

# EXPORTACIÓN DE MINERALES Y TRABAJO INFORMAL EN BOLIVIA

## MINERAL TRADING AND INFORMAL LABOUR IN BOLIVIA<sup>α</sup>

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- **RESUMEN:** En países desarrollados, existe una extensa literatura sobre el efecto del comercio exterior en el sector informal. En países en desarrollo, el análisis requiere un enfoque diferente debido a sus características estructurales y su importancia histórica.

En Perú y Bolivia, el reciente auge (2006-2014) en los precios de exportación de minerales ha llevado a cuatro fenómenos: a) crecimiento en el trabajo informal y a menudo ilegal en la minería; b) aumento de la explotación laboral; c) conflictos entre mineros formales e informales, y campesinos; d) conflictos con empresas internacionales y con el estado. Mostramos que el reciente crecimiento del trabajo informal en la minería es diferente al causado por crisis pasadas del sector. Analizamos la lógica económica de la actividad minera orientada a la exportación para determinar cómo ha dado lugar al sector informal. En un primer paso, mostramos cómo el reciente auge de los precios de exportación condujo al crecimiento de la mano de obra informal en la industria minera. Posteriormente, explicamos la importancia de la minería y el comercio internacional para Bolivia, así como las raíces históricas de la informalidad laboral causada por las crisis mineras. Explicamos algunas características importantes del sector informal y su empoderamiento político.

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Concluimos sopesando la importancia de la informalidad laboral como un amortiguador durante las crisis en el sector minero. Hasta donde sabemos, ningún estudio ha examinado previamente la informalidad laboral en la economía del comercio de minerales.

- **PALABRAS CLAVE:** Bolivia; comercio; minería; labor; informalidad.
- **ABSTRACT:** In developed countries, there is extensive literature on the effect of foreign trade on the informal sector. In developing countries, the analysis requires a different approach due to its structural characteristics and historical significance.  
In Peru and Bolivia, the recent boom (2006-2014) in the export prices of minerals has led to four phenomena: a) growth in informal and often illegal work in mining; b) increased labour exploitation; c) conflicts among formal and informal miners, and peasants; d) conflicts with international companies and with the state. We show that the recent growth of informal work in the mining industry is different from the one caused by past crisis in the sector. We analyse the economic logic of the export-oriented mining activity in order to determine how it has given rise to the informal sector. In a first step, we show how the recent export price boom led to growth in informal labour in the mining industry. Subsequently, we explain the importance of mining and international trade to Bolivia as well as the historical roots of labour informality caused by mining crises. We explain some important characteristics of the informal sector and its political empowerment. We conclude by weighing the importance of labour informality as a shock absorber during crises in the mining sector. To the best of our knowledge, no studies have previously examined labour informality in the mineral trade economy.
- **KEYWORDS:** Bolivia; trade; mining; labour; informality.
- **CLASIFICACION JEL:** F16, J46, Q32, Q33, Q34.
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## **INTRODUCTION**

In 1989, Hernando de Soto launched a pioneering book on the causes that explain the existence of the informal sector. According to him, regulations in the labor market and inflexibility of wages explain the existence of the informal sector. Subsequently, the studies concentrated on the hypothesis that those who did not find work in the formal sector did so in the informal sector, although there were also studies indicating that informality could be voluntary (Maloney, 2003) (Morales, Agramont, & Cueto, 2015). Globalization brought concern about the effect on the labor market of imports and exports (Fiess & Fugazza, 2010), (Paz, 2014). In the context of globalization, China flooded world manufacturing markets by offering its products at reduced prices due to the low cost of its factors of production, especially labor, and an alleged under-evaluation of its currency. According to several studies, this had two different effects. On the one hand, it deteriorated wages and employment (Acemoglu, Autor, Hanson, & Price, 2014) (Acosta & Montes-Rojas, 2014) (Autor, Dorn, Hanson, & Song, "Trade Adjustment: Worker Level Evidence", 2014), on the other, it pressured national companies to develop innovations to produce more while lowering their costs. This last phenomenon also occurred in export markets. The companies that succeeded, hired more qualified workers among the formal ones (Aleman-Castilla, 2006) or the same as before, lowering wages or outside the current legislation, making them informal. The development of technology accompanied the ability to compete with foreign companies (Autor, Dorn, & Hanson, "Untangling Trade and Technology: Evidence from Local Labor Markets", 2015), but, at first, the labor market suffered the fall in employment or the deterioration of its quality by reducing wages or increasing informality. However, more disaggregated studies showed that the effects could be heterogeneous (Goldberg & Pavnik,

2003). It was shown that the boom of certain export sectors could decrease informality (Safojan, 2019). These effects would be different depending on the destination market for exports (Brambilla, Lderman, & Porto). Other authors (Bosch, Goni, & Maloney, 2012) studied the interaction between national reforms and trade.

In developing countries, the existence of informal workers and the processes that involve them are explained differently. In these, structural factors explain almost all the informality (Morales, 2017) such as the unequal distribution of income that segments the demand and supply of goods and the differences in levels of training and access to information among workers. History is also important, especially from the colonial era, and trade. Until recently, some of these countries simultaneously faced the boom in raw material prices and the import of manufactured goods at decreased prices, leading to the Dutch disease (Morales et al, 2016). They experienced processes different from those that occurred in developed countries with globalization.

