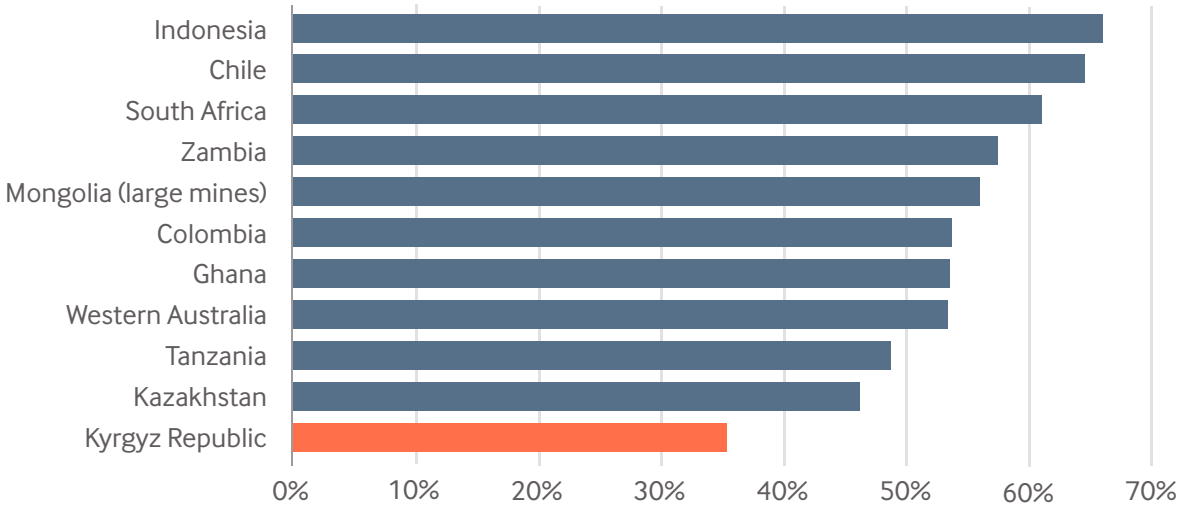


Figure 2. Average effective tax rate for mining tax regime for a mine with development costs of $500 million, per unit operating costs of $500 per ounce and a gold price of $1,300 per ounce[17]

With such a low tax burden, if tax were all that mattered to investors, the Kyrgyz Republic would be a very attractive country to mine. However, tax is only one of a number of factors. Some investors may be dissuaded from investing in the country because other aspects of governance make doing business difficult. For instance, the Fraser Institute survey of mining investors ranked the Kyrgyz Republic last amongst neighboring countries in Asia. Moreover, the investors surveyed by the Fraser Institute thought that the country's geology was reasonably attractive, but this was let down by the poor perception of regulation and policy risk.[18] In comparison to many of its neighbors in Eastern Europe and

12 Glenn-Marie Lange, Quentin Wodon, and Kevin Carey, *The Changing Wealth of Nations 2018: Building a Sustainable Future* (World Bank, 2018), 8-14.

13 This result is corroborated with Mogilevskii (2015) who finds that the effective tax rate is also lower than the rate faced by Kumtor. Roman Mogilevskii, Nazgul Abdrazakova, and Saule Chalbasova, *The Impact of Kumtor Gold Mine on the Economic and Social Development of the Kyrgyz Republic*, Working Paper, Institute of Public Policy and Administration, University of Central Asia, 2015:14.

14 See appendix A2 for details on why I used this mining project profile.

15 International Monetary Fund, *Fiscal Regimes for Extractive Industries: Design and Implementation* (2012), 29.

16 The Kyrgyz Republic must levy high duties on imports from countries outside the Eurasian Economic Union. I assume that the mine imports goods from both inside and outside the Eurasian Economic Union. If the mine imported solely from outside the EEU, the tax burden would be higher, but still lower than the other countries I measure here.

17 Natural Resource Governance Institute, NRGI Gold Mining Tax Model v1, 2018.

18 Taylor Jackson and Kenneth Green, *Annual Survey of Mining Companies 2015* (Fraser Institute, 2016; Ashley Stedman and Kenneth Green, *Annual Survey of Mining Companies 2017* (Fraser Institute, 2018).

Central Asia, the country also scores poorly on the Ease of Doing Business Index, which measures how attractive regulations are for business development.[19] (See Figure 3.)

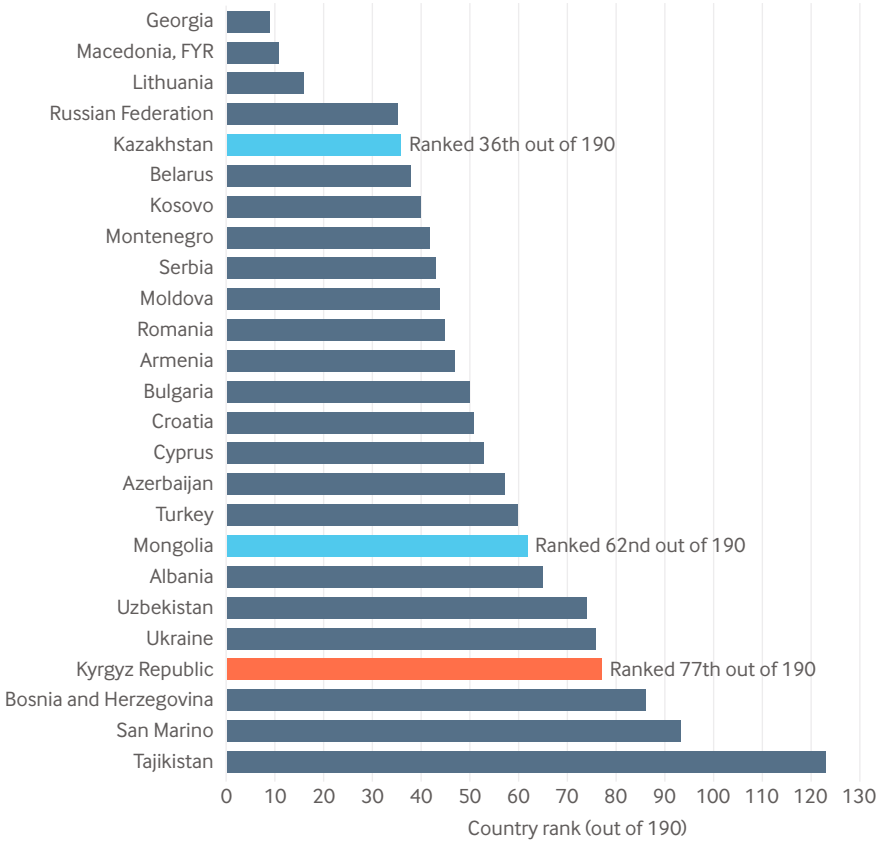


Figure 3. Ease of Doing Business Index, global ranking for countries in Eastern Europe and Central Asia[20]

Other surveys show some of the specific concerns of investors. Control Risks, a political risk consultancy, scores political risk in the Kyrgyz Republic as "high."[21] In comparison, Kazakhstan's political risk ratings are "medium" and "low." Control Risks highlights the Kyrgyz government's limited progress in "tackling pervasive corruption" and underdeveloped infrastructure where "power cuts are likely to continue, given years of underinvestment in energy infrastructure." The consultancy also states that "the authorities profess a desire to attract more foreign investment, but uncertainty over the direction of economic policy, questionable commitment to contract sanctity and considerable socioeconomic tension continue to complicate the business environment."[22]

These complaints are all directly relevant to tax policy: with more money, the government might be able to install better infrastructure (although better spending processes and control over corruption are also needed). A more stable tax regime that is both reasonably accepted by local communities, the government and investors is also likely to reduce political risks.

This poor performance in attracting investors might be acceptable, if it stemmed from the government's attempts to protect the rights and welfare of its citizens. However, the country's low score in the Resource Governance Index (RGI)—a measure of the quality of transparency and accountability from the perspective of citizens' welfare—suggests this is not wholly the case. While the Kyrgyz Republic ranks

19 The Ease of Doing Business indicators relate to the business conditions for all businesses in the economy, so may not closely represent the conditions in the mining sector. However, given the prominence of the mining sector in many of these economies, these scores are probably still informative.
20 World Bank, "Doing Business, Economy Ranking." Accessed 15 May 2018. www.doingbusiness.org/rankings?region=europe-and-central-asia
21 S&P Global. SNL Platform Proprietary data available from S&P Global Market Intelligence: www.snl.com
22 S&P Global. SNL Platform Proprietary data available from S&P Global Market Intelligence: www.snl.com

higher than Uzbekistan and Turkmenistan, the country's governance of its minerals is still "weak." Such weak transparency and accountability may be a further sign that governance in the country is deterring mining investment.

RGI category	Countries in Eurasia
Good	None in Eurasia
Satisfactory	Mongolia
Weak	Azerbaijan, Kazakhstan, Kyrgyz Republic, Russia, Ukraine
Poor	Afghanistan
Failing	Turkmenistan, Uzbekistan

Table 3. Resource Governance Index category ratings, 2017, Eurasia

Source: Natural Resource Governance Institute, Resource Governance Index (2017).

Given this weak governance, should the government maintain low taxes to attract investment? Growing empirical evidence shows that for developing countries, non-tax business climates (infrastructure, governance) are generally so poor as to outweigh any advantage a country might get from levying a low tax rate.[23] Improving a country's governance and business climate is a necessary condition for substantially increasing investment in the country, while setting a low tax burden is not a sufficient condition, and perhaps not even a necessary condition to attracting investment. It might also be the case that generating less tax revenue constrains the government's ability to improve the business climate. For example, restricting funds for education, infrastructure and government departments can create greater problems in governance and in turn create an unattractive business climate.

Good tax design matters despite the Kyrgyz Republic's governance challenges. An overly high tax burden is likely to deter investment. A tax regime that fails to generate revenues—either because companies are left more free to manipulate "profits" so as to avoid paying taxes, or because the tax regime is insufficiently progressive in that it leaves windfall profits untaxed—can lose the faith of people and be subject to political pressures for change. This not only wastes opportunities for the government to generate greater revenues, but can also lead to the future changes in the tax regime.

