**DOI** 10.52468/2542-1514.2021.5(4).159-174



# TAXATION OF COPPER AND NICKEL ORES MINING IN AUSTRALIA, CANADA, CHILE, KAZAKHSTAN AND USA**

**Natalya S. Kostrykina, Andrey V. Korytin, Elena V. Melkova**
*Institute of Applied Economic Research, Russian Presidential Academy of National Economy and Public Administration, Moscow, Russia*

***Article info***
Received –
2021 April 23
Accepted –
2021 October 10
Available online –
2021 December 24

***Keywords***
Mineral extraction tax, minerals, resource rent, fair market value, resource royalty, copper, nickel, multicomponent complex ores

The subject. This article discusses the taxation of copper and nickel extraction in Australia, Canada, Chile, Kazakhstan and USA

The purpose of the article is to confirm or disprove the hypothesis that the experience of taxation of copper and nickel extraction in Australia, Canada, Chile, Kazakhstan and USA may be used for modifying the mineral extraction tax (MET) in Russia in order to increase the share of resource rent collected by the government.

The methodology of research includes legal interpretation and economic analysis of the tax legislation in United States, Canada, Australia, Chile and Kazakhstan as countries with a well-developed tax system and a significant size of the mining sector in overall GDP.

The authors select the legislative acts of these countries and regions that determine the procedure for collecting taxes in the extraction of metal ores, including those containing copper and nickel, as well as in the production of copper and nickel. The selected legislative acts are analyzed to determine the essential parameters of taxation. Particular attention is paid to the method of calculating the tax base, taking into account the approach to as- sessing the value of the taxable object, permissible tax deductions and exceptions, which allows authors to test the hypothesis put forward by determining which part of the value of a mineral resource is withdrawn during taxation.

The main results, scope of application. Mineral extraction tax is the main tool for collecting natural resource rent in Russia. However, the level of taxation of solid minerals and coal is disproportionately low compared to their share in the production and export of raw mate- rials. Thus, in 2018, the amount of MET on all minerals totaled 100.5 billion rubles, while the MET collected from oil and natural gas amounted to 5,979.6 billion rubles, i.e. 60 times as much. At the same time, the role of solid minerals in the Russian economy is comparable to the role of oil and gas. The share of the main types of minerals in the exports of the Russian Federation in 2018 was 20.4% compared to 56% for oil and gas, i.e. the difference of less than three times. The contribution of the industries related to the extraction of min- erals and production of metals (mining of coal, ores, diamonds, metallurgy, fertilizer pro- duction) to the Russian GDP is about half as much as that of industries involved in the ex- traction and processing of oil and natural gas (7% and 14% of GDP respectively).

In view of the above, it is important to develop a new approach to the taxation of solid minerals in Russia based on the world's best practices. In order to identify the general prin- ciples of their taxation, we have conducted a detailed analysis of the tax legislation in a number of countries with a well-developed tax system and a significant size of the mining sector (the United States, Canada, Australia, Chile and Kazakhstan). We focused on the tax- ation of copper and nickel ores mining.

Conclusions. The analysis of the international experience of taxation of copper and nickel min- ing sector reveals the following trend: the tax is calculated based on the market value of the extracted minerals, which is linked to the price quotes for the relevant product on an orga- nized metal exchange (for example, the price of pure metal on the London Metal Exchange). This approach can be used in the Russian tax practice in several ways. First, Russia can adopt the Australian model where royalty on a mineral resource can be levied at the time of sale of the useful component irrespective of the processing stage (ore, concentrate or metal). The second potential model is based on the actual sale price of the product (provided it is sold in an arm's length transaction) after deducting the costs of processing (i.e., smelting, enrichment etc., depending on the stage of processing) to arrive at the market value of the ore at the "mine mouth". The third is the Canadian model which is similar to the second one, but with the extraction costs also deducted from the sale price.

** The research was done in fulfillment of the state order given to the Russian Presidential Academy of National Economy and Public Administration.

ISSN 2542-1514 (Print)

## 1. Introduction

Objective data indicate that the Russian economy is largely dependent on the resource revenues. A significant part of the consolidated budget tax revenues consists of revenues from the mining, metallurgical and chemical industries, and GDP growth is in strongly dependency on the price dynamic in the commodity markets [1].

The actual problem is to search for additional tax revenue sources; however, it is unacceptable to increase the tax burden on labor and capital [2, p. 25]. Under the given conditions, more intensive taxation of the largest raw material exporters is more affordable, especially the taxation of solid minerals, including ferrous and non-ferrous metals, coal, diamonds, fertilizers.

The production of non-ferrous metals from domestic raw materials is based on copper and nickel, as well as platinum, palladium, zinc and lead contained in copper-nickel ores. Therefore, it makes sense to consider the taxation of copper and nickel mining in a one work.

In 2018, the Deputy Minister of Finance (now First Deputy Prime Minister) Andrey Belousov estimated the revenue collection potential of 14 large resource companies, mainly related to the extraction and processing of solid minerals, in the amount of 513 billion rubles (about 8 billion of USD). However, any mechanism of the revenue collection was not been presented.

In 2020, in the annex to the Regulations of the budgetary, tax and customs-tariff policy for 2021-2023, it is proposed to change the approach to taxation of multicomponent complex ores (MCO) based on an analysis of the experience of fixed tax rates on MCO extraction at the Krasnoyarsk Territory. In other regions, MCO extraction is taxed at a rate of 8% on the value basis. However, in practice, the value of ore minerals for tax purposes is often assessed by accounting method, so this value is significantly lower than the market value.

Since 2021, the rates of tax on mineral extraction have been increased for solid minerals by multiplying current rates on $K_{RENT}$ coefficient, but the approach to the tax base (and its components) assessment has not been changed.

In this situation, the search for ways to improve the taxation of non-ferrous metal ores, primarily multicomponent copper and nickel ores, becomes relevant. Within this framework, an actual problem is to study approaches to the natural resource rent collection in the copper and nickel mining industries in large producing of copper and nickel countries with a developed taxation system.