An important aspect to highlight in the literature on labour informality in developed countries is that it is concentrated in the manufacturing sector, while in developing countries informality also affects other sectors such as agriculture, mining, construction and commerce. In this paper we study the case of labour informality in mining that has historical roots and has significant links with international trade. The way of approaching this study differs from that usual for developed countries.

Mining activity in the Andean countries has been crucial to their economies, and it has become even more so with the boom in international mineral prices (2006-2014). In Bolivia, in 2014, the value of mineral production rose to 14.6 per cent of GDP (in dollars, at current prices). The

growth in mineral prices, in the context of the retreat of the state from the mining sector since the 1980s, led to the expansion of the number of informal workers. These workers organized themselves in so-called “mining cooperatives”, working mining deposits with authorization from the state or illegally. The term *cooperative* is a euphemism which is unrelated to the universal concept of a cooperative. It refers to a group of miners where a few are in control of the group. Often, they hire salaried workers (labourers) in violation of the basic rules prescribed by labor law. In the 1980s, the total number of mining workers fluctuated around 67,000, a third of whom were members of a cooperative. In 2016, the number of mining workers rose to 138,000. Of this number, 88.6 per cent were cooperative workers, that is, informal workers. The contribution of mining activity to the state in the form of royalties was only 0.37 per cent of GDP that year. Between 2006 and 2017, cooperatives were responsible for 44 per cent of mining production<sup>1</sup>, but they only paid 26 per cent of the total royalties. During this period, they contributed only 15 million dollars for exploitation rights and managed to increase their concessions from 47,000 to 375,000 hectares<sup>2</sup>.

The recent expansion of informal mining work is the result of both the fluctuations in the prices of minerals in international markets and the domestic policies on sectoral and foreign trade. Until the recent price boom, the informal sector played an important role in softening the effects of price reductions lowering their work income. In contrast, from 2005 on, due to the withdrawal of the state from mining activity, the informal sector significantly increased their income and was the main beneficiary of the price boom.

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<sup>1</sup> Without counting clandestine production.

<sup>2</sup> In November 2018, the government promised to expand the areas where cooperatives can work.

## 2. THE MINING ECONOMY

The mining economy has some characteristics that differentiate it from other sectors. These are mainly the following: a) it depends on two random variables, one related to the international price and another related to the discovery of new veins; b) as a mine is exploited, the deposits are depleted and yields decrease; c) to mitigate the drop in yields, it requires increasing investments in exploration and in the incorporation of new technology. As in other sectors, wages in mining are inflexible downward due to union pressure and laws. As can be expected from this description, sector crises are possible, some are lasting while others are short lived.

When there is a crisis, mining owners optimize their balance by temporarily allowing workers to exploit mines in exchange for a lease or part of the production. To avoid unemployment, miners accept the deal and sacrifice part of their earnings to make up the losses. In the mining sector, it is possible to work a mine with rudimentary instruments, thus facilitating the employment of informal miners. They become self-employed as producers and marketers of ore. With this strategy, they become buffers for the crises. In order to strengthen their negotiating position with private entrepreneurs and the government, they organize themselves into *cooperatives*. These do not have the profile that is normally associated with such organizations; thus, using the term *cooperatives* is prone to confusion. Rather, they are groups of self-employed workers who can even have salaried employees.

With the boom in mineral prices in recent years, *cooperatives* have ceased to be shock absorbers and become the main beneficiaries of the price increase, due to the withdrawal of the Bolivian state from the mining industry.

The history shows that it is difficult for the mining activity to constitute a sustainable resource for economic development<sup>3</sup>.

In the following sections, we discuss the historical, economic, and political roots of the informal mining sector in Bolivia.

### **3. MINING IN BOLIVIA**

#### **3.1. Brief history**

From 1542 on, the Spanish colonization of the Andes was motivated by the appropriation of minerals, especially silver. The indigenous people were forced by taxation rules and coercion to work in the mines under inhumane conditions. The colonial economy revolved around the mines. This situation did not change with independence in 1825. Colonial institutions marked subsequent economic and political development (Dell, “Persistent Effects of Peru’s Mining Mita”, 2011).

At the end of the 19th century, the importance of tin grew in detriment of silver, and large mining empires owned by a handful magnates came up. In the first half of the 20th century, miners promoted several upheavals and the powerful Bolivian Federation of Union Mine Workers (FSTMB) was founded. The police and armed forces intervened to suppress rebels.

In the 1950s, the government nationalized the large mining companies, created a state company, COMIBOL, to administer it and strengthened the Mining Bank. COMIBOL's mismanagement and fluctuating mineral prices repeatedly caused a crisis in mining leading to the dismissal of thousands of

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<sup>3</sup> Bibliographic reviews on the relation between natural resources and growth can be found in Sanchez M (2011) and Thorpe (2010).

workers. In 1985, The government ordered the partial closure of COMIBOL, laying off 27,000 workers. The Mining Bank was also shut down. This was an important milestone in the expansion of the informal mining sector, which reached its peak with the price boom in the period 2005-2014.