This is not necessarily problematic if these changes correct past policy mistakes, but too frequent changes are damaging as I will explain in the next section.

The next sections quantitatively measure the qualities of tax regimes against four key criteria to determine what contributes to a well-designed tax regime.

23 World Bank Group, *Global Investment Competitiveness Report 2017/2018: Foreign Investor Perspectives and Policy Implications* (2018); International Monetary Fund, *Options for Low Income Countries' Effective and Efficient Use of Tax Incentives for Investment* (2015).

3. Framework for evaluating the Kyrgyz mining tax regime and international benchmarking

There is no universal best design for a mining tax regime. Good practice guides provide only a basic structure that governments can follow.[24] This leaves numerous decisions for a government to make. In evaluating mineral tax regimes, analysts use a variety of measures and criteria.[25] Here I focus on four that are likely to cover the primary concerns of governments when setting tax terms for their mining industries. The rest of this section details why these criteria are useful to evaluate tax regimes, and which are potentially the most important for the Kyrgyz Republic.

1. *Tax base simplicity.*[26] The simplicity of the tax base helps determine whether the tax authority can limit tax avoidance amongst companies.
2. *Government revenue reliability at low profit levels.* The ability to generate revenue for the treasury when company profits are low.
3. *Progressivity when costs change.* The ability to progressively tax companies as their costs decline. This indicates that the tax regime will be attractive to a large range of investors with different types of mines, and will tax windfall profits from low cost companies.
4. *Progressivity when prices change.* The ability to progressively tax companies as prices rise. This indicates that the tax regime will be attractive investors in different economic conditions, and will tax windfall profits when prices are high.

The third and fourth criteria both relate to different aspects of progressivity. Analysts often evaluate these as one—in terms of the change in profits—however, here I separately treat progressivity with respect to costs and prices because variable rate gross sales taxes (like the revenue tax) behave differently in each case.[27]

It is difficult to design a tax regime that performs well across all these criteria. A policy maker usually faces a trade-off. The art of tax policy design is therefore to understand what the government's priorities are, and choose a tax regime that meets those priorities. In the rest of this section, I discuss what these priorities might be for the government. However, this assessment is inherently subjective and something that is best chosen by the government and other stakeholders themselves.

These criteria are also important because they indicate how stable tax terms might remain over the course of a mining project. Over time, tax regimes that are unbalanced in one of these respects often come under pressure—either from companies, the government or other stakeholders—to be changed. A tax regime that represents a reasonably balanced deal between the country and the companies over time as conditions change is more likely to be seen as fair, and result in fewer changes in the future. See box 1 on three reasons why governments should avoid frequent changes to tax regimes.

24 Natural Resource Governance Institute, *Natural Resource Charter (2nd Edition)* (2014).

25 I follow the IMF's method, except for our measure of tax base simplicity, for which I use Puyo and Luca, *Fiscal Analysis of Resource Industries (FARI)*, 35-42; International Monetary Fund, *Fiscal Regimes for Extractive Industries: Design and Implementation,* (2012), 50-64.

26 This is our own measure of the complexity of the tax regime and the level of tax abuse risk. It is simplistic in the sense that it does not measure provisions in each tax code that increase or decrease the difficulty in measuring the tax code – for example net back provisions for royalties increase measuring difficulty, but this is not measured here.

27 In reality both price and cost will change at the same time, and some studies suggest they are somewhat correlated. Gerhard Toews and Alexander Naumov, "The Relationship Between Oil Price and Costs in the Oil and Gas Industry" (*OxCarre Research Paper 152,* 2015).

Box 1. Three reasons why governments should avoid frequent changes to tax regimes

Government should rectify mistakes in tax policy when they discover them, to the extent that they are legally able to do so, but too frequent changes in taxes are problematic.

First, companies and their investors care about the threat of tax increases after sinking capital into projects. They worry that a government is in a position to raise taxes or expropriate an asset entirely after investment and this worry limit how much they are willing to invest, a phenomenon known as the hold-up problem. To mitigate this, a government must demonstrate it will not raise taxes or expropriate assets once investment decisions have been made. It might do this by avoiding a history of significant tax increases, building a trustworthy approach to policymaking, offering lower taxes, and, if all else fails, writing clauses into contracts and legislation that make it illegal to change taxes on a project. The latter is a frequent resort of many resource-rich developing countries. Setting taxes too high or too low matters. Companies may realize that a tax regime offering a particularly good deal for investment is not likely to be stable if prices rise and the public pressures the government to increase taxes. Conversely, taxes that are too high are also unstable—pressures from companies and lack of investment might force policy changes.

Second, frequent changes also matters in collecting rent. For instance, from 2000 to 2016 Zambia changed its mining tax regimes nine times in response to the changes in copper prices, but typically two or three years after those changes. Such a lagged policy response means that during upturns in profits, the opportunity to tax available rent is wasted, while in a downturn, companies are under greater financial pressure and may decide to close operations. A tax policy that is constantly seeking to catch up with events opens the door for these inefficiencies.

Third, policy instability matters because any change in policy allows opportunities for the government to make mistakes and for companies and other stakeholders to lobby for incentives. The conflict that frequently arises from policy changes also damages relationships with companies and with other stakeholders.,

Each of the next four parts to this section discuss each of these criteria, while illustrating how the current tax regime in the Kyrgyz Republic compares with other regimes in some other mining countries with respect to each criteria. In each chart, I only show a small set of the total set of countries I evaluated, so as to clearly depict each data point. In the accompanying data sheets to the report, found online, you can see the results for all countries evaluated.

It is important however to treat this only as an illustration—the "right" policy for Kazakhstan, Mongolia or any other country will not necessarily be the right policy for the Kyrgyz Republic. These comparisons however, can at least show how far away from "normal" the Kyrgyz regime is and prompt us to ask why that is, and whether that is the right policy for the country.

TAX BASE SIMPLICITY

Tax avoidance by companies is a large concern for almost all governments in the world. Central to limiting tax avoidance is for tax authorities to measure each tax base and apply the correct tax rate to understand whether a company has paid the correct

28 Philip Daniel and Emil Sunley "Contractual assurances of fiscal stability," in *The Taxation of Petroleum and Minerals: Principles, Problems and Practice,* ed. Philip Daniel, Michael Keen and Charles McPherson, (Oxford: Routledge, 2010), 405-424.
29 Mario Mansour and Carole Nakhle, *Fiscal Stabilization in Oil and Gas Contracts : Evidence and Implications* (Oxford Institute for Energy Studies, 2016).
30 David Manley, *Ninth Time Lucky: Is Zambia's Mining Tax the Best Approach to an Uncertain Future? (Natural Resource Governance Institute, 2016)*
31 Mario Mansour and Carole Nakhle, *Fiscal Stabilization in Oil and Gas Contracts : Evidence and Implications* (Oxford Institute for Energy Studies, 2016).
32 Paul Stevens, Jaakko Kooroshy, Glada Lahn and Bernice Lee, *Conflict and Coexistence in the Extractive Industries* (Chatham House, 2013).

amount of tax. However, measuring the base of some taxes is more difficult than others and therefore more susceptible to company manipulation. Measuring gross sales is relatively straightforward. A tax auditor must multiply the price of output by the amount produced. Although gross sales are still not simple to measure and it is still critical for the tax authority to audit taxpayers thoroughly, they are *simpler* to measure than profit taxes.[33] Conversely, to measure profits, a tax auditor must measure price, output and all the applicable costs from operating costs, development costs and finance costs. Most tax authorities find this difficult, particularly those in developing countries that are not well resourced. Kyrgyz government officials might also be concerned the State Tax Service cannot measure the taxable profits of mining companies. Therefore, even if the government were to invest heavily in the tax authority and thoroughly review the tax code to close tax loopholes, both actions that could generate a substantial return for the country, a strong reliance on gross sales taxes is appropriate if tax administration capacity is a concern. These issues are particularly relevant when designating which taxes to share with local authorities since local governments are likely to have even less capacity to measure tax bases than central tax authorities, which they must do to ensure they receive the correct amount of revenue from the central government.[34]

However, relying wholly on taxing revenues and inputs perpetuates tax administration issues for three reasons. First, while the government might hesitate in relying on the capabilities of the State Tax Service to measure mine profitability at present, if the tax authority does not have any responsibilities to measure profits of gold mines, it is unlikely to ever develop these capabilities. Introducing some profit taxes might help the State Tax Service to learn by doing.

Second, the government needs to be well informed about mining costs whether or not it levies profit taxes. In setting the royalty rate or revenue tax rates, government officials must understand whether mining companies can bear the tax given their costs. If the State Tax Service is not charged with measuring costs for tax purposes, it is unlikely to have reliable information to help tax policy makers.[35]

Third, by levying a 10 percent corporate income tax on other business including other mining companies but not on gold mining, the tax code potentially contains a loophole for companies to shift profits from the higher tax regime to the lower tax regime. The resulting increase in profits might be captured by a withholding tax, but tax treaties may effectively reduce withholding taxes rates to close to zero. I do not know if this has been a specific problem in the Kyrgyz Republic, but it is a common concern in other countries. To close this loophole, good practice is to levy the standard corporate income tax rate across all businesses.[36]

To measure tax base simplicity and the extent to which each regime exposes a government to the risk that companies will avoid taxes through profit-shifting techniques, I estimate the proportion of revenues generated by tax types according to their tax base. Figure 4 shows this apportionment by taxes on gross sales, operating

33 For these challenges, see Jack Calder, *Administering Fiscal Regimes for Extractive Industries. A Handbook* (International Monetary Fund, 2014), 19-20.

34 To the extent that the country wants to share revenue sourced directly from mining companies between central and local government, this type of tax is the right one to use. As a tax on gross sales is relatively simple to measure, local authorities, which probably have less capacity to measure such things than the State Tax Service does, can check that they are receiving the correct amount from central government. Basing this tax on gross sales also makes it more likely to generate revenue reliably than profit-based taxes, which is the next criterion I will analyze. See the fourth recommendation from Andrew Bauer, Uyanga Gankhuyag, Sofi Halling, David Manley and Varsha Venugopal, *Natural Resource Revenue Sharing* (Natural Resource Governance Institute and United Nations Development Programme, 2016).