## 2. Purpose, hypothesis and research method

The purpose of the study is to identify common patterns in approaches to taxation of copper and nickel mining in countries with a developed tax system by the example of Australia, Canada, the United States, Chile and Kazakhstan, which are among the largest producers of copper and nickel.

The hypothesis of the study is that the taxes on non-ferrous metal mining in these countries are calculated on the basis of the market value of the extracted minerals, and this value corresponds to the metal exchange prices.

The study is carried out by analyzing the tax legislation of the specified countries (as well as states and provinces) in the scope of mining activity. For the purposes of the analysis of the tax legislation in federal countries (Australia, Canada and the US), we select the states or provinces with the largest volumes of copper and nickel production (see Table 1): for Australia – Queensland and Western Australia, for Canada – British Columbia and Ontario, for the US – Arizona and Michigan.

ISSN 2658-4050 (Online)

Studying the legislation of mining taxation, we select the legislative acts of these countries and regions that determine the procedure for levying taxes in the extraction of metal ores, including copper and nickel ores, as well as in the production of copper and nickel. The selected legislative acts are analyzed to determine the tax structure: subject of taxation, object of taxation, tax base, tax rates and other features of tax payment. Particular attention is paid to the method of calculating the tax base, taking into account the approach to assessment the value of the object of taxation, allowed tax deductions and exceptions. The clarification of all these facts make it possible to test the hypothesis and find out what share of the value of a mineral resource is collected by the taxation.

Table 1

**Regions of Australia, Canada, the US and Russia with the largest volumes of copper and nickel production**

| *Country* | *Metal* | *Production volume, thous. tons* | *Region* | *Contribution to product., %* |
|---|---|---|---|---|
| Австралия | Copper | 900 | Southern Australia | 31 |
| | | | Queensland | 27 |
| | | | Western Australia | 21 |
| | | | New South Wales | 18 |
| | Nickel | 200 | Western Australia | 96 |
| Канада | Copper | 600 | British Columbia | 55 |
| | | | Ontario | 25 |
| | Nickel | 220 | Ontario | 38 |
| | | | Quebec | 31 |
| | | | Newfoundland and Labrador | 21 |
| США | Copper | 1330 | Arizona | 63 |
| | | | Utah | 18 |
| | Nickel | Production is insignificant | Michigan | Production is insignificant |
| Россия | Copper | 890 | Krasnoyarsk region | 47 |
| | | | Chelyabinsk region | 17 |
| | | | Orenburg region | 14 |
| | Nickel | 280 | Krasnoyarsk region | 87 |
| | | | Murmansk region | 12 |

Source: Australia's Identified Mineral Resources 2016. Australian government. URL: http://www.australianminesatlas.gov.au/aimr/index.html; Minerals and Metals Facts. Government of Canada. URL: https://www.nrcan.gc.ca/science-data/science-research/earth-sciences/earth-sciences-resources/earth-sciences-federal-programs/minerals-metals-facts/20507; Aksenov S. A. and others. (2020). On the state and use of mineral resources of the Russian Federation in 2019: State Report – 2020.

ISSN 2542-1514 (Print)

**3. Approaches to mineral rent taxation**

Researchers identified a number of main forms of mineral rent taxation, including: the fixed fee, the specific or ad valorem royalty, the higher rate of proportional profits or income tax or the progressive profits tax, and the resource rent tax (as in the Australian petroleum resource rent tax) [3]. Australian authors Garneau and Clooney-Ross proposed the resource rent tax for more neutral taxation of the mining industry [4], however the implementation of this approach has brought to ambiguous results.

In Australia in 2009, the Henry Tax Review announced an idea to replace the country's royalty-based mineral extraction taxation system with a single tax on resource rent. Researchers has repeatedly established that a resource rent tax provides a greater return to the state and community, fewer tax-led distortions for business, and ongoing financial attractiveness of mining for a sovereign state. [5, p. 821]. The Henry Review argued that "a well-designed rent-based resource tax is less likely to distort investment and production decisions"[1].

In 2012 the Australian government introduced the Minerals Resource Rent Tax (MRRT), following the main proposals of the Henry Review[2]. However, this measure led to significant political controversy, meanwhile actual tax revenues from MRRT is found be much less than predicted[3]. The Henry Review and Government proposal have drawn a powerful negative response from businesses in the resources sector long before MRRT introduction [6].

As a result, in 2014 the MRRT was canceled by the newly elected coalition government. The experts' belief that an assessment of the effectiveness of MRRT requires a detailed information on the actual operational costs for every mine as well as on capital investment requirements and expected returns of the investment [7].

Boadway and Keen (2010), Land (2010) and Hogan (2012) advocate the simultaneous application of royalty and resource rent tax regimes [10], while Alekseev and Konrad (2017) argue that a number of the complex issues of an original resource rent tax can be resolved by another approach to natural resource rent taxation [8].

**3.1. Australia: mineral royalties**

The natural resource deposits in Australia are owned by the people (through their governments). Special taxes on mining are a form of compensation to the people for the private sector extraction of a non-renewable resource. The States are the owners of minerals and oil and gas on their territory, while the Commonwealth government owns offshore oil and gas.

Each of the states and territories has enacted its own laws relating to exploration and development of mining operations. While there has been little effort to standardise these laws, they have many common features, and generally Australia has a relatively uniform legal approach to mining[4].

*Queensland: royalty payable for minerals*

Depending on the mineral, the royalty rate payable under the Mineral Resources Regulation 2013 is either a percentage of the value of the mineral or a flat rate per tonne. The value of a mineral is calculated by determining the gross value of the mineral and deducting certain permitted expenses[5]. The gross value of a mineral will generally be the amount for which it is sold.