### **3.2. Production and trade**

The main minerals that Bolivia extracts and exports are: tin, silver, zinc, antimony, gold, wolfram, lead and copper. Cooperatives work mainly in tin mines and alluvial gold deposits.

Subsoil minerals are property of the state, which grants exploitation rights to mining companies and cooperatives. The state kept exploiting a few mines after the partial closure of COMIBOL in 1985. In 2016, the mining sector employed 138,000 workers, 88 percent of whom were cooperative members. Mining cooperatives are responsible for only 29 per cent of total production. The bulk of mining production, 67 per cent, is in the hands of a few transnational companies (San Cristóbal, San Bartolomé and San Vicente), while the remaining 8 per cent is produced by COMIBOL.

Most of the exports, 70 percent, comes from the private sector, 21 percent come from cooperatives, and the remaining 9 per cent of the state mining.

Bolivian minerals reach 46 different destinations on four continents. The most important exports are: zinc, silver, tin, lead and gold. The US, Japan and South Korea make up for 54 per cent of the Bolivian mineral trade. China is placed in fourth place, but it is expected to increase its purchases. In the Americas, the main buyers are the US, Canada and Peru. In Europe, there are five main buyers: the UK, Belgium, Spain, Switzerland and the Netherlands.

Among Asian countries, purchases from Japan, South Korea and China stand out.

The San Cristobel Mine produces zinc, silver, and lead with the open-pit technology, making up for 50 per cent of the total production. San Cristóbal has a 30 per cent share in total mining production and employs only 1,422 workers. This contrasts with the low labour productivity in the mining cooperatives. San Cristóbal is a subsidiary of the Sumitomo Corporation, one of the main industrial groups in Japan. San Vicente is operated by the transnational Pan American Silver (PAS) company.

### **3.3. Historical roots of labour informality in the mines**

Since ancient times, some usual labour practices of agriculture have been transferred to mining production. In the past the landowners gave the farmers lots of land for their own use in lieu of remuneration. In some cases, land owners and peasants entered into a partnership: the farmer could cultivate a piece of land and promised to share the production with the owner. These modalities were replicated in mining, but subject to adjustments depending on the fluctuations of prices. The workers who entered into a partnership with the owners of the mines were called “*kajchas*”<sup>4</sup>, an expression which has its origins in the Quechua language and refers to the action to split equally.

In the colonial period and in the first century of the republic, the shortage of metallic money led the mining owners to remunerate their workers with part of the production. In situations where the prices of minerals fell, it was agreed that the miners could work on their own, if they gave between 40

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<sup>4</sup> According to Betancort (2007): “The *kajcheo* was a practice of mining workers of the eighteenth century (although with antecedents in the sixteenth and seventeenth century) that consisted of working for their own benefit from Saturday night to Monday in the early morning.”

and 50 per cent of the production to the owner of the mine. This arrangement was called “pirquiño”.

Both the “kajchas” and the workers under the pirquiño had to sell their share on their own, thus becoming merchants and swelling the mass of informal workers.

During the international economic crisis (1929 - 1932) the prices of minerals fell sharply. The companies, unable to cover fixed costs (including wages), sought to optimize their profits by giving workers the mines to work on their own in exchange for a lease. Workers accepted those agreements as an alternative to unemployment. They assumed the risk of production and commercialization, which, in good times, were carried by the company. They obtained a reduction in fixed costs by sacrificing their own remunerations. Once the crisis was over, the companies returned to manage the mines and the workers went back to formal work. To sum up, the number of self-employed workers grew in times of crisis and decreased in good times, thus, the self-employed workers served as a buffer against crises in the mining sector.

Starting in the 1930s, the mining unions came out in defence of the unemployed, creating “cooperative unions” based on collective agreements with companies in order to extract minerals and market them on their own. The term cooperative union was used to mean an association created by dismissed workers who previously were part of a union.

The government founded the Mining Bank in June 1936 to promote production, provide technical support and loans, and facilitate access to machinery and equipment to the mining industry. The Mining Bank had also

a monopoly on the commercialization of minerals. The creation of this entity favoured the cooperative sector, allowing it to market the mineral directly through the bank, thus breaking the ties it had with the large commercial companies existing at the time.

The large number of miners in cooperatives put significant pressure on successive governments, which even led to the Bolivian Political Constitution of 1938 saying that the "state will promote, through adequate legislation, the organization of cooperatives "

A law enacted in 1945 established that abandoned mines should be turned over to the Mining Bank, which granted exploitation rights to private companies and leases to mining cooperatives.

A law of 1958 stipulates that state-owned mines should preferably be managed by cooperatives when they are not managed by the state.

The nationalization of the mines in 1952 posed a new challenge to workers since they would have to negotiate with the state.

After the 1952 National Revolution, the miners' union pressured COMIBOL and the government to rehire workers who had been previously laid off from private companies and to hire other workers for social reasons (widows, children of deceased workers etc.). This led to an excessive number of workers in COMIBOL's payroll, but it did not prevent the formation of groups of miners willing to work on their own. These groups worked in deposits peripheral to the state mines, in the recovery of minerals from clearings and rivers, and in food and other services. These activities involved many informal workers.

It is noteworthy that the labour supply in mining was, always, enough, or even in surplus, relative to demand.