35 International Monetary Fund, *Fiscal Regimes for Extractive Industries: Design and Implementation,* 19.

36 Natural Resource Governance Institute, *Natural Resource Charter (2nd Edition)*, 17-19.

profit and corporate profits—ordered from simplest to most complex tax bases. If profit-based taxes are harder to administer than gross sales-based taxes, for a given capacity of tax authority, the proportion of revenue in orange is most likely to be avoided, while the green portion is more likely to be collected.

This is a very simple proxy for tax avoidance risk; in reality other details of the tax code can create various loopholes that allow companies to reduce their tax obligations. The risk of tax avoidance might also depend on the types of companies operating in each country, and the capacity of each tax authority. However, by comparing the tax regimes according to the split between gross sales bases and other profit bases, this simple proxy at least allows me to evaluate the sorts of trade-offs policy makers must consider when choosing the broad design of a tax regime.

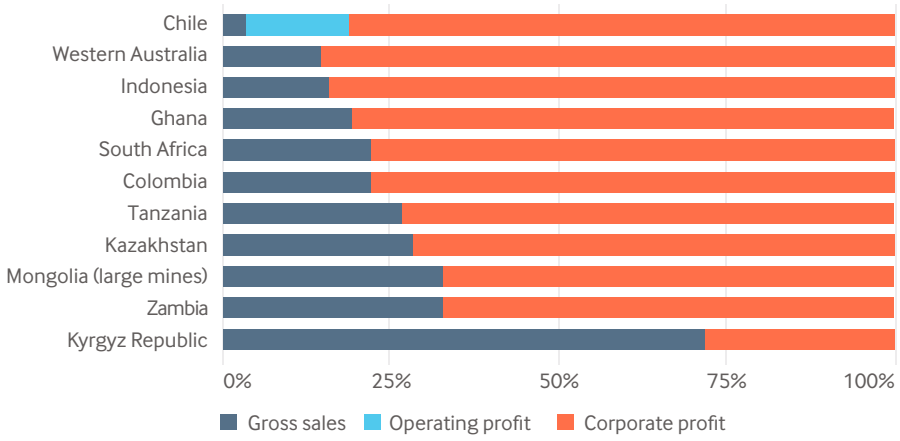


Figure 4. Proportion of total lifetime revenues split between revenue- and profit-based taxes[37]

Figure 4 shows that the Kyrgyz tax regime on gold companies stands apart from the other regimes in terms of its reliance on gross sales taxes. The one component of the regime based on corporate profits is the withholding taxes. Whether this is too high a reliance on gross sales taxes, given the trade-offs this implies for the other criteria evaluated here, depends on whether the government is particularly worried about the capacity of the State Tax Service to measure and administer profit taxes like the corporate income tax.

GOVERNMENT REVENUE RELIABILITY AT LOW PROFIT LEVELS

When companies incur losses, either because their mining projects are an early stage of operations or because mineral prices have slumped, they are unlikely to pay profit taxes. However, as long as they have made a sale, they will pay gross sales taxes, such as a royalty. Sometimes a government wants a mining tax regime that they can rely on to generate at least a minimum amount for their budget each year, whether or not companies make profits. This is particularly the case if the government relies on a small number of taxpayers to contribute most of their budget needs, and if the mining industry is still in the early stages of operations.

37 Natural Resource Governance Institute, NRGI Gold Mining Tax Model v1, 2018. Note that absolute revenue is not equal across each regime, so the absolute value of revenue may be more in a regime with lower proportion. This result also assumes that the statutory withholding tax rates on dividends and interests (treated as a corporate profit base) are the effective rates. In reality it is likely that double taxation treaties reduce the effective withholding tax in many cases.

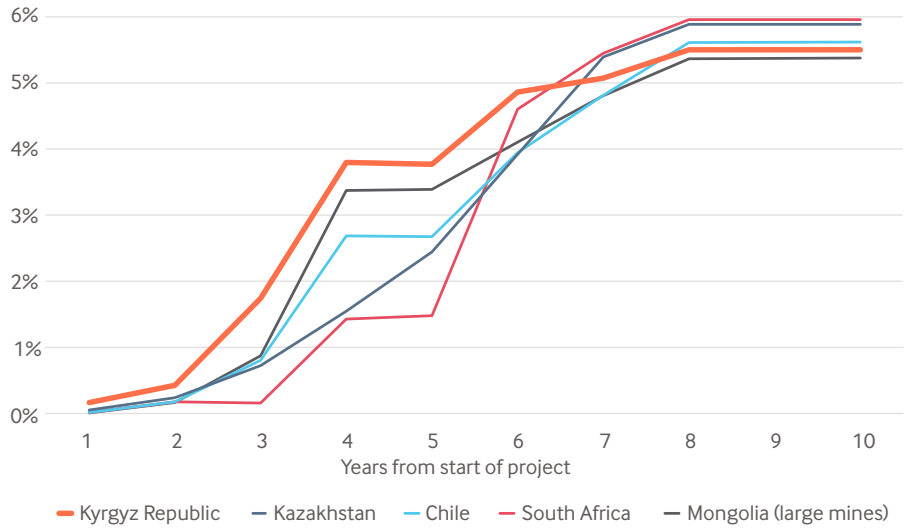


Figure 5. Proportion of total tax revenues paid by a mining project in the first 10 years of operations[38]

Figure 5 shows the proportion of government revenue paid in the first ten years of a project starting. Tax regimes predominantly based on gross sales and input taxes are more likely to be able to deliver revenues even if company have not yet made a profit. The chart shows that the Kyrgyz regime with its high proportion of taxes on gross sales ensures that a relatively high proportion of revenues are earned when company profits are low. This contrasts with tax regimes like Kazakhstan's, which delivers a relatively low proportion of revenues in the early years of a project.

Reliability is good, but it involves trade offs. The more revenue that is generated in the early years of a project when profits are low, the less revenue is likely to be paid in later years when profits are high. Should the Kyrgyz government consider revenue reliability a priority concern? There are two reasons to think that it should not.

First, compared with many other mineral-rich economies, the Kyrgyz economy and its tax base do not appear to be highly exposed to fluctuations in the mineral markets. So if a subnational number of mines fail to pay taxes in the early years of their operations, the effect on the total tax revenues collected by the government will probably be small. Kumtor is the largest industrial enterprise in the country, but along with the rest of the mining sector, contributes only 7 percent of total government revenues. This has varied between 5 to 10 percent in recent years. Furthermore, the rest of the economy appears to be only weakly linked to the mining sector; only 1 to 5 percent of workers, albeit well-paid workers, are employed in the mining sector.[39] I do not know the extent to which mining companies source goods and services from the Kyrgyz economy, and to what extent Kyrgyz miners support a wider economy, but despite this uncertainty, setting a tax regime to lessen exposure to mineral market risks might not be important for the government.

Second, while production from Kumtor continues, most of the revenue the government earns from the mining sector will come from this mine. So changes to the legislated tax regime—separate to the contractual regime on Kumtor—will not impact overall revenues greatly. If production from Kumtor does decline, then a larger share of the revenue will come from the new legislated tax regime. However, by this time, in

38 Natural Resource Governance Institute, NRGI Gold Mining Tax Model v1, 2018.

39 Calculations based on EITI data. Note that the EITI website quotes a 10 percent figure, but this does not seem to be supported by their data. An EY (2018) report states that tax and non-tax revenues from the "non-ferrous metals sector" average 17 percent of total government revenues from 2014 to 2016. EY, *Non-ferrous metals production and processing. The sector's contribution to the economy of the Kyrgyz Republic and the effects on it of fiscal initiatives* (International Business Council, 2018); Mogilevskii, et al (2015), 15).

the mid 2020s, the new mines that will pay taxes under the legislated regime should be fully into production and generating profits. This expected profile of revenues suggests that the government does not need a regressive regime to bring forward payments. As long as it continues to benefit in the short-term from the payments from Kumtor, it can then expect to receive payments from the new mines in the future.

Therefore, although this may seem counter intuitive given how much the government needs money as soon as possible, from the perspective of reforming the tax regime, revenue reliability is probably less of a concern that the other criteria I evaluate in this report.

PROGRESSIVITY AS COSTS CHANGE

In a mining project, prices, costs and many other factors are constantly changing. Similarly, mining projects across a country can have different costs, types of operations, and quality of ores. For example, as of 2017, the Kyrgyz Republic has one mine in the cheapest quartile of the global gold cost curve, and one in the third quartile, with probably others not measured in between. (See Figure 6.) Kazakhstan and Mongolia also have a wide dispersion of costs for different mines. Until a mine has started production it is not possible to tell for sure what the costs will be. Future mines in the Kyrgyz Republic could therefore lie anywhere along this cost curve.[40]

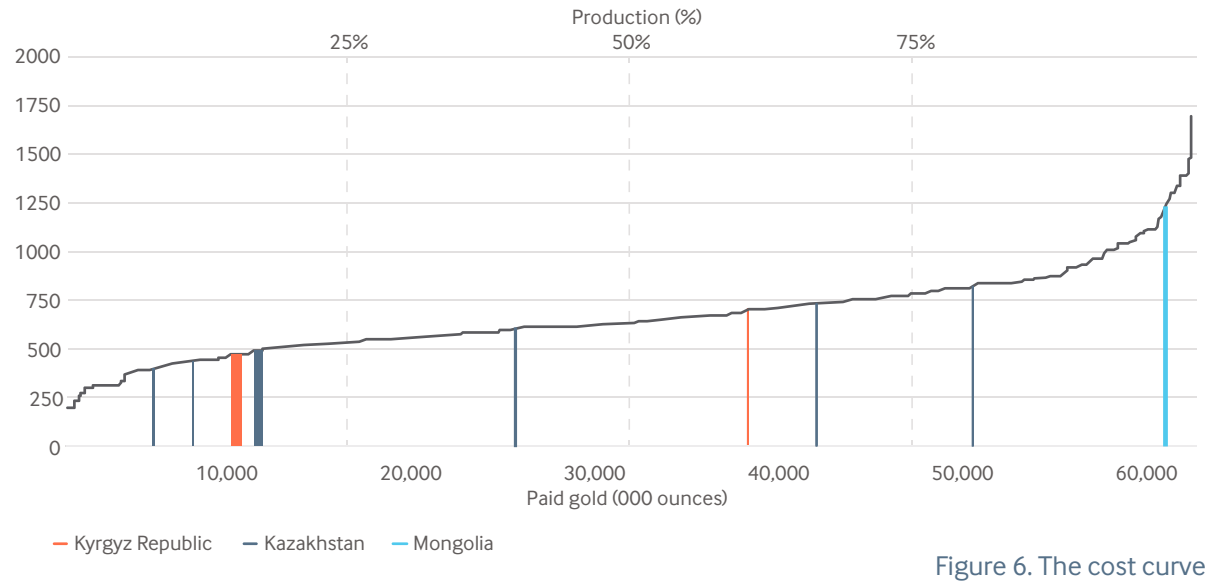


Figure 6. The cost curve for all mines producing gold in the world

In trying to attract investment and ensure that production continues, it is often desirable to set a tax regime that takes into account these different cost profiles. In a progressive tax regime, the tax burden is relatively low for high cost mines that, for a given price, will make smaller profits than low cost mines. While the tax burden is relatively high for low cost mines that make high profits. Conversely, setting a tax regime that is regressive can make some low profit projects uneconomical, reduce the economic life of mines (as there will be less economic reserves to extract, a concept known as "high-grading"), and increase the likelihood that a mine will shut down when prices fall.[41] In theory, companies decide to invest in a mining project if they expect that they will earn pre-tax profits that are high enough to pay for the various