[1] Australia's future tax system: Report to the Treasurer. December 2009. Part Two: Detailed analysis: in 2 volumes. Commonwealth of Australia, 2010. Vol. 1. ix, 313, 10, 39. p. URL: https://treasury.gov.au/sites/default/files/2019-10/afts_final_report_part_2_vol_1_consolidated.pdf.

[2] Australia waits on minerals resource rent tax. International Tax Review. September 30 2010. URL: https://www.internationaltaxreview.com/article/b1fbrkvf34dkl1/australia-waits-on-minerals-resource-rent-tax.

[3] Freebairn J. Royalties or Resource Rent Taxes? Austaxpolicy: Tax and Transfer Policy Blog. 10 December 2015. URL: https://www.austaxpolicy.com/which-is-more-efficient-and-effective-comparing-royalty-and-resource-rent-taxes/.

[4] Jay Leary, Geoff Kerrigan. Mining Law 2020. Seventh Edition. Australia. ICLG.com.

[5] Cost relating to the late dispatch of coal from a port (coal only); freight or insurance costs relating to the transport, by water, of the mineral to a port outside Queensland; loss of metal content (certain minerals only); other approved deductions. Deductions for mining royalty. Queensland Government. https://www.business.qld.gov.au/industries/mining-energy-water/resources/minerals-coal/authorities-permits/payments/royalties/calculating/deductions

ISSN 2658-4050 (Online)

A market value mineral – is a mineral mined by the holder for the mineral if—

1) the mineral is sold at a listed price or an average listed price; or

2) the mineral is disposed of or used and a market value for the mineral may be established by reference to a listed price, or an average listed price, for the mineral; or

3) neither paragraph (1) nor (2) applies to the mineral and—

i) the mineral is sold in an arms-length transaction to a person other than a relevant entity for the holder; and

ii) the holder has sold a mineral of the same kind in an arms-length transaction in the previous 2-year period to a person other than a relevant entity for the holder; or

4) paragraphs (1) to (3) do not apply and the holder entered into an agreement, before or as soon as practicable after the mineral was mined, to sell the mineral in an arms-length transaction to a person other than a relevant entity for the holder[6].

In cases covers by paragraphs 1, 3 and 4 above the gross value of a mineral is a sale price disregarding any processing cost for the mineral. In a case covered by a paragraph 2 above the gross value of a mineral is determined by reference to a listed price, or average listed price, for the mineral, disregarding any processing cost for the mineral.

A mineral mined by the holder for the mineral is not a market value mineral if—

1) the mineral is sold or disposed of to, or used by, a relevant entity for the holder and the relevant entity is involved in the marketing or reselling of the mineral or in the production of a commodity using the mineral; or

2) the mineral is sold or disposed of to, or used by, a person and the holder receives a non-financial benefit from the sale, disposal or use (whether or not the holder also receives a financial benefit from the sale, disposal or use).

If a mineral is not a market value mineral, the gross value of the mineral is the amount decided by the Minister in a gross value royalty decision for the mineral; or if the mineral is sold and an amount in relation to the royalty payable for the mineral is recovered from the buyer — the total of — the amount decided by the Minister in a gross value royalty decision for the mineral; and the amount recovered.

There is a procedure for an application to the Minister for a gross value royalty decision. The Minister may also make a gross value royalty decision on Minister's own initiative. Calculating the correct amount of royalty is important as the opposite may lead to a royalty penalty of 75% of any understated liability[7].

Royalty rate for prescribed mineral

There is a special procedure to calculate royalty in respect of prescribed mineral – copper, gold, lead, nickel, silver, zink.

Average market price, for a prescribed mineral, means the average for a return period of the following price, converted to Australian dollars at the hedge settlement rate for each day of the return period. For copper and nickel is used the spot price quoted on the London Metal Exchange.

The royalty rate for a prescribed mineral (royalty) is—

(a) if the average market price for the mineral is equal to or lower than reference price 1 for the mineral—2.5% of the value of the prescribed mineral (royalty); or

(b) if the average market price for the mineral is higher than reference price 1 for the mineral but lower than reference price 2 for the mineral—calculated by the following formula – 2.5% + (average market price – reference price 1) / (reference price 2 – reference price 1) * 2.5%;

(c) if the average market price for the mineral is equal to or higher than reference price 2 for the mineral—5% of the value of the prescribed mineral (royalty).

Refence price 1 for copper is 3 600 Australian dollars for each tonne, reference price 2 for copper is 9 200 Australian dollars for each tonne. Reference price 1 for nickel is 9 200 for each tonne, reference

[6] MINERAL RESOURCES REGULATION 2013. Queensland Consolidated Regulations. http://classic.austlii.edu.au//au/legis/qld/consol_reg/mrr2013291/

[7] Liability for mining royalty. Queensland Government. https://www.business.qld.gov.au/industries/mining-energy-water/resources/minerals-coal/authorities-permits/payments/royalties/calculating/liability

ISSN 2542-1514 (Print)

price 2 for nickel is 38 100 for each tonne[8].

*Western Australia: royalty payable for minerals*

Mineral royalties are collected under the Mining Act 1978[9], the Mining Regulations 1981[10] or the various State Agreement Acts that have been negotiated for major resources projects.

State Agreements are essentially contracts between the Government of Western Australia and proponents of major resources projects, and are ratified by an Act of Parliament. These Agreements specify the rights, obligations, terms and conditions for the development of a project, and establish a framework for ongoing relations and cooperation between the State and project proponents. In some cases, the State Agreement Act contains specific royalty clauses while in other cases it simply refers to the royalty provisions in the Mining Act.

Mineral royalty rates are prescribed under either the Mining Regulations 1981 or the State Agreement Acts. In respect of copper and nickel the State Agreement Acts almost always use the royalty rates from the Mining Act[11].

In Western Australia ad valorem royalty system is used to collect ore mineral royalties. This means that a proportion of the 'royalty value' of the mineral is calculated. The royalty value is broadly calculated as the quantity of the mineral in the form in which it is first sold, multiplied by the price of the mineral in that form, minus any allowable deductions.