### **3.4. Deinstitutionalization and labour informality**

Bolivia suffered a severe economic crisis between the end of the 1970s and 1985 due to export prices decrease, interest rates growth, excessive burden of external debt, and the depletion of mineral deposits. The deterioration of real wages, caused by an inflation rate of 8,000 per cent, created great discontent among the workers.

The significant drop in tin prices made many people in Bolivia and abroad think that the “tin era had ended” and that this strategic mineral would be replaced by hard plastics. COMIBOL experienced significant state-funded losses. In order to stabilize the economy and for political and technical reasons, the government decided to withdraw the state from the mining activity. COMIBOL would remain only as a “residual” company to handle the logistics of closing the business. The government thought that the best way to weaken the powerful labor movement was to provoke the dispersion of the workers. The government, with the international financial support, granted bonuses to the 27,000 dismissed miners, which were worth significantly more than those prescribed by labour law. Some migrated to the valleys and tropical zones to grow coca, while others stayed in the mining regions to swell, once again, the ranks of self-employed workers associated with cooperatives. The government granted them the right to exploit some mining areas owned by COMIBOL.

The government also closed the Mining Bank with great consequences for the cooperatives since it was this institution that bought their production. The Mining Bank certified the ore grade and bought it at international prices,

minus some fees. After the bank closed, cooperatives had to negotiate with private traders and intermediaries.

The dismissal of 27,000 workers meant that more than 100,000 people, including their families, had no income. In order to soften the social impact, the government, with the support of international aid agencies, enacted some policies in favour of mining cooperatives. We mention some of them: 1) creation of funds to support cooperatives financially; 2) tax exemptions; iii) transfers of equipment from COMIBOL and the Mining Bank to cooperatives; iv) debt forgiveness contracted with the National Mining Exploration Fund, COMIBOL, the Mining Bank, Health Insurance and other state institutions; v) programmes for social housing.

There were two troubling issues concerning the government policy: (1) the lack of clarity about the role assigned to mining cooperatives in the country's development; (2) the ease with which the government accepted the premise that the era of tin had come to an end, that didn't happen.

That was the context of deinstitutionalization in which cooperatives benefited from the price boom. It should be noted that the applied social protection policies did not contribute to the emergence of informality.

### **3.5. International politics and labour informality**

In the middle of the Cold War, Nikita Khrushchev made an offer to build a tin foundry in Bolivia and also grant a \$ 150 million loan. The labour unions pressed the government to accept this offer. In 1961, the government of Bolivia, under strong pressure from the US, rejected it and, in contrast, it contracted a loan from the US, West Germany and the Inter-American Development Bank, for a recovery plan for the mining called the "Triangular

Plan". The condition for this loan was the closure of several loss-making mines and the dismissal of a fifth of the COMIBOL workforce. An advisory group was created by the creditors to follow up on the plan. An additional requirement was that the Bolivian government turned down the foundry offered by the Soviet Union. COMIBOL allowed the laid off workers to work in the fields that they had left which led to the expansion of informal work.

Around the same time, US President, John F. Kennedy launched the Alliance for Progress with a substantial economic support for Bolivia. A credit for the recovery of mining was approved conditional on the dismissal of thousands of workers who were cornered to work in the informal sector.

Under the government of General René Barrientos (1964-1969), 10,000 additional miners were laid off and wages were lowered by 40 to 50 per cent. The workers reacted but the military intervened to suppress them, causing 600 deaths and 2,000 injuries, including women and children.

The US Embassy facilitated the financing to execute the third phase of the "Triangular Plan". Once again, the dismissed miners went to swell the ranks of informal labour.

The recurrent policy of outsourcing the production of COMIBOL to cooperatives was the main instrument to deal with fluctuations in international prices. But the dismissals were also justified by productivity losses caused by excessive growth in salaried labour prompted by union pressures or political expediency. Cooperatives served as buffers for mining and political crises, and continue to do so to this day.

To summarize, we distinguish three phases in the growth of mining cooperatives throughout Bolivian history.

- The first, prior to 1985, is characterised by the tin mining crises and the expansion of the gold cooperatives in the department of La Paz.
- The second phase, between 1985 and 2005, is characterised by the closure of COMIBOL operations.
- The third phase coincides with the price boom beginning in 2002 and the political alliance between the government and the informal workers since 2006.

#### **4. THE EXPORT PRICE BOOM AND THE EXPANSION OF THE INFORMAL SECTOR**

The Bolivian mining production is destined to foreign markets. The evolution of the unit value index of mineral production is illustrated in Figure 1. In this figure (right axis), we observe the important growth in unit values<sup>5</sup> since 2005. In the 10 years up to 2015, this index grew by more than 200 per cent.