40 S&P Global. SNL Platform Proprietary data available from S&P Global Market Intelligence: www.snl.com. Costs are C1 cash costs (operating costs, transport, treatment charge (TC)/refining charge (RC) and royalties).

41 James Otto, Craig Andrews, Fred Cawood, Michael Doggett, Pietro Guj, Frank Stermole, John Stermole, and John Tilton, *Mining Royalties: A Global Study of Their Impact on Investors, Government, and Civil Society* (World Bank, 2006), 164–182.

taxes and still make a net tax profit. While these companies only pay tax on profits if they make a profit, they always have to pay taxes on inputs and gross sales. This means that tax regimes heavily reliant on revenue and input taxes can make projects unviable for investors. The higher these taxes are, the more likely projects in a country will be unviable. Progressive tax regimes that tax companies more as their costs decline are also useful in ensuring that low cost mines, and therefore those mines that likely make windfall profits, are more heavily taxed.

I measure progressivity with respect to a change in costs in my model by comparing the government share of total project cash flows changes for different operating cost assumptions.[42] I do this while keeping prices constant. Figure 7 shows the results for the Kyrgyz regime and four others to illustrate the comparison. The accompanying datasheet shows the results for all 11 tax regimes I evaluated. The more the curve slopes upwards the more regressive (less progressive) the tax regime is.

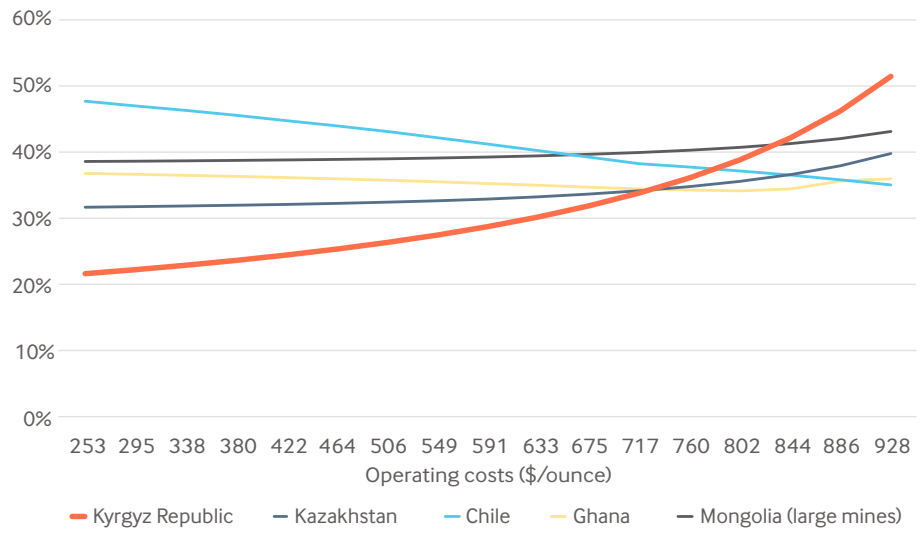


Figure 7. Government share of total project cash flows with respect to changes in operating costs[43]

Unfortunately, in this sense, the Kyrgyz tax regime is relatively regressive because of the royalty, infrastructure charge and revenue tax the government levies. For low cost to medium cost mines, the tax burden is relatively low, which might allow companies to make windfall profits without being taxed. Conversely, with high cost mines, the Kyrgyz regime takes a significant share or revenues. The SNL mines and minerals database indicates that in 2017, the operating costs of Bozymchak were about $750 per ounce of gold produced. This probably means that this mine carries a higher tax burden than lower cost mines. Future mining projects might also have also have costs as high as Bozymchak and so also bear a relatively high tax burden. This might deter some investors, or encourage investors to request investment incentives from the government.

In comparison, the Kazakh regime in Figure 7 shows a much flatter curve, it takes about the same share of financial benefits generated by a mine whether costs are low or high. The Chilean regime is the most progressive. The Chilean regime levies a high tax on low cost mines, and a low tax on high cost mines. This is most likely to attract a broad range of investors while taxing the windfall profits generated by low cost mining companies.

42 It is standard practice to show this measure, rather than the average effective tax rate, purely for graphical reasons: charting the average effective tax rate (AETR) does not clearly illustrate the differences in tax regimes, and is highly dependent on the range of price and cost choices. See Philip Daniel, Michael Keen and Charles McPherson, *The Taxation of Petroleum and Minerals: Principles, Problems and Practice*, London and New York: Routledge (2010), 202.

43 Natural Resource Governance Institute, NRGI Gold Mining Tax Model v1, 2018.

What priority should the Kyrgyz government place on levying a tax regime that is progressive with respect to costs? This depends on how concerned the government is with some mines potentially shutting down, deterring investment in high cost projects and whether the gold mining industry will be dominated by a few large low cost mines. The more regressive a regime, the more likely a slump in the gold price will cause some mines to shut down and lay off workers. The mining industry does not employ a significant proportion of the country's workforce, but they are well paid and may support a many people with these wages. Further, the unemployment would be concentrated in local communities for whom the mining industry is the primary economic activity. Such localized unemployment may be particularly concerning for the government. Also, because a regressive regime does a poor job at taxing windfall profits from low cost companies, keeping a regressive regime may limit how much tax revenues the government receives. If one or two low cost mines dominate the industry, this could represent a particularly large amount.

PROGRESSIVITY AS PRICES CHANGE

Mining companies can earn significant windfall profits when mineral markets boom. But when prices slump, some mining operations become unviable and their owners may shut down these operations. Governments might wish to avoid mines shutting down, as tax revenues fall and workers are laid off. A tax regime that progressively taxes companies as prices rise can help to tax windfall profits, while relieving companies during price slumps, can therefore be useful for a government. Furthermore, progressiveness might result in taxes being changed less often. During a boom, the government and public might expect high payments from mining companies. If the tax regime ensures that this happens, these expectations will be met, and the chances of destabilizing conflicts with companies might be less. This in turn might help investment: surveys often show that uncertainty of future tax rates is a key concern for investors, while there is some evidence that progressive tax regimes correspond with more stable tax regimes.[44,45]

Figure 8 shows how progressive each regime is when prices change (and costs remain constant). An upward sloping portion of the curve shows progressivity and a downward slope shows regressivity. The royalty and infrastructure payment, both based on gross sales, makes the current regime particularly regressive. However, the revenue tax, which only becomes applicable once the gold price rises above $1,300, makes the regime progressive for these higher prices. However, the rates on the revenue tax mean that the tax burden is relatively low for prices around $1,300 per ounce.

Countries close to the Kyrgyz Republic's, Kazakhstan and Mongolia, both tax companies relatively heavily when prices are very low, although not as much as the Kyrgyz regime. However, as prices rise, Kazakhstan and Mongolia's tax regimes become slightly more progressive, steadily rising as prices increase. The price point at which their tax regimes stop being regressive is much lower that the Kyrgyz Republic's (around $800-900 versus the Kyrgyz Republic's $1,300). The Chilean regime is a good example of a progressive tax regime. When prices are low, the tax burden is low, as prices rise the tax burden increases. This quality comes from the windfall tax on operating profits, a type of tax I evaluate in the next section.

44 Stedman and Green, *Annual Survey of Mining Companies 2017.*
45 Mansour and Nakhle, *Fiscal Stabilization in Oil and Gas Contracts: Evidence and Implications.*

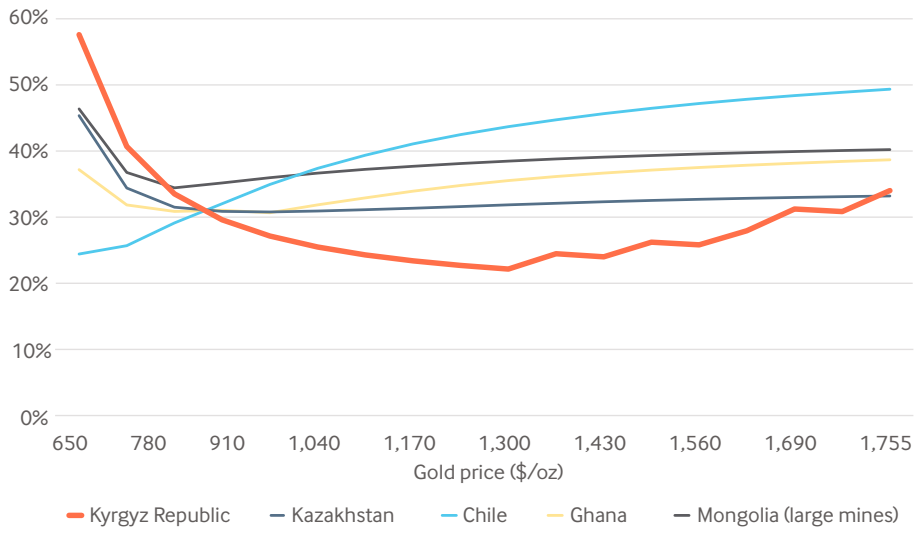


Figure 8. Government share of total project cash flows with respect to changes in gold price[46]

What priority should the government place on levying a tax regime that is progressive with respect to prices? This is more or less the same priority as that afforded to the previous criteria. The government may prefer progressivity to accommodate a broad range of mines and avoid them shutting down when prices fall. It may also want to avoid being forced to change terms or give tax incentives when economic conditions encourage companies to ask for them. Progressivity will also allow the government to generate high tax revenues when gold prices rise. However, these benefits usually come at the cost of tax base simplicity and revenue reliability, the first two criteria I evaluated.