Western Australia has a three-tiered royalty system that was introduced in 1981. It applies one of three royalty rates depending on the form in which the mineral is sold (ore, concentrate or final form), and the extent to which it is processed[12].

Fines may be imposed if royalty return and production report non-compliance occurs. Forfeiture action or a financial penalty in lieu of forfeiture will be initiated if royalty payment non-compliance occurs. The penalty comprises a flat penalty plus a 20% percentage of the late royalty amount. The penalty must not exceed $75,000 if the lessee is an individual or $150,000 if the lessee is a body corporate.

Determination of royalty value in relation to nickel and nickel by products

The royalty value of nickel is the amount, in Australian currency, obtained by multiplying the percentage of units of nickel metal in the nickel containing material sold (as set out in invoices relating to the sale) by —

(a) the contracted list price for the mineral (as set out in those invoices) less any allowable deductions; or

(b) if there is no contracted list price for the mineral, the reference price for the mineral less any allowable deductions[13].

Contracted list price — for nickel sold at a price, or average price, listed on the London Metal Exchange for nickel — that price, in Australian currency. Reference price, in relation to nickel or a nickel by-product, means the price for the mineral, in Australian currency, that is the amount of a price, or average price, of a particular type or classification, fixed on the London Metal Exchange

[8] MINERAL RESOURCES REGULATION 2013. Queensland Consolidated Regulations. http://classic.austlii.edu.au//au/legis/qld/consol_reg/mrr2013291/

[9] Mining Act 1978. Western Australia. Published on www.legislation.wa.gov.au. https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_29868.pdf/$FILE/Mining%20Act%201978%20-%20%5B09-a0-04%5D.pdf

[10] Mining Regulations 1981. Western Australia. Published on www.legislation.wa.gov.au. https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_43047.pdf/$FILE/Mining%20Regulations%201981%20-%20%5B12-h0-01%5D.pdf

[11] Mineral Royalty Rate Analysis Final Report 2015. Government of Western Australia. Department of State Development. Department of Mines and Petroleum. https://www.jtsi.wa.gov.au/docs/default-source/default-document-library/mineral-royalty-rate-analysis-final-report-0315.pdf

[12] Mineral Royalties. Government of Western Australia. http://www.dmp.wa.gov.au/Minerals/Royalties-1544.aspx

[13] Allowable deductions in relation to a mineral, means the amount of any reasonable costs incurred in transporting the mineral, in the form in which it is first sold, where those costs are incurred after the shipment date by the person liable to pay the royalty for the mineral; and relate to transport of the mineral by a person other than the person liable to pay the royalty for the mineral. They also include the price paid or to be paid for packaging materials used in transporting the mineral, in the form in which it is first sold.

ISSN 2658-4050 (Online)

or the Metal Bulletin for the mineral for a particular date or over a particular period nominated by the Director General, a description of which is published on the Department's website.

The royalty value of cobalt, or copper, sold as a nickel by‑product is the amount, in Australian currency, obtained by multiplying the percentage of units of cobalt or copper metal, as is relevant, in the nickel by‑product sold (as set out in invoices relating to the sale) by the contracted list price for the mineral (as set out in those invoices) less any allowable deductions; if there is no contracted list price for the mineral, the reference price for the mineral less any allowable deductions.

The royalty rate of 2,5% is applied to nickel and nickel by-products irrespective of the form in which the mineral is sold.

Royalty rates for copper and other non-ferrous metals

Generally, the ad valorem or value-based rate of royalty, which applies under the Mining Regulations 1981, is based on the following principles:

- bulk material (subject to limited treatment) – 7.5% of the royalty value;
- concentrate material (subject to substantial enrichment through a concentration plant) – 5.0% of the royalty value;
- metal – 2.5% of the royalty value.

**3.2.USA: mining taxes**

The US has a rather unusual and complicated system of deriving budget revenue from subsoil natural resources. To a large extent the complexity stems from the fact that subsoil resources in the US usually (although not always) belong to the owner of the land under which these resources are located. In addition, because of the federal structure of the country, land and subsoil resources can be owned by federal government, state or local government, a Native American tribe, or private persons. At the same time, different levels of government (federal, state, and local) collect revenue from different minerals under different rules and these rules depend on the ownership of the minerals.

*Taxation of copper in Arizona*

Arizona is the largest producer of copper in the US, accounting for over 50% of the country's newly mined copper. The rules for revenue collection from copper and the other non-ferrous metals in Arizona are summarized in the table 2 below.

Table 2

**Budget revenue structure from hardrock mining in Arizona**

| Type | Rate | Deductions or limitations |
|---|---|---|
| Royalty | | |
| Gross revenue with reference price<br><br>Rate determination: Statutory minimum, lease-specific | Current rate and base: Market royalty rate; at least 2% of gross value of all minerals produced and sold determined by published price quotation (or, where unavailable, appraisal of fair market price); where processing is performed after mineral is extracted, it shall be deemed produced and sold when concentrate or cathode results from that processing. | Deductions: None<br><br>Limitations: None |
| Severance Tax | | |
| Net proceeds<br><br>Rate determination: Statutory, uniform | Current rate and base: 2.5% of net severance base, which is 50% of the difference between gross value of production and production costs | Deductions: Production costs, generally those incurred in mining and processing until point of sale; |

ISSN 2542-1514 (Print)

Окончание табл. 2

| *Type* | *Rate* | Deductions or limitations |
|---|---|---|
| | gross value of production is sale price (or price from last reporting period, if no sale) multiplied by the number of recoverable units of the mineral. | includes depreciation and property taxes; does not include severance tax and depletion, or corporate expenses and income tax<br><br>Limitations: None |

*Source:* https://www.gao.gov/products/B-330854.