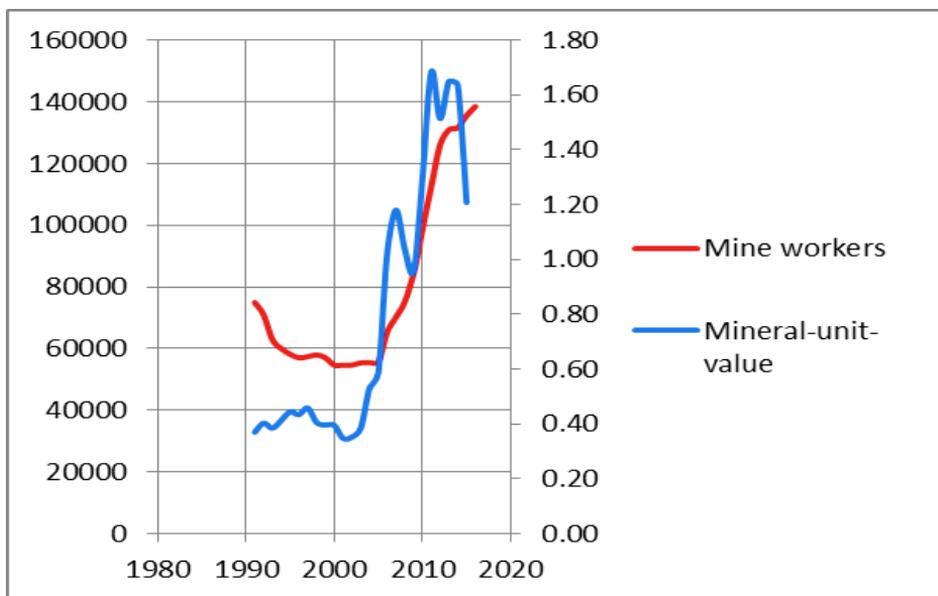
Simultaneously, as shown in Figure 1 (left axis), responding to the favourable behaviour of prices, the number of workers in this sector went from 56,000 in 2005 to 137,000 in 2016. In addition, 684,240 indirect jobs were created, according to the Ministry of Mining and Metallurgy, most of them in the informal sector.

The growth in cooperatives was not always a response to price increase. In the history of Bolivia, as it was explained in Section 3.3, the informal labor sector absorbed the losses of the companies resulting from the decrease in the prices of minerals. This happened frequently during Spanish colonial rule and in the nineteenth and twentieth centuries.

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<sup>5</sup> This index is calculated by dividing the value in dollars of mining production by its added value at 1990 prices, according to Bolivia's "National Accounts".

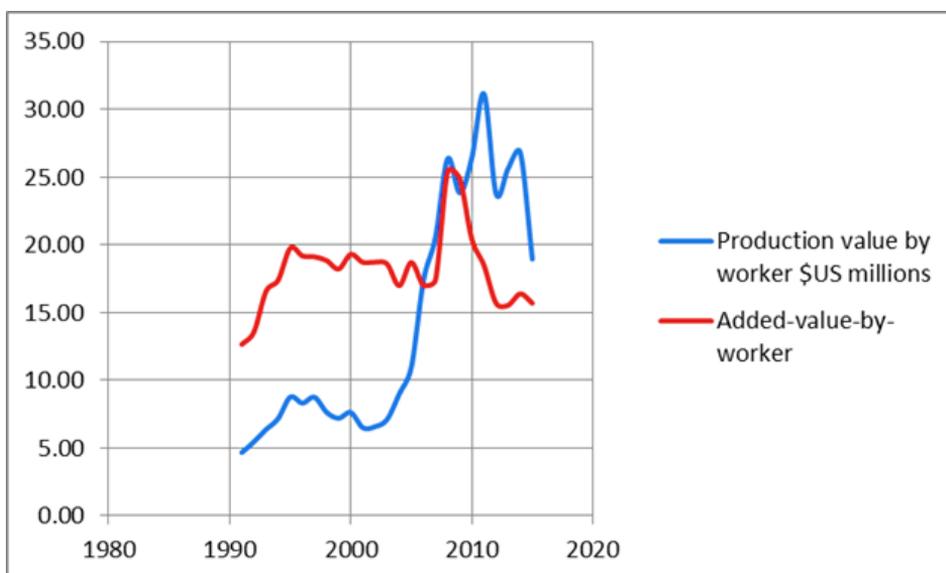
Figure 1. Price index and employment evolution.



Source: Ministry of Mining and Metallurgy

The most remarkable aspect of the important growth in the mining workforce is that, by 2016, 88 per cent of the workforce was informal, a total of 122,700 workers (Figure 3), grouped into 1,816 cooperatives. When they were dismissed from COMIBOL in 1985 (see Section 3.4), they dispersed into other activities and some returned to mining when prices went up. Many peasants from neighbouring mining centres joined this movement. The high prices were an incentive for migration to mining even to work in low-grade deposits with rudimentary equipment, often only with the use of picks, shovels, and hammer. Illegal production was roughly bagged in burlap sacks, sold to local traders, or transferred by rudimentary means of transportation to Chile, where some formal and informal companies bought them.