46 NRGI Gold Mining Tax Model.

4. Reforming the current gold mining tax regime

The Ministry of Economy and the Mining Authority asked NRGI to evaluate a range of reform ideas. Here I describe these regimes, and evaluate them using the same approach that I used in Section 2. I also comment on specific elements of the current revenue tax, with suggestions on certain modifications.

DETAILS OF TAX REFORM IDEAS FROM THE GOVERNMENT

The government has officially proposed Regime A, an increase in the revenue tax rates. The other four are our response to the Ministry of Economy's request to consider whether to introduce a profits tax (like a corporate income tax) and a windfall tax. These tax regime also meet the Draft Kyrgyz Republic Fiscal Policy Concept 2017-2040 request to consider new approaches to mining taxation.[47] This prospective mix of tax tools corresponds with advice from the International Monetary Fund, the Natural Resource Charter and other good practice guides to levy a mix of a royalty, corporate income tax and a windfall tax.[48] Currently, the Kyrgyz regime does have a royalty, and a type of windfall tax, in the form of the revenue tax, but it lacks the corporate income tax.

I chose two types of windfall tax to illustrate a range of options that the government could take. These forms are differentiated by the difficulty in measuring the tax base. The existing revenue tax and a windfall tax on operating profits are similar to the taxes levied in Chile and Peru. The Ministry of Economy also requested that NRGI examine replacing the revenue tax with a variable rate profit tax based on the design levied on gold mines in South Africa.

For each of these three regimes, I chose the tax rates that ensured that the estimated increase in government take would be similar to the estimated increase from the first proposed regime, the increase in the revenue tax.

In each case, I evaluated only the impact of changing the specific taxes mentioned and assumed that all other taxes (such as the royalty) remain unchanged from the current regime. This ensures that I model the effect of the entire regime, not only individual components. This is important in modeling practice because changing one tax in a regime can affect other aspects in ways that are not easily anticipated without a fiscal model.

Table 4 summarizes each regime I analyze, the rest of this sub-section describes the regime in more detail.

47 Draft Kyrgyz Republic Fiscal Policy Concept 2017-2040, article 11.1. XI. "Subsoil Use. Consider establishing the tax system on the basis of rent using research on international leading practices in taxation and production of a mine model. Also consider the feasibility of applying a corporate income tax with levying windfall tax elements."

48 Natural Resource Governance Institute (2014), 17-19.

Tax type	A. Current regime	B. Current regime with revenue tax increase by 3%	C. Current regime plus corporate income tax	D. Current regime less revenue tax, plus corporate income tax and operating profit tax	E. Current regime less revenue tax, plus variable rate profit tax (South Africa profit tax)
Royalty	5% on gross sales	5% on gross sales	5% on gross sales	5% on gross sales	5% on gross sales
Local infrastructure payment	2% on gross sales	2% on gross sales	2% on gross sales	2% on gross sales	2% on gross sales
Revenue tax	Current schedule, see Table 5	Revised schedule, all rates increased by 3%, see Table 5	Current schedule, see Table 5	None	None
Operating profit tax	None	None	None	Yes, see Table 6 for rates.	None
Corporate income tax	None	None	10%	10%	None
Withholding tax on dividends and interest	10%	10%	10%	10%	10%
All other taxes	No change	No change	No change	No change	No change

Table 4. Main elements of each regime

Notes: See appendix for full details of each tax. Green denotes a change with respect to the current regime.

Regime B. Current regime with revenue tax increase by 3 percent (RT 3 Percent)

Increase the revenue tax rates by three percentage points, as shown in Table 5. The government has proposed to levy the tax only on companies that export ore or concentrate.[49] This is part of the government's policy to increase the value added to its raw minerals within the country. Mines could therefore avoid this tax by processing their concentrate themselves in the Kyrgyz Republic and exporting refined gold and copper products. The tax change as currently proposed therefore is likely to only affect a portion of the industry—approximately eight of the 15 large mines that are currently operating or are being developed. In a second report, I calculate that a 3 percent rise in the revenue tax rates would not be enough to encourage these eight mines to relocate their gold processing to the Kyrgyz Republic, principally because of the ore types these mines possess require specialized and expensive processing techniques that are likely not commercially viable in the Kyrgyz Republic. NRGI's second report on the Kyrgyz Republic gold mining industry also argues that even if the tax did encourage mines to locate their processing in the country, there would be little increase in tax revenues.[50]

LME gold price (USD per ounce)	Current rate schedule	Proposed rate schedule
1,300 or less	1%	4%
1,400	3%	6%
1,500	5%	8%
1,600	7%	10%
1,700	9%	12%
1,800	11%	14%
1,900	13%	16%
2,000	14%	17%
2,100	15%	18%
2,200	16%	19%
2,300	17%	20%
2,400	18%	21%
2,500	19%	22%
2,600 or more	20%	23%

Table 5. Revenue tax price-rate schedule, current and proposed rates

Source: EY, Non-ferrous metals production and processing. The sector's contribution to the economy of the Kyrgyz Republic and the effects on it of fiscal initiatives, (International Business Council, 2018).

49 The actual wording of the bill states that the increased revenue tax rates are applicable to any mine that *produces* gold ore or concentrate. Not *exports*. However, this would make the increased tax applicable to mines that produce ore or concentrate and then sell their products to a processing plant or smelter in the Kyrgyz Republic, thus deterring the activity that the government originally intended by the bill.

50 David Manley and Nazgul Kulova, *Should the Government of the Kyrgyz Republic Impose a Tax on Gold Ores and Concentrates?* (Natural Resource Governance Institute, 2018).

The government may be proposing this tax increase for two different objectives that are not easy to reconcile. Either the government wishes to increase in-country value addition, or the government wants to increase tax revenues. In our second report, I have analyzed the tax change with respect to the first objective: value addition. In this report, I instead analyze the tax change with respect to the second objective: increasing tax revenues. If the government wishes to use this tax increase to raise revenues rather than as a beneficiation policy, then applying this tax rate increase to all gold companies is appropriate.

Regime C. Current regime plus corporate income tax (RT + CIT)

The Ministry of Economy requested that NRGI examine levying a corporate income tax of 10 percent on gold mining companies. This regime introduces application of the standard 10 percent corporate income tax to all mines (including gold), and keeps the revenue tax at the present rates. The concept of this regime is that the revenue tax would be used to tax windfall profits based on price as a proxy (albeit imperfect) for profits.

Regime D. Current regime less revenue tax, plus corporate income tax and operating profit tax (CIT + OPT)

This idea was conveyed to NRGI by the Ministry of Economy. This regime applies the standard 10 percent corporate income tax to gold mines (non-corporate income tax is already applicable to non-gold mines), and replaces the revenue tax with a variable rate tax based on operating profits as a way to tax windfall profits. The use of operating profit as the tax base for the windfall tax is to ensure that measurement is relatively easy. I chose a design similar to the operating profit taxes levied in Chile and Peru.[51]

The tax base is comprised of the operating profits of the mine project, specifically, earning before interest, tax, depreciation and amortization (EBITDA). A similar alternative tax base would be earnings before interest and tax (EBIT). EBITDA is likely easier to measure than EBIT, as using EBITDA depreciation and amortization would not have to be measured to calculate the tax base. However, the exact formulation would require more consultations and expert review.

To illustrate the effects of an operating profit windfall tax, I created a set of tax rates. These depend on the current operating profit margin (EBITDA/gross sales), according to this table:

Operating profit margin	Applicable tax rate
0% - 40%	0%
40% - 45%	15%
45% - 50%	20%
50% - 60%	25%
60% - 70%	30%
70% - 80%	35%
80% or more	45%

Table 6. Operating profit tax, profit margin-rate schedule

Regime E. Current regime less revenue tax, plus variable rate profit tax (SA profit tax)

This idea was conveyed to NRGI by the Ministry of Economy. It replaces the current Kyrgyz revenue tax with a version of the profit tax that is levied on gold mines in South Africa. In South Africa this tax is levied in place of the standard corporate income tax rate of 28 percent. The rate is determined by a formula:

51 Pablo Mir, *Mining Royalties and Taxation, the Chilean Experience,* (Brazil, June 2010). www.ibram.org.br/sites/1300/1382/00000615.pdf

$$Y = a - \left(\frac{a*b}{x}\right)$$

Y– tax rate

a – max tax rate applicable to mining companies (20 percent)

b – level of profit, where companies are exempted from paying corporate income tax (5 percent)

x – ratio of taxable corporate profit to revenue ("profit ratio").

In South Africa, the parameter "a" is 34 percent. However, I chose the lower value of 20 percent to ensure that the tax burden was comparable with the other regimes considered by the government (because the government has not proposed reducing the royalty or other taxes).

Note that this regime requires inclusion of certain standard corporate income tax rules in the Kyrgyz Republic in order to calculate the profit ratio, although does not necessitate applying the tax itself.

EVALUATION OF TAX REFORM IDEAS

Using the same evaluation approach as I used in the last section, here I show how each of these four ideas compare to possible government objectives. In all but the first idea, I had discretion in choosing which rates and tax structures to compare.

I chose the parameters of the regimes to ensure that at current prices, the rise in the tax burden would be similar. Figure 9 shows this, and that any of these reforms would move the Kyrgyz regime into the lower end of the 40 to 60 percent average effective tax rate range identified by the IMF as being reasonably achievable for mining tax regimes. Although, at a gold price of $1,300 per ounce, it would still be much lower than the tax regimes in other countries I evaluated. However, if the government wants to increase the tax burden, the rates on each tax regime could be sized to increase or decrease this overall tax burden.