As stated in the table, both the royalty and the severance tax use gross value of the mineral as the base. In order to determine gross sales or production value, Arizona does not use the self-reported data from mining companies whether they sell to an affiliate or to an independent party. To the extent possible, Arizona revenue authorities use reference prices (published quotations) for the mineral. Specifically, the statute says the following: "The gross value shall be based on the monthly average price of the mineral as quoted by the mineral commodities market and industry trade journals as determined by the commissioner and specified in the lease".[14] The price "determined by the commissioner" is then multiplied by the amount of the mineral extracted. This amount may be determined from the unprocessed ore or from concentrate or from cathode, depending on when the sale by the mining company is made but no later than at the cathode stage.

*Taxation of nickel in Michigan*

Michigan is currently the only state where nickel is mined in the US. This mining is done in a single mine (Eagle Mine) which started commercial production only recently (in 2014). The mine produced 14,000 tons of nickel in 2019.[15]

Michigan imposes a severance tax on nonferrous minerals, including nickel. The tax rate is 2.75% of "taxable mineral value" with no deductions (Act 410, sc. 211.784). The severance tax is imposed in lieu of ad valorem property tax on subsoil resources as long as the mine continues to be a "producing mine".

Michigan Department of Treasury defines taxable value of a mineral as "the total value received by a taxpayer for the sale or transfer of taxable minerals".[16]

Sales to an independent party and to a related party are treated differently. Specifically, according to the Treasury Department, "There is a rebuttable presumption that the purchase price of a taxable mineral under a bona fide arm's-length contract of sale or transfer between unrelated persons reflects the taxable mineral value.

In determining the taxable mineral value of a taxable mineral for contracts of sale or transfer between related persons, there is a rebuttable presumption that taxable mineral value for related party sales or transfers shall be based on the average daily price of the mineral as quoted on published market indices as of the date of sale or transfer." (p.188)[17]

**Canada: mineral royalties**

The economic literature defines special taxes for mineral extraction activity in Canada as "royalty" while the corresponding juridical acts ordinary designate them as "taxes": for example, mineral tax in British Columbia and mining tax in Ontario. All these royalty taxes in Canada are levied on the provincial level to compensate the province for the commercial use and depletion of their mineral resources [9]. In certain cases, mineral tax revenue is shared with First Nation (i.e. indigenous) communities that have a revenue sharing agreement with the province [10].

[14] Ariz. Rev. Stat. §§ 27-234. Available at: https://www.azleg.gov/viewdocument/?docName=https://www.azleg.gov/ars/27/00234.htm

[15] https://pubs.usgs.gov/periodicals/mcs2020/mcs2020-nickel.pdf

[16] See, https://www.michigan.gov/documents/taxes/Tax_Text_649907_7.pdf, p. 187

[17] A rebuttable presumption is an assumption that is considered true unless proven otherwise. The burden of proof falls on the party that tries to dispute the rebuttable presumption.

ISSN 2658-4050 (Online)

In spite of the significant fiscal autonomy of provinces, regional tax systems in Canada tend to the "harmonization" which includes unification of some provincial tax rules. The mineral taxation is also the subject of this tendency that lets us to consider the taxation of an extraction of metallic minerals in Canada by example of the case of mineral royalties in British Columbia as well as specific regulations applied in Ontario.

*British Columbia*

In the accordance with the B.C. Mineral Tax Act, the royalty payer is an operator of the mine or the site. The Act defines: "operator[18] means, for each mine, the person who, either alone or with another person, is or was the owner, lessee, licensee, tenant or other holder of a right to win minerals from the mine but does not include a person who, under an arm's length agreement, has a right to receive only royalties paid or payable in cash"[19].

Taxpayers must self-assess and pay mineral tax unless they qualify for an exemption or have only removed non-taxable resources. The following materials are not taxable in British Columbia: earth, gravel, marl, peat, sand, soil. The taxable natural resources are coal and other mineral mines, placer gold mines, and quarries[20].

The tax on metallic minerals are imposed equally, in two tiers. The first tier taxes 2% of the *net current proceeds* of the operator derived from the operation of the mine for the current fiscal year of the mine; it is a kind of down payment. At the second tier tax equals the amount by which 13% of the *net revenue* of the operator derived from the operation of the mine exceeds the first tier tax payment.

Net current proceeds equal *gross revenue* after deduction current *operating costs*. Gross revenue includes: 1) the *transaction value* of mineral product sold, 2) *cost recoveries* from the operation of the mine, and 3) *other current revenues* from the operation of the mine. In addition to specific rules about what can and cannot be included as an operating cost, there are three general criteria. Operating costs must be: incurred by an operator of the mine, incurred for the purpose of earning revenue from the operation of the mine, and reasonable in amount.

At the first tier, the tax is levied on the calculated amount of net current proceeds at a rate of 2%.

Net revenue equals *total revenue* after deduction the balance of the *Cumulative Expenditure Account* (CEA). Total revenue equals the sum of gross revenue (as has been determined) and other revenues: government grants, subsidies and other assistance received for capital assets, insurance payments received for capital assets, revenue from the recovery of capital asset costs, proceeds from the disposal of capital assets as well as the fair market value of assets used less or discontinued.

CEA Balance includes following expenditures:, pre-production discovery or development costs, new mine allowance, current operating costs, increases or decreases in mineral product and supplies inventories, equipment lease or rental costs, capital asset purchasing costs, exploration costs, research costs and reclamation costs.

The total amount of tax payment is accounted with multiplying net revenue amount by 13% tax rate after deduction the amount of tax payed at the first tier (2% of net current proceeds). If an operator of the mine is an individual who is actively engaged in the operation of the mine, the operator may deduct from the operator's proportionate share of the tax base for the fiscal year an amount equal to the proportion of $50,000.

The definition of the transaction value of a mineral product is substantial to calculate an amount of the mineral tax base. In subsection 8 (4) of the Mineral Tax Act, we find out that:

"The transaction value of a mineral product is the price paid or payable for the mineral product",

[18] "To operate a mine" means to product of minerals from a mine including: discovery, development, mining, milling, smelting, refining, washing, preparation, drying, beneficiation or other processing of those minerals required to obtain a mineral product, and reclamation of the mine.