Figure 2. Mineral production value and added value by worker



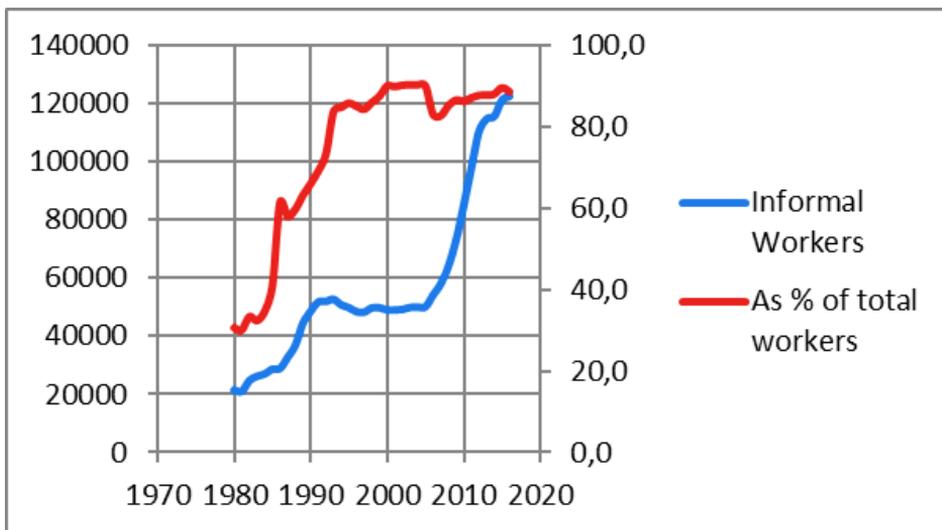
Source: Ministry of Mining and Metallurgy

The mineral production value quadrupled between 2005 and 2015, going from 611 million dollars to 2,569 million dollars. However, the mining sector contributed only 4-5 per cent to the state in the form of royalties. The contribution in royalties meant, at best, 0.64 per cent of GDP in 2011. The data show how negligible the contribution of the informal sector is relative to its importance.

Despite the significant increase in the number of workers, the income of cooperative members grew rapidly. In 2011, the earning peaked at 31,000 dollars per year on average per worker, more than 10 times the minimum wage in force at that time, but with great variance. The fact that cooperative members worked with rudimentary technology and in deposits often with low yields did not allow an increase in the volume of production, measured

through the added value of the sector at constant prices, with the exception of the year 2009 (Figure 2).

Figure 3. Informal workers in numbers and percentage of the total



Source: Ministry of Mining and Metallurgy

## 5. FEATURES OF A MINING COOPERATIVE

### 5.1. Labour informality

The mining cooperatives of Bolivia differ from the cooperatives of the rest of the world in several aspects. In particular: 1) cooperatives are associations of self-employed miners with the purpose of improving the negotiations with the state and other economic agents, such as minerals traders or suppliers of machinery or tools; 2) not all workers in cooperatives are partners; almost two thirds are salaried workers; 3) work is done on a self-employed basis or in groups within the cooperative, not jointly; 4) there is no equitable distribution of income.

Cooperatives negotiate lease contracts with COMIBOL and exploitation rights with the state. The cooperative sector also has a long history of illegal appropriation of both state and private mines. In the words of Rolando Jordan (2018, p. 260):

The mining cooperative is an informal productive sector with a low level of productivity that uses backward, labour-intensive technologies and has a great capacity to survive in low-price situations due to over-exploitation of the labour force (including women, the elderly and children), non-compliance with social, environmental and industrial safety standards.

Any adult man can request to participate in a cooperative, but his family membership or social network increases the probability of his acceptance. His application for membership must be accompanied by a birth certificate proving his Bolivian nationality, a military service credential, a health certificate and a marriage document (if married). Very few women are accepted as members in a cooperative, although some do get accepted as widows of members.

The cooperative size varies greatly: some have fewer than 30 members, while the largest, the Unified Cooperative in Potosí, has 5,000 members and 15,000 salaried workers.

The mining cooperatives are grouped in provincial associations and, at the national level, in the National Federation of Mining Cooperatives (FENCOMIN), which since 2006 has acquired significant political importance.

Some deposits in which mining cooperatives operate have been exploited for a long time, even for several centuries as in the case of Potosí's Cerro Rico. Many mines are almost exhausted, containing only low-grade minerals.

The cooperative sector operates mainly in COMIBOL areas through lease agreements. The regulations allow for cooperative members to benefit from COMIBOL's technology, equipment and machinery, however only part of them do so.

Not all workers work inside the mines. Some work recovering minerals from COMIBOL residue piles. The work outside the mines is almost always performed individually. They become partners only to market the mineral.

In the mines, cooperative workers labour individually or in groups. Each crew (with some exceptions) is responsible for: 1) acquiring their tools; 2) identifying a place to extract minerals; 3) renting machinery and equipment; 3) requesting the cooperative for permission to exploit a deposit; 4) marketing the minerals extracted; 5) informing the cooperative about the marketing and making the necessary contributions.

Some cooperatives have machinery and equipment, which they lease partners, for hours, days or longer periods. Some crews rent their equipment from trading companies.

The workers income is low, or even nil when they cannot find a good mining site. Conversely, lucky miners might obtain generous income allowing to buy machinery and equipment to improve their labour performance. The absence of a mechanism for income redistribution or compensation inside the cooperative provoke much inequality.

## **5.2. Productivity**

After the cessation of its activities, COMIBOL withdrew most of its machines from the mining centers despite its commitment to transfer them to the cooperatives. On some occasions, they rejected saying that the transfer conditions were unfair and that the machines were quite obsolete. Thus, large quantities of COMIBOL equipment, such as cars, drills, crushers or even mills, were abandoned and cooperative members opted to work manually.