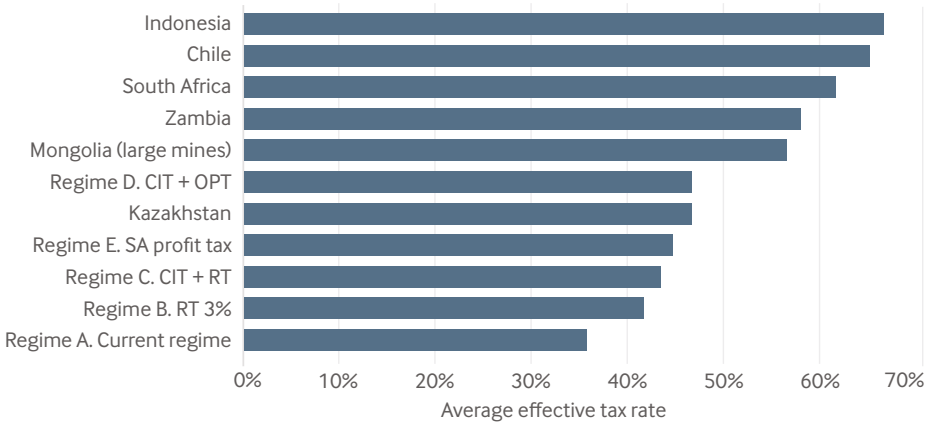


Figure 9. Government tax (annual effective tax rate (AETR)) for a mine with a capital expenditure of $500 million and gold price of $1,300 per ounce[52]

Tax base simplicity

Figure 10 (similar to Figure 4 above) summarizes the evaluation of the four regimes for the perspective of simplicity in measurement by showing the total revenues the government receives from each type of tax, grouped by the type of tax base. All the tax regimes still have a reasonably high proportion of revenues coming from

52 Natural Resource Governance Institute, NRGI Gold Mining Tax Model v1, 2018.

the simpler-to-measure gross sales category, compared with the other countries I evaluated.

The three regimes that have revenue tax as a component have high proportions of total revenues coming from gross sales taxes. These are likely to be the least subject to tax avoidance, as the State Tax Service is more likely to accurately measure gross sales base than profits.

Regime D, including both a corporate income tax and operating income tax represents a middle ground. A relatively small amount of revenue comes from taxes based on gross sales, but some revenue comes from the operating profit tax. Operating profits—depending on the exact definitions used to design the tax—can be simpler to measure than the profits used in corporate income tax, as they do not include as many cost items as corporate profits.

Out of the regime ideas considered here, Regime E, which would replace the revenue tax with a variable profit tax as levied in South Africa, would expose the government to the most tax abuse risk based on the complexity of tax base measurement. However, even in this case, by the measure I use here, this risk is still less than in countries like Zambia that are also concerned about tax avoidance by mining companies.

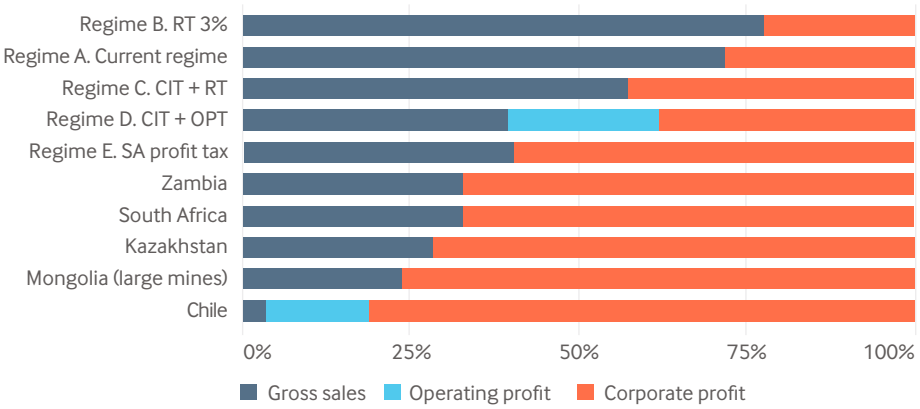


Figure 10. The proportion of total project revenues generated by tax based on gross sales, operating profit and corporate profit[53]

Government revenue reliability at low profit levels

Figure 11 (similar to Figure 5 above) shows a trade-off that governments often have to make in terms of earning revenue early in a project's life versus later in a project's life. Increasing the revenue tax by three points would ensure that new projects pay a higher amount in the first six years, but as production increases this regime is not progressive enough to tax the resulting profits as much as the other regimes, though it still generates higher revenues during this period than the current regime. The regime based on the South African profit tax has the opposite characteristic: the government might suffer relatively low revenues in the early years of the project but then enjoy much higher revenues as the project matures. As I argued in Section 2, revenue reliability may not be a significant concern for the government at this point in time because most revenues are currently generated by the Kumtor gold mine.

53 *Ibid.*
54 *Ibid.*

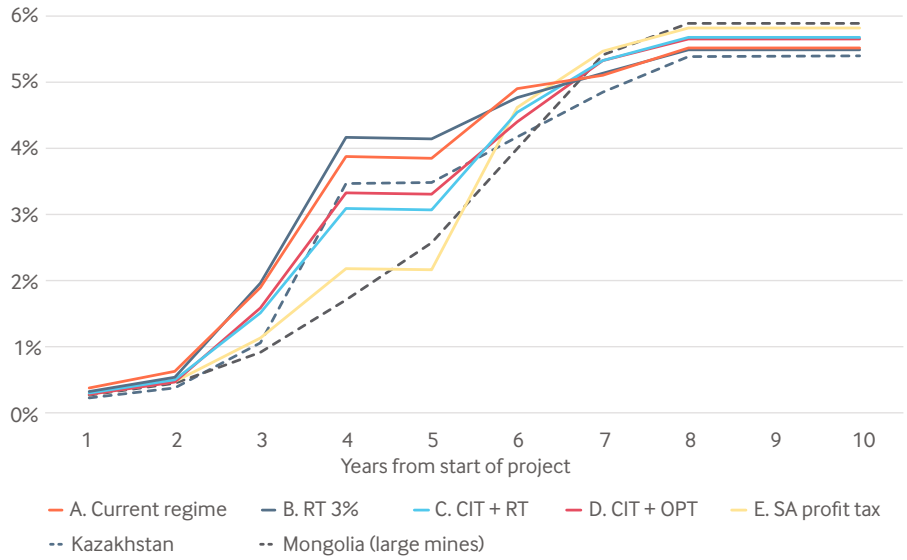


Figure 11. Government revenue earned in the first ten years of a project[54]

Progressivity as costs change

All but one regime is regressive with respect to a change in operating costs, although to differing degrees. Figure 12 illustrates this by the upward sloping curves showing that the proportion of cash flow the government takes is higher for mines with high costs than it is for mines with low costs. Increasing the revenue tax by three points makes the tax regime even more burdensome for companies with high costs. For mines with costs above $650 per ounce of gold produced, which represents a significant proportion of the gold mines across the world at present, the tax burden is higher than the Kyrgyz Republic's neighbors, such as Kazakhstan.

Replacing the revenue tax with the South African profit tax would reduce the regressiveness of the tax regime, which would be attractive to a wider range of investors, while still levying a reasonably high tax burden on mines with lower costs that could better afford to pay higher taxes.

The exception is Regime D, which combines the corporate income tax and operating profit tax. This tax regime is progressive with respect to a change in operating costs for a wide range of costs. By design, the operating profit tax taxes companies more when their operating profits increase. This is useful both to attract investment in a wide range of mines with different cost profiles, and also to tax windfall profits on companies whose costs are relatively low. For instance, Figure 12 shows that when costs are low, the tax burden is high.

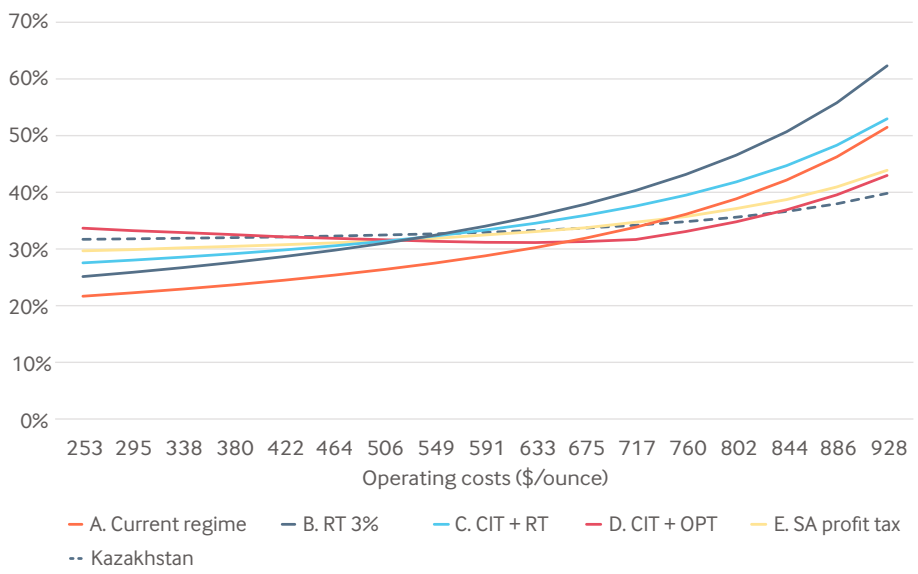


Figure 12. Government share of cash flow as the operating costs change[55]

Progressivity as prices change

The previous metric showed how each regime responds to a change in costs while keeping price constant. Figure 13 shows the opposite: how each regime responds to a change in *prices*, keeping costs constant. In this case, an upward sloping curve shows a progressive regime with respect to prices.

Regime B, increasing the revenue tax by three points, forms a U-shape curve. This leads to very high tax burden when prices are low and when high. But for current prices the tax burden would still be relatively low.

Adding the corporate income tax alongside the revenue tax makes the regime less regressive at low prices, and a little more progressivity at high prices. Regime D, which replaces the revenue tax with the operating profit tax, has a similar effect. The tax regime using the South African profit tax is not particularly progressive because at high prices, it fails to tax the windfall profits as much as the other regimes.