[19] https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/96291_01

[20] "Quarry material" means a mineral that is: limestone, dolomite, marble, shale, clay, volcanic ash, diatomaceous earth, sandstone, quartzite, dimension stone, or other prescribed substances. Rock, riprap and stone products are also non-taxable if they are used in the building or maintenance of a road or structure located on land outside the mineral title or group of titles from which they were mined.

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except cases described in 8 (5):

a) "the price paid or payable for the mineral product is subject to some condition or consideration in respect of which a value cannot reasonably be determined",

b) "the purchaser and vendor of the mineral product are related persons at the time of the sale and the price paid or payable is less than the price that would have been paid or payable if the purchaser and vendor had not been related persons",

c) "the commissioner has designated under subsection (3) that the mineral product was disposed of earlier than its actual disposition", or

d) "a transaction value is prescribed for the particular mineral product"[21].

In the accordance with the Act a taxpayer must self-assessed the tax accrued using these tax base accounting rules. Primarily, he must determine the transaction value of a mineral product at the disposition point. Under subsection 8 (3), referred by subsection 8 (5) (c), "the commissioner may designate that a disposition of mineral product has occurred at a point earlier than its actual disposition", if the point determined by the taxpayer is not correct.

In the cases of subsections 8 (5) (a)-(d) while the transaction value is not to be a value of mineral product sold[22], the transaction value defines as "the amount determined by the operator to be the fair market value at which similar minerals would have sold" at the designated point of disposition, "at a sale between a purchaser and vendor dealing at arm's length" (subsection 8 (6) (a) of the BC Mineral Tax Act).

If the commissioner considers that the amount determined by the operator under paragraph (a) is less than the fair market value of the mineral product at disposition or at the designated disposition point, as the case may be, the amount determined by the commissioner after taking into account any factors the commissioner considers relevant.

Thus, the correct payment of mineral royalties in British Columbia depends on taxpayer's bona fides, as well as the commissioner's vigilance.

*Ontario*

Legislation of Ontario defines a taxpayer (operator) similarly to B.C.'s definition and establishes a similar approach to the tax base definition. Under the Mining Tax Act 10-percent tax rate (for remote mines – 5%) imposed on the amount of the operator's profit from the extraction of mineral substances that calculated as the operator's proceeds from the mines plus any other amount received minus operational expenses. In this context, *proceeds* means "the total consideration that is received or is receivable from another person or persons, in any currency, whether in cash or non-cash form, from the output of the mine, including all by-products sold, or the amount determined in the prescribed manner, and all consideration received or receivable from hedging and future sales or forward sales of the output of the mine"[23].

The tax is applied to an operator's annual profit in excess of a $500,000 annual deduction, which needs to be shared by associated corporations. In addition, a mining tax exemption on up to $10 million of profit during an exempt period is available for each new mine. The exempt period for a non-remote mine is three years, and the exempt period for a remote mine is 10 years.

Canadian royalty system has been criticized for poor rent collection from mining companies. Researchers show that due to the low level of resource royalties and special incentives for corporate tax, the resource sector receives unjustified preferences compared to other industries that leads to an inefficient allocation of resources in

[21] Mineral Tenure Act. Victoria, British Columbia, Canada. – URL: https://www.bclaws.ca/civix/document/id/complete/statreg/00_96292_01

[22] (a) the price paid or payable for the mineral product is subject to some condition or consideration in respect of which a value cannot reasonably be determined,
(b) the purchaser and vendor of the mineral product are related persons at the time of the sale and the price paid or payable is less than the price that would have been paid or payable if the purchaser and vendor had not been related persons,
(c) the commissioner has designated under subsection (3) that the mineral product was disposed of earlier than its actual disposition, or
(d) a transaction value is prescribed for the particular mineral product.

[23] Mining Tax Act. R.S.O. 1990, CHAPTER M.15. – URL: https://www.ontario.ca/laws/docs/90m15_e.doc

the economy [11].

### 3.4. Chile: taxation of the mining activity

Copper industry is a basis of the Chilean economy: copper composes 90% of the mining sector and more than 50% of Chile's exports (thus, export of copper yields 15% of national GDP) [12]. Taxation of the mining sector in Chile falls under four main categories:

- Corporate taxes on private mining firms;
- A special mining tax instituted in 2006;
- Tax on profits of Codelco (*Corporación Nacional del Cobre de Chile*), the state-owned copper mining firm which controls the one third of copper extraction in Chile;
- A tax on copper exports of Codelco-owned mines that goes directly to the Ministry of Defence [13].

Companies operating in Chile under the general taxation regime pay corporate tax at a rate of 25% as well as an additional tax of 35% which is applied to income that is withdrawn, distributed as dividends or remitted abroad by non-resident individuals or legal entities. However, mining companies initially pay a special tax on mining activity (*Impuesto específico a la actividad minera*), and the amount of the special tax is deducted from the corporate tax.

The special tax on mining activity was instituted in 2006 with Ley №20.026 and applies to metallic and non-metallic mining. Before that time, there existed no specific tax or royalty on the products of the mining sector. Its provisions are introduced under Title IV bis of the Act of Income Taxation (Ley sobre Impuesto a la Renta). The tax is applied under provisions of Ley № 20.469 de 2010 on progressive basis and is paid on profit, or operating income from mining activities [14].

The tax base is calculated on the basis of adjusting the corporate income tax base by excluding non-mining income; similarly, only operational costs are considered. The tax rates are progressive between 0 and 14% depending on the firm's profit from mining and its operating margin (*Margen Operacional Minero*)[24]:

- Income equivalent to 12,000 tons of refined copper per year or less – 0%;
- Income equivalent between 12,000 and 15,000 tons per year – 0,5%. The tax rate increases further in 0.5% by the an increase in income equivalent of 5,000 tons of refined copper, until it reaches 3% for income equivalent over 40,000 tons;
- If the income equivalent exceeds 50 000 tons of refined copper per year, nominal tax rate on this excess is from 5 to 14 percent depending on the operating margin[25].