The manual work at many stages of the production and the concentration of ore, and mineral's low-grade, meant reduced productivity of the cooperatives. Pulse drilling, manual ore selection and concentration take considerable time, which limits productivity.

## **5.3. National trade**

There are four agents in the commercialization process: producers, rescatirs, trading companies, and exporting companies. The producer can be an individual, a team or a cooperative. The rescatiri is an informal marketer who buys the miner's production in cash and at a low price. The trading companies are, in principle, formal, buy at international prices, apply legal deductions, and resell the production to exporting companies. In many cases, they rent out equipment and machinery to the cooperatives to ensure that the production is sold to them. Very few cooperatives export directly.

After the closure of the Mining Bank, the number of private mineral trading companies multiplied and they obtained market power at the expense of cooperative members. They take advantage of the lack of checks and transparency in the minerals market to manipulate prices at will. Cooperatives

felt that the deductions that marketers collect for taxes, insurance contributions etc., are unfair.

There are no rules that protect the interests of cooperatives against the continuous plundering of marketers, or link them more beneficially with the international market.

#### **5.4. Mandatory contributions**

Collections for mining royalties (provincial taxes) reached 4.30 per cent of the value of production on average from 2000 to 2015, with some tendency towards growth. In 2017, 6.44 per cent of national taxes were collected from the sector. Additionally, the sector pays the complementary tax on mining (ICM). The aliquot of this tax varies with the ore grade and is approximately 2.5 per cent of the value of production

Miners working in COMIBOL-owned deposits must pay also a “leasing fee” of 1 per cent of the value of the production, Cooperatives are exempt from VAT payments.

The contributions to worker associations are as follows: 1 per cent to the National Federation of Mining Cooperatives, 1.5 per cent to the provincial federations, and from 2 to 20 per cent to the cooperative, depending on which cooperative the member belongs to. These percentages refer to the value of production.

Registration with the National Health Insurance (CNS) is voluntary. It implies a contribution of 1.8 per cent of the value of production. In some cases, the cooperative forces its members to sign up for health insurance.

Registration with a pension fund (AFPs) is also voluntary. When it occurs, the annual contributions are equal to the national monthly minimum wage. Very few workers are affiliated with AFPs.

All these contributions are calculated at the time of commercialization. The marketing company is a holding agent, which has to make contributions on behalf of the partners who sell their production.

### **5.5. Mandatory contributions**

In general, there are no industrial safety standards in cooperatives, if there are any, they depend on the decision of the members or the crew.

The occupational risks to which mining workers are exposed are numerous: collapse of galleries; fall of roof stones; blows to the head due to the lack of appropriate helmets; accidents in the handling of explosives; accumulation of toxic gases; aspiration of dust with the risk of silicosis; risk of rheumatism and pathologies associated with exposure to loud noises.

Traditionally, miners mitigate hunger and fatigue by consuming coca leaves and alcohol, which in turn cause other health problems.

Bolivia has norms for the protection of the environment, but these are difficult to meet for small production units and the mining cooperatives. According to the Ministry of Mining, 85 per cent of the mining cooperatives operate without an environmental licence.

Women work in mines performing various menial tasks, putting their health at risk, with little or no social benefits.

## 6. THE POLITICAL POWER OF INFORMAL WORKERS

### 6.1. Labour informality, empowerment and conflicts

Cooperatives have used their political power to expand their areas of work. During the administration of President Carlos Mesa (2003-2005), they took control of the Vice Ministry of Mines and the Oruro local government. In that period, they occupied the Caracoles and Colquiri Mines and expelled COMIBOL workers.

Since the national elections of 2002, and especially since the 2005 elections, Evo Morales' party organized a campaign to win over mining cooperative members. More than 100,000 cooperative members and their families constituted a significant fraction of the electorate (5 per cent), thus capable of influencing an election outcome.

Cooperatives inherited the mining union tradition of intimidation by exploding dynamite in urban centres to attract attention to their sectoral claims<sup>6</sup>.

Evo Morales (2016-2019) did nothing to recover the mines closed by the market-oriented government of Sanchez de Lozada. On the contrary, it gave unusual advantages to cooperative miners. This coincided with the mineral price boom. Therefore, cooperatives expanded rapidly riding a period of prosperity; contrary to previous expansions of the sector that were caused by crises. The boom brought about high incomes for many cooperative members. Their alliance with the government gave them some unique

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<sup>6</sup> The dynamite is exploited in the air, does not cause material damage, but provokes a shocking noise that causes panic in the population.

benefits, such as not having to pay all taxes and removing their salaried workforce from the reach of general labour law.

The Mining Fund (FOFIM) was created as a decentralized non-bank entity whose purpose was to give technical assistance and loans to mining cooperatives represented by FENCOMIN.

Thanks to its enormous political power, FENCOMIN counts presently in its ranks several congressmen, two deputy ministers, a branch superintendent, and dozens of chief administrators in the government. Fulfilling an electoral campaign promise, a mining cooperative member was named Minister of Mines in the first government of Evo Morales.

FENCOMIN opposed the unionization of its salaried workers and a mining law prohibiting the rental of mining concessions to national and foreign companies. Although the government ended up approved these measures, some 30 concessions were leased by the cooperatives outside the law.