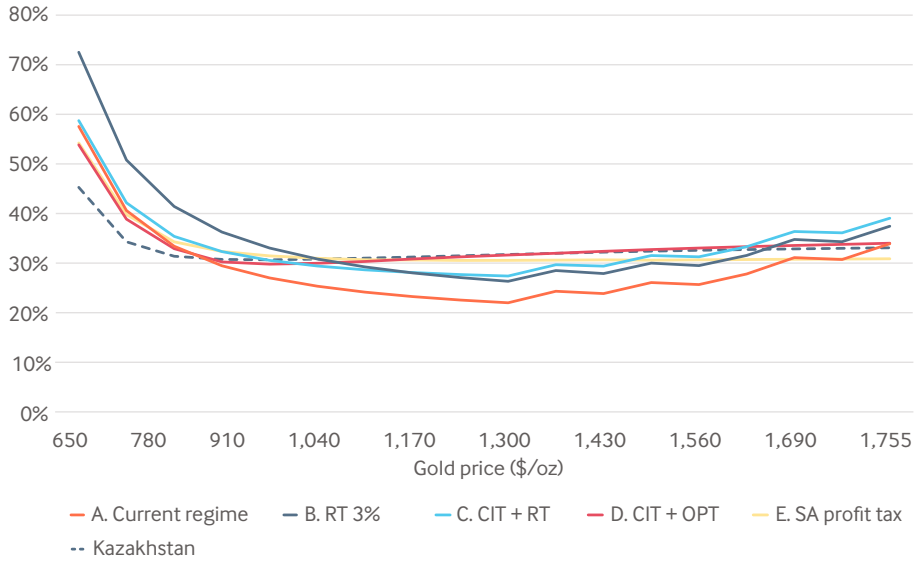


Figure 13. Government share of cash flow as the gold price changes[56]

55 *Ibid.*
56 *Ibid.*

5. Conclusion and recommendations

My financial modeling of gold mines in the Kyrgyz Republic indicates that, under current economic conditions, the current legislated tax regime taxes gold mines (other than Kumtor) relatively lightly. However, it is not straightforward to say whether the current tax burden is too low for the country. It depends on the costs of current and future mines, and future mineral prices. It also depends on the importance investors place on a country's tax regime compared with other factors, such as the political risk and business climate in which they must operate. As the Kyrgyz Republic's business climate is relatively unattractive to investors, a low tax burden does not do much to compensate.

This study shows that designing a tax regime inevitably involves the government making a trade-off. Applying any of the four tax regimes I evaluated in this report section forces the government to compromise on at least one of the its objectives. To illustrate this, Table 7 summarizes my evaluation of the current regime and the four suggested regimes. I have given each regime a score relative to the other tax regimes for each of the four evaluation criteria. This score is somewhat subjective, since there is not yet an established quantitative method to calculate such a score. This is particularly the case for ranking the progressivity of each regime, since a tax regime can be progressive under one range of costs or prices and regressive under another range. However, I believe this at least provides a basic summary of the more detailed analysis in this report.

	1. Tax base simplicity	2. Government revenue reliability at low profit levels	3. Progressivity as costs change	4. Progressivity as prices change
A. Current regime	Very good	Poor	Poor	Fair
B. Current regime with revenue tax increase by 3%	Very good	Very good	Very poor	Fair
C. Current regime plus corporate income tax	Fair	Fair	Fair	Very good
D. Current regime less revenue tax, plus CIT and operating profit tax	Poor	Good	Very good	Good
E. Current regime less revenue tax, plus variable rate profit tax (South Africa profit tax)	Very poor	Very poor	Good	Poor

Table 7. Comparison of the current regime and four proposed regimes against possible government objectives

The chart shows that no regime is perfect; each has at least one weakness. For instance, increasing the revenue tax by three percentage points might ensure that the tax regime performs well across most of the criteria, but poorly in one important one—in that it is the least progressive among the studied options with respect to costs. This regime might deter investment than the other regimes, or at least encourage companies to seek investment incentives. It is also more likely to force companies to close operations sooner than they would under a more progressive tax regime.

Alternatively, replacing the revenue tax with the corporate income tax and operating profit tax might ensure that the tax regime performs well across most dimensions except in simplicity of measurement.

The right course of action depends on which objectives and concerns matter most for the government. If the government is more worried about tax avoidance risks than deterring investment or missing out on taxing windfall profits, then keeping a predominantly gross sales-based regime is probably preferable. In this case, keeping with the current regime or increasing the revenue tax by three points is probably appropriate. The latter could be achieved by either by replacing the revenue tax with one in which the rates change with a measure of revenue rather than price, or by regulating when and how the government can change the rates periodically. Furthermore, if the point of raising the revenue tax is to generate more revenue, I suggest applying the change to all gold mines, not just those that produce gold concentrate. Otherwise, a large number of mines will avoid the tax by processing their concentrate in the Kyrgyz Republic, which is not likely to generate much extra revenue for the government.[57]

However, raising the revenue tax also makes the tax regime particularly regressive. For high cost mines, or when prices are low, raising this tax might force some mines to close, which will increase unemployment and reduce tax revenues, and may also deter investors. Raising the revenue tax also does a poor job of taxing windfall profits made by low cost mines. Relying mainly on gross sales taxes also reduces the ability of the government and the State Tax Service to understand the cost structures of the mining industry, making tax reforms like this one far more difficult to implement well.

If these are more important concerns for the government than tax avoidance, then applying either Regime C or D by introducing the standard corporate income tax may be more appropriate. Out of the two regimes, I believe Regime B is the most practical option. This represents a good middle ground that balances the various concerns of the government. It also benefits from using taxes that are already levied in the country. This regime may not provide a reliable or timely stream of revenues, but as the mining industry does not represent a dominant portion of the total government revenue, this may not be the government's highest priority for the mining tax regime.

Further, while the corporate income tax increases the risk of tax avoidance, having at least some exposure to this may help the STS increase its capacity to measure profits. This regime also uses taxes already levied in the country. However, the points I have made concerning the revenue tax are applicable to this regime, too. I therefore would suggest considering the reviewing the design of the revenue tax along the issues I highlight in Section 3.

57 David Manley and Nazgul Kulova, Should the government of the Kyrgyz Republic impose a tax on gold ores and concentrates?

If the government does choose to levy the corporate income tax, I suggest thoroughly reviewing the tax code to identify any loopholes or elements that are not appropriate for gold mining. I also suggest reviewing the resourcing, incentives and organizational structure of the State Tax Service to ensure that it has the capabilities necessary to successfully administer a profits tax.

Out of all the tax regimes I evaluated, Regime E—replacing the revenue tax with South Africa's gold profit tax—is the least appropriate for the Kyrgyz Republic since much of the tax regime is based on corporate profits, which will make a large portion of total revenues potentially subject to tax avoidance strategies.

Appendix

A1. DETAILS OF THE CURRENT MINING TAX REGIME IN THE KYRGYZ REPUBLIC

This is the tax regime levied on mining companies, except Kumtor Gold Company. There are differences for mines that produce some gold compared with those that do not. I detail those differences here.

Royalty[58]

A royalty is a tax on a mining company's revenue (or gross sales revenue) less the company's payments of value added tax (VAT) and sales tax. The rates differ according to mineral type. For gold, silver and platinum produced, the rates differ by the estimate size of the reserve:

- 5 percent for deposits with reserves greater than ten tons;
- 3 percent for deposits with reserves of three to 10 tons;
- 1 percent for deposits with reserves of less than three tons.

For copper and all other metals, the royalty rate is 3 percent.

Payment for development and maintenance of local infrastructure

The government levies a payment on the same base as the royalty, with a rate of two percent. The government is meant to transfer the amount paid to local authorities.

From the perspective of a company producing gold, this means that it faces an effective royalty rate of seven percent (five percent for the royalty and two percent for the payment for development and maintenance of local infrastructure).

Corporate income tax[59]

The corporate income tax differs according to the minerals produced. For mines that produce at least some gold, the corporate income tax rate is zero. This also applies to corporate income derived from the sale of other minerals, as long as the mine has produced at least some gold. There does not appear to be a *de minimis* threshold to this rule, so that theoretically, a mine could produce an ore with very small quantities of gold and still enjoy a zero rate on corporate income tax. If a mining company does not produce at least some gold, the corporate income tax rate is 10 percent, which is equal to the rate levied on most other businesses in the Kyrgyz Republic.

Revenue tax

In place of corporate income tax, gold mining companies must pay a revenue tax. This is effectively a variable rate royalty or gross sales tax, variable with respect to the prevailing gold price. The tax base is the same as the royalty: gross sales less VAT less sales tax. The revenue tax is therefore applied alongside the royalty—royalty payments are not deducted from the base first. The tax rate varies according to the prevailing monthly gold price on the London Metal Exchange.

58 Government of the Kyrgyz Republic. Tax Code, articles 307-310. 17 October 2018. www.sti.gov.kg/docs/default-source/form/taxcoderu.pdf?sfvrsn=2

59 Tax Code, article 213

Table 8. Revenue tax, price-rate schedule[60]

LME gold price (USD per ounce)	Revenue tax rate
1,300 or less	1%
1,400	3%
1,500	5%
1,600	7%
1,700	9%
1,800	11%
1,900	13%
2,000	14%
2,100	15%
2,200	16%
2,300	17%
2,400	18%
2,500	19%
2,600 or more	20%

Withholding taxes

The government levies a rate of 10 percent on the value of dividend and interest paid to foreigners.

Value added tax (VAT)[61]

The VAT rate differs according to whether the goods are imported or bought locally, and whether the company exports gold and silver. For all companies, VAT of 12 percent is charged on the value all goods imported into the Kyrgyz Republic. This value includes customs value, customs duty and excise. For goods bought locally by a company that exports, VAT is charged at a zero rate if the company does not produce gold or silver. If the company does produce gold or silver, it is exempted from VAT in either case. Exemption and zero-rating are not the same. By exempting gold mines of VAT, the tax incidence falls on the mines' suppliers. This means that local businesses have to either pay the VAT themselves, or apply for a refund, which might be delayed if the State Tax Service cannot pay promptly.