The considered new amendments to the mining tax law passed in 2010, coupled with the rise in copper prices, caused the increase in national budget revenues from the extractive industry. However, the large firms were allowed to continue with the previous tax rate for eight years. If they chose to apply the new tax rates immediately, however, they would pay the higher tax rate of 5% (in the lower profit margin bracket) for three years, and then revert to the previous sliding scale of 4-9% for the following eight years. As a result, revenues from the special mining tax are relatively small, and this tax account for less than 3% of budget revenues, which is ten times less than corporate income tax revenues [15].

In addition to the taxes considered, the state-owned Codelco is subject to an extra income tax of 40% as well as a 10-percent tax on copper exports[26]. Moreover, Codelco pays dividends to the Chile budget, up to 100% of profits as a rule [13].

### *3.5. Kazakhstan*

The payers of the mineral extraction tax in Kazakhstan are subsoil users engaged in the extraction of hydrocarbons, mineral raw materials, groundwater and therapeutic muds, including the extraction of minerals from man-made mineral

[24] https://www.bcn.cl/leychile/navegar?idNorma=6368&idVersion=2020-09-02&idParte=8656019

[25] https://obtienearchivo.bcn.cl/obtienearchivo?id=repositorio/10221/28571/1/IEAM_como_gasto__Chile_y_extranjero_edit.pdf

[26] The Chilean legal system includes some unpublished laws. One such law is number 13.196, the Ley Reservada del Cobre. The Ley Reservada commandeers 10% of Codelco's sales abroad in foreign currency to be disbursed directly to the Ministry of Defense for use in financing equipment. In addition, the law establishes a minimum financial transfer of USD 180 million.

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formations, on which the mineral extraction tax has not been paid, within each individual concluded subsoil use contract, except for subsoil users operating exclusively under the license for prospecting (Article 738 of the Tax Code of the RK).

According to Article 744 of the Tax Code of the RK, a taxable item is the physical volume of reserves of minerals contained in mineral raw materials (taxable volume of recovered reserves[27]).

The tax base for calculating the mineral extraction tax is the value of taxable volume of recovered mineral reserves, contained in mineral raw materials, for a taxable period (paragraph 1 of Article 745 of the Tax Code of the RK).

If the mineral raw materials contain only those minerals, for which official price quotations were fixed by the London Metal Exchange or the London Bullion Market Association in a reporting taxable period, the value of taxable volume of recovered mineral reserves contained in mineral raw materials is determined on the basis of the average exchange price of such minerals for a taxable period.

According to paragraph 3 of Article 745 of the Tax Code of the RK, the average exchange price is defined as the product of the arithmetic mean of daily average price quotations for a taxable period and the arithmetic average market exchange rate for a relevant taxable period using the formula below.

$$S = \frac{P1 + P2 + \ldots + Pn}{n} * E,$$

where:

S – average exchange price of a mineral for a taxable period;

P1, P2, ..., Pn - daily average price quotation on the days, for which price quotations on the London Metal Exchange were published within a taxable period;

E - arithmetic average market exchange rate for a relevant taxable period;

n - the number of days in a taxable period, for which price quotations were published.

The daily average mineral price quotation is determined using the formula:

$$Pn = \frac{Cn1 + Cn2}{2},$$

where:

Pn - daily average price quotation;

Cn1 - daily Cash price quotation for a mineral;

Cn2 - daily Cash Settlement price quotation for a mineral.

It should be noted that the average exchange price of a mineral is applied to the entire volume of each type of mineral contained in the taxable volume of recovered mineral reserves and also to the amount transferred to other legal entities or a structural unit within one legal entity for subsequent processing or use for own production needs.

If the mineral raw materials contain minerals with official price quotations and minerals without price quotations at the same time, the value of taxable volume of recovered mineral reserves without price quotations shall be determined *on the basis of the weighted average price of their sale*, and in case of their transfer to other legal entities or a structural unit within one legal entity for subsequent processing and use for their own production needs – *on the basis of the actual production cost of extraction and primary processing (enrichment),* attributable to such types of minerals, determined in accordance with international financial reporting standards and the requirements of the legislation of the Republic of Kazakhstan on accounting and financial reporting, increased by 20 percent. In addition to this, the value of taxable volume of recovered mineral reserves with price quotations in this mineral raw material shall be determined by the formulas presented above.

In case of no sale of mineral raw materials that underwent only primary processing (enrichment), the value of taxable volume of recovered mineral reserves *without price quotations* shall be determined on the basis of the weighted average selling price of the last taxable period of such sale.

According to paragraph 6 of Article 745 of the Tax Code of the RK, in case of no sale of mineral raw materials at all, the value of taxable volume of recovered mineral reserves *without price quotations* determined on the basis of the actual production

[27] The taxable volume of recovered reserves is the volume of recovered reserves of minerals contained in mineral raw materials, less the volume of standard losses for a taxable period. The volume of standard losses is established on the basis of the detailed site development plan approved by the state body of the Republic of Kazakhstan.

ISSN 2658-4050 (Online)

cost of extraction and primary processing (enrichment), attributable to such types of minerals, determined in accordance with international financial reporting standards and the requirements of the legislation of the Republic of Kazakhstan on accounting and financial reporting, increased by 20 percent.

In case of subsequent sale of mineral raw materials that underwent primary processing (enrichment) and minerals contained in taxable volumes of recovered mineral reserves, a subsoil user shall be obliged to adjust the amounts of the calculated mineral extraction tax with account of the actual weighted average selling price in the taxable period of the first sale.