Cooperatives wanted to make environmental standards more flexible, and also sought the inclusion of miners' representatives in the state social insurance board and the creation of a ministry under their oversight. They also called for preferential treatment in the payment of electric power.

Although the royalties paid by the sector are small, the cooperatives proposed that these be invested in projects that favour them.

## 6.2. Miner conflicts with government and transnational companies

### 6.2.1. Political power and conflicts

The political power acquired by the cooperatives grouped in FENCOMIN led to the increase of their demands, creating considerable frictions with the government, COMIBOL salaried workers, transnational corporations, and peasant communities. This led to the most serious political conflicts in this century<sup>7</sup>:

In October 2003, major unrest in the Huanuni Mine between COMIBOL miners and cooperatives, left 14 workers dead.

In October 2006, cooperative members and COMIBOL miners fought for the control of the tin deposits of Posokoni Hill (Huanuni, Oruro) with cartridges of dynamite, ANFO (an explosive of greater range), knives and sticks, leaving 16 dead and more than 100 injured<sup>8</sup>. An agreement was reached whereby COMIBOL would take control of the mine, hire 4,000 new workers, and leave some slots for non-contract miners organized in cooperatives. The Minister of Mines, issued from the cooperative ranks, was dismissed and a former COMIBOL worker was appointed in his place. The hiring of 4,000 new workers by COMIBOL led to a surplus workforce, causing financial problems for the company. The authorization given to cooperative members to exploit some areas has caused permanent conflicts between these and COMIBOL workers.

Caving to pressure from COMIBOL workers, the state retook control of the Colquiri and Huanuni Mines, and cooperative members were evicted.

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<sup>7</sup> See CEDIB (2014), Poveda (2014), Pimentel (2016) and Peredo (2016).

<sup>8</sup> For a useful analysis of this event, see Arteaga (2008).

However, COMIBOL signed a lease agreement with a cooperative to exploit the rich Rosario vein in Colquiri.

In 2016, Bolivia was shaken by a violent conflict between mining cooperative members and the government of Evo Morales as a result of the amendment to a law on mining cooperatives, which sought to regulate the activities of cooperatives. The conflict ended with the death of four mine workers and a deputy minister, alongside many injured. The death of the deputy minister caused the detention of hundreds of workers and the closure of the radio station belonging to the mining cooperatives.

Despite the opposition of the cooperatives, President Evo Morales, with the support of the National Labour Union (Central Obrera Boliviana) promulgated a law allowing the creation of unions within the cooperatives. After these tragic events, the government and the cooperatives sought to rebuild their deteriorated relations, this effort resulted in a new alliance. However, as of 2019, no labor unions within cooperatives exist.

Frequently, conflicts erupt between peasants and others who want to exploit the mines in their lands. Among those involved are foreign and national companies and cooperatives. Sometimes, the peasant communities agree to the exploitation of mines on their land in exchange for money or participation in the mining production.

One of the major conflicts took place in 2014 between a Canadian company and farmers around the rich silver, *indio*<sup>9</sup>, and gallium deposits of Malluc Khota. The conflict ended with a reversal of the mining concession

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<sup>9</sup> “*Indio*” is the name of a mineral. It is used as an electrolytic coating against wear in pieces of antifriction alloys.

and the withdrawal of the Canadian company. Behind the conflict were cooperatives who hoped to reach an agreement with the peasants in order to exploit the mine.

### **6.2.2. Environmental impacts and conflicts over the use of water**

Bolivia has recently enacted legislation concerning the rights of indigenous people, including prior consultation for mining and other projects, territorial management, the right to a healthy environment, and participation in projects of various kinds. The failure to respect such rights creates conflicts among actors.

One of the key reasons for conflict between the peasant and mining communities is the use of water resources<sup>10</sup> and the disposal of industrial waste. Frequently, water courses are diverted from peasants' agricultural activities to mining, thus harming the welfare of peasants. The water used in the mines contains materials that contaminate rivers used for irrigation. Violent conflicts arise as a result of these problems, often leading to fatalities as well as injuries.

The Mining and Metallurgy Law, promulgated in 2014, provoked serious unrest among peasant communities which accused the government of prioritizing the use of water for mining activities to the detriment of agriculture. The government reached an agreement with the farmers, committing itself to modify several articles of the law. Despite the modification of the law, many peasant sectors strongly rejected it.

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<sup>10</sup> Conflicts over water are frequent in Bolivia. See, for example, the Assies narrative (2003) about the Water War in 2003.

## **7. CONCLUSIONS**

This paper refers to the existence of an important informal sector in mining in Bolivia and its relationship with foreign trade and politics. This study highlights the structural differences that exist between the informal sectors in developed and developing countries and the differences regarding the impact of international trade.

It was demonstrated that mining is not a sustainable resource for development for several reasons, including its dependence on two random variables (the one related to international prices and the one related to the discovery of new deposits), and because its exploitation implies the progressive exhaustion of reserves and, consequently, the fall in yields and the need to increase investments to maintain them. Several Andean countries have had for a long time export-oriented mining as their main activity, which seems to contradict the previous statement. This activity persists thanks to many informal workers who act as shock absorbers of the crises in the sector. The large number of informal miners poses, in turn, political problems and does not contribute to development.

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