60 Government of the Kyrgyz Republic. Tax code. 17 October 2018. www.sti.gov.kg/docs/default-source/form/taxcoderu.pdf?sfvrsn=2
61 Government of the Kyrgyz Republic. Tax code, articles 227, 256, 261, Tax code, article 227

Other taxes and payments

There are a range of other taxes and payments. However, as Figure 14 illustrates below, these are relatively insignificant compared to the taxes already described.

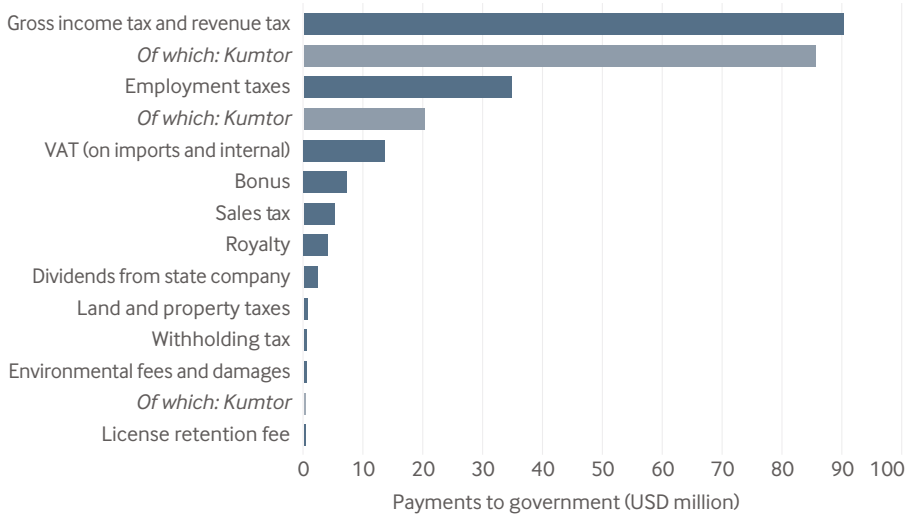


Figure 14. Average annual total industry payments by tax type from 2012 to 2014, with main Kumtor payments separated[62]

Table 9. Tax regime on mining companies in the Kyrgyz Republic[63]

Tax or payment	Rate	Base	Legal act
Taxes			
Bonus	Bonus rates are established by the government of the Kyrgyz Republic for all types of natural resources based on a classification table.	Geological reserves and prognosticated resources placed on the State Register of Mineral Deposits and Occurrences	1) Tax code, articles 301-306 2) Government Decree #410 of June 25, 2009
Sales tax	2%, 3% for sales paid in cash and 0% paid in non-cash form	Gross sales (services) minus VAT minus sales tax	Tax code, articles 316-319
Personal income tax	10%	Remuneration paid to a physical person	Tax code, articles 163, 173
Property tax			Tax code, articles 323-328
Land tax		Area	Tax code, articles 334-337
Social security contributions			
Employer payments to the social fund	17.25%	Remuneration	Law of the Kyrgyz Republic #8 on social security contribution rates of January 24, 2004, articles 1-4, 8
Employee payments to the social fund	10%	Remuneration	
Customs payments			
Customs fee	0.25% for customs registration 1/10 of the calculation index (100 Kyrgyz som) per each km of customs escort	Customs value of goods	Law on Customs Regulation, article 87
Non-tax payments			
Payment for development and maintenance of local infrastructure	2%	Gross sales minus VAT minus sales tax	Law On Non-Tax Payments, article 19-3

62 Natural Resource Governance Institute, "EITI Complete Summary Data Table," www.eiti.org/api/v1.0/summary_data and author's calculations.

63 Government of the Kyrgyz Republic. Tax code. 17 October 2018. www.sti.gov.kg/docs/default-source/form/taxcoderu.pdf?sfvrsn=2

License retention payment	Rates vary depending on the area of land, how long the land has been used, and the type of extractive activity.	Area	1) Article 19-2 of the KR Law on Non-Tax Payments 2) Government Decree #760 of November 6, 2015
Dividends accrued and paid on state-owned shares	No less than 25%	Retained profit for the year	Law on Joint Stock Companies and Charter of a company
Land lease payments for: 1. Public and municipal lands; 2. Forestry lands	Based on agreement		Article 8 of the land code
Compensation for agricultural losses	There is no loss calculation formula		Regulations *On Land Lease for Subsoil Use*, as approved by Kyrgyz Government Decree #261 of April 12, 2006 (para. 10, compensation of losses)
Compensation for forestry losses	There is no loss calculation formula		Forestry code, article 101 (compensation of losses)
Loss of profit in connection with land lease	No loss calculation formula		Regulations *On Land Lease for Subsoil Use*, as approved by Kyrgyz Government Decree #261 of April 12, 2006 (para. 10, compensation of losses)
Environmental charges and compensation for environmental damage			Kyrgyz Government Decree #625 On Approval of *Environmental Pollution Charge Rates in the Kyrgyz Republic* of September 10, 2015
Social infrastructure support			Agreement, contract
Payments to the land rehabilitation fund		In accordance with a technical program for the development of a particular deposit	*Subsoil Licensing Regulations* as approved by Kyrgyz Government Decree #834 of December 14, 2012

Kumtor tax regime[64]

- Gross income tax—13 percent of gross sales
- Issyk-Kul fee—1 percent of gross sales
- Annual amount for mineral development of the Kyrgyz Republic—4 percent of gross sales
- Environment pollution payment—$2.7 million per year
- Land and access fee—$5 million per year
- Payments to the trust fund for the reclamation of the Kumtor mine—an annual payment of $6 million until the total payments reach an agreed upon cost for reclamation of at least $69 million.

A2. MODELING APPROACH

The most widely used approach to modeling the impact of tax regimes on mining projects is a discounted cash flow model. For this, I used an adapted version of the

64 EY, *Non-ferrous metals production and processing. The sector's contribution to the economy of the Kyrgyz Republic and the effects on it of fiscal initiatives* (International Business Council, 2018).

IMF's FARI model. The model is of a single mining project that produces a concentrate with gold and copper. Since the impact of tax policy is on current operations and the investment decisions of future projects, I evaluated the tax regime by choosing a group of mining projects that are representative of mines currently in operation, and the possible characteristics of future projects. The effects of a tax regime can differ depending on the specific cost and production of a mine. I therefore chose two mine profiles that represent a comparatively large mine and comparatively small mine in the Kyrgyz Republic. I chose characteristics for two potential projects that might cover the range of current and future mines that could exist in the Kyrgyz Republic, and that are sufficiently different to create some variability to test how each tax regime applies to different mines. The "small mine" is based on the Bozymchak mine, taking the main characteristics from the SNL mines and minerals database. However, I adjusted the production and costs to ensure that under the current Kyrgyz tax regime, the hypothetical mine would generate a post-tax return above our assumed investor hurdle rate of 12.5 percent. The "large mine" is based on the Kumtor mine and the data available in the SNL database. However, I have halved the assumed annual production of gold under the assumption that finding and developing another Kumtor-sized mine is unlikely. It is more likely to find a smaller-sized mine.

Broadly speaking, the evaluation results for both model mines are similar. The few apparent differences I have noted in the report are:

Table 10. Key assumptions for two mine project profiles

	Small mine	Large mine
Peak production, ounces of gold	60,000 ounces	250,000 ounces
Associated minerals (percent of gross sales from gold)	10%	10%
Production life	20 years	20 years
Total development costs	$200 million	$500 million
Replacement capital per year	$2 million	$5 million
Operating cost, USD per ounce (varied in the model as part of the progressivity analysis)	$422 per ounce	$422 per ounce
Transport, treatment and refining charges	$78 per ounce	$78 per ounce
Operating costs with transport and TC/RC	$500 per ounce	$500 per ounce
Pre-tax internal rate of return	20%	34%
Post-tax internal rate of return (under Kyrgyz current regime)	15%	27%

I chose operating costs of $500 per ounce (including transport, treatment and refining charges) to place the model mines close to the center of the global gold cost curve, based on the estimated costs of mines in 2017. In the evaluation, I vary this assumption.

To each of these mine profiles, I applied the main elements of the Kyrgyz mining tax regime. However, I did not include the state share of companies owned by Kyrgyzalten, the Kyrgyz Republic's state-owned mining company. Also, there are certain taxes and other fiscal instruments that apply to some or all mining companies in the Kyrgyz Republic that I did not include in the model tax regime, for example licensing fees. EITI data show that these taxes and payments historically have not generated significant revenue. For example, land and property taxes, environmental fees and the license retention fee together contribute only 1 percent of total mining industry payments. I therefore did not include these taxes to keep the model and our analysis as simple as possible.

Custom duties vary according to trade agreements between countries—such as the Eurasian Economic Union trade rules—and according to the good or service being imported. For simplicity, I have assumed one rate for all imported inputs. For the

Kyrgyz Republic, goods from outside the EEU appear to attract a duty of 9.4 percent.[65] I have assumed a 5 percent import duty based on the assumption that some goods are sourced from within the EEU and some from outside. Most other countries in I used in the evaluation, particularly those outside the EEU, have reduced import duties to zero across most mining inputs, or have trade agreements with major trading nations doing the same.

I also assumed a set of economic factors that would apply to a mining project, for instance: the global metal price, an investor's hurdle rate, and global inflation. For these I took the values used as current standard practice by industry and government analysts.

Table 11. Key economic and financial assumptions

Economic factor	Assumption
Mineral price (varied in the evaluation)	$1,300 per ounce
Nominal discount rate (government and investor)	12.5%
Inflation	2%
Real interest rate	5%
Project leverage (equity/total assets)	50%

65 Export.gov. "Kyrgyz Republic - Import Tariffs." Accessed 14 May 2018. www.export.gov/article?id=Kyrgyz-Republic-Import-Tariffs

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ACKNOWLEDGMENTS

The author wishes to thank the staff of the Ministry of Economy and the State Committee of Industry, Energy and Subsoil Use of the Kyrgyz Republic for their guidance and information; Nurlan Mamyrbaev, doctor of technical science at the Kyrgyz Republic Institute of Mining and Mining Technologies; Steven Macey, independent consultant; and Nazgul Kulova, Amir Shafaie and Thomas Scurfield of the Natural Resource Governance Institute.