Table 3

**Tax rates for the extraction of metal ores in Kazakhstan**

| *Raw materials* | *Minerals* | *Rate, %* |
|---|---|---|
| Ores of ferrous, non-ferrous and radioactive metals | Chrome ore (concentrate) | 16,2 |
| | Manganese, ferromanganese ore (concentrate) | 2,5 |
| | Iron ore (concentrate) | 2,8 |
| | Uranium (pregnant solution, mining) | 18,5 |
| Metals | Copper | 5,7 |
| | Zinc | 7,0 |
| | Lead | 8,0 |
| | Gold, silver, platinum, palladium | 5,0 |
| | Aluminum | 0,25 |
| | Tin | 3,0 |
| | Nickel | 6,0 |
| Mineral raw materials containing metals | Vanadium | 4,0 |
| | Chromium, titanium, magnesium, cobalt, tungsten, bismuth, antimony, mercury, arsenic and others | 6,0 |
| Mineral raw materials containing rare metals | Niobium, lanthanum, cerium, zirconium, lithium, beryllium, tantalum, strontium | 7,7 |
| | Gallium | 1,0 |

Source: Tax Code of the Republic of Kazakhstan

In addition to the mineral extraction tax, Kazakh mining enterprises pay other special taxes: the signature bonus, the payment to recover historical costs and the excess profits tax, but their fiscal significance is not so big.

The signature bonus is a one-time fixed fee paid by a subsoil user for obtaining the right to subsoil use in a contract area (subsoil plot), and also for expanding a contract area (subsoil plot).

The payment to recover historical costs is a fixed payment of a subsoil user to recover total costs incurred by the state on geological study of a contract area (subsoil plot) and exploration of mineral deposits before concluding a subsoil use contract.

The excess profits tax is paid from the amount of net income on a progressive scale depending on marginality (the ratio of total revenues to total costs) [16].

According to the Ministry of Industry and Infrastructural Development, no revolutionary amendments to the current rules of regulation of the extractive industry, in particular, to the Code on Subsoil and Subsoil Use are expected in the near future.[28]

## 4. Conclusions

Comparative analysis of the taxation of copper and nickel extraction in Russia and abroad shows that certain characteristics are similar in Russia and in other countries with a significant size of the mining sector, e.g., the United States or Canada. In these countries the object of taxation, with slight variations, is the ore mined “at the mouth of the mine”. However, the fundamental difference lies in how the value of such ore is estimated. In the considered countries, the size of the tax base for the extraction of minerals is calculated based on the market prices for the extracted raw materials.

Unlike in Russia, in federal states such as Australia, Canada or the United States, the taxation of metal ore mining is the responsibility of the regions - states or provinces - and a number of taxes may also exist at the local level, as in the United States.In each of these countries every state or province has its own legislation, although it has common features with legislation of other states or provinces in this country. Under this approach each of the regions has an opportunity to adjust more precisely its legislation based on peculiarities of mining conditions in the region. At the same time, we see that from time to time such regions make a comparative analysis of their mineral royalty systems

[28] Yerbolat Yerkebulanov, Almat Daumov, Baizhan Bekzhanov, Mikhail Abdulov. Mining 2020, Kazakhstan. Chambers and Partners. Last Updated January 22, 2020. Available at: https://practiceguides.chambers.com/practice-guides/mining-2020/kazakhstan

ISSN 2542-1514 (Print)

with those applied by the other regions. Also, these counties – or rather the regions in these countries – do not classify payments for the extraction of natural resources as a tax, and the state body responsible for the introduction and administration of the relevant legislation is the natural resources department.

The analysis of the international experience of taxation of copper and nickel mining sector reveals the following trend: the tax is calculated based on the market value of the extracted minerals, which is linked to the price quotes for the relevant product on an organized metal exchange (for example, the price of pure metal on the London Metal Exchange).

This approach can be used in the Russian tax practice in several ways. First, Russia can adopt the Australian model where royalty on a mineral resource can be levied at the time of sale of the useful component irrespective of the processing stage (ore, concentrate or metal). Provided no changes are introduced into the «extracted mineral» concept in the Russian tax legislation, it will lead to the necessity to calculate the amount of pure metals in ores in most cases. The second potential model is based on the actual sale price of the product (provided it is sold in an arm's length transaction) after deducting the costs of processing (i.e., smelting, enrichment etc., depending on the stage of processing) to arrive at the market value of the ore at the "mine mouth". The third is the Canadian model which is similar to the second one, but with the extraction costs also deducted from the sale price. Royalty rates in the three considered methods will differ accordingly.

ISSN 2658-4050 (Online)

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### INFORMATION ABOUT AUTHORS

***Natalya S. Kostrykina*** – Researcher, Tax Policy Research Laboratory
*Institute of Applied Economic Research, Russian Presidential Academy of National Economy and Public Administration*
build. 9, 82-84, Vernadskogo pr., Moscow, 119571, Russia
E-mail: kostrykina-ns@ranepa.ru
ORCID: 0000-0002-9810-0573

***Andrey V. Korytin*** – Researcher, Tax Policy Research Laboratory
*Institute of Applied Economic Research, Russian Presidential Academy of National Economy and Public Administration*
build. 9, 82-84, Vernadskogo pr., Moscow, 119571, Russia

ISSN 2542-1514 (Print)

E-mail: Korytin-AV@ranepa.ru
ORCID: 0000-0001-6635-7190

***Elena V. Melkova*** – Researcher, Tax Policy Research Laboratory
*Institute of Applied Economic Research, Russian Presidential Academy of National Economy and Public Administration*
build. 9, 82-84, Vernadskogo pr., Moscow, 119571, Russia
E-mail: melkova-ev@ranepa.ru
ORCID: 0000-0002-5686-0371

**BIBLIOGRAPHIC DESCRIPTION**

Kostrykina N.S., Korytin A.V., Melkova E.V. Taxation of copper and nickel ores mining in Australia, Canada, Chile, Kazakhstan and USA. *Pravoprimenenie = Law Enforcement Review*, 2021, vol. 5, no. 4, pp. 159–174. DOI: 10.52468/2542-1514.2021.5(4). 159-174. (In Russ.).

ISSN 2658-4050 (Online)