

Problemas del
DESARROLLO

REVISTA
LATINOAMERICANA
DE ECONOMÍA

Problemas del desarrollo

ISSN: 0301-7036

Universidad Nacional Autónoma de México, Instituto de
Investigaciones Económicas

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Problemas del desarrollo, vol. 52, no. 206, 2021, July-September, pp. 35-59

Universidad Nacional Autónoma de México, Instituto de Investigaciones Económicas

DOI: <https://doi.org/10.22201/iiec.20078951e.2021.206.69714>

Available in: <https://www.redalyc.org/articulo.oa?id=11869402002>

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The policy concessions of mining groups in Mexico

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This research was carried out with the support of DGAPA-UNAM through the PAPIIT project, "Atlas of Mining in Mexico," code IN303417.

Date received: July 13, 2020. Date accepted: December 19, 2020.

Abstract

This article analyzes the political, economic, and territorial changes that enabled conditions more favorable to the accumulation of large private mining capital in Mexico. The article also reviews the continuities and contradictions present in this process during the period 1982-2018. Documentary, statistical, and cartographic analysis reveal that since the 1990s, Mexican mining groups have dominated mining and metallurgical production. It is concluded that the disincorporation of federal mining reserves, the privatization of mining companies with state involvement, the changes in the legal framework, and the monopolization of mining concessions are elements that favored the extent of integration, diversification, and capital internationalization mining companies have attained.

Keywords: mining groups; privatization; mining concession; capital concentration; dispossession.

1. INTRODUCTION

Large-scale mining in Mexico has been the object of study in recent years by several researchers from disciplines such as political ecology (Cohen, 2015), economics (Azamar, 2017; Morales and Tellez, 2016; Paredes *et al.*, 2016), geography (Morales, 2002; Sánchez and Casado, 2018) and anthropology (Cortés, 2018; Garibay *et al.*, 2011), among others. This literature generally focuses on the negative environmental impact and social conflict caused by these companies, in particular the iconic Canadian-owned mining projects. Meanwhile, studies on large Mexican companies also address environmental and social impacts but in a more isolated manner; in other words, they will only analyze one of the numerous mines controlled by national private equity mining groups (Islas, 2017). This means that economic aspects receive less attention, which feeds the belief that foreign companies dominate Mexico's domestic mining and metallurgical production (Guevara, 2016).

Contrary to this opinion, research such as that carried out by Delgado Wise and Del Pozo (2001), Morales and Téllez (2016) and Sánchez and Casado (2018) show that while Mexican mining has been historically defined by weak domestic producers, this situation was reversed and today it is a few local oligopolies which dominate mining and metallurgical production of Mexico's primary mining resource exports. The authors point out that the adoption of the neoliberal economic model from the 1980s, as well as the reform and creation of various laws and regulations related to this economic activity, are determining factors in the dizzyingly rapid growth of large Mexican mining companies which outstrips that of foreign companies such as Goldcorp, Pan American Silver, Torex Gold, Agnico Eagle or Alamos Gold.

As such, this article seeks to contribute to this new literature, by means of focusing on a dual objective: on the one hand, identifying the political, economic and territorial changes which allowed large Mexican mining capital to attain a greater level of relevance in the domestic metallurgical and mining sector and, on the other, to analyze the continuities and contradictions of this process of concentrating capital between 1982-2018.

The analysis therefore focuses on the five most important national capital mining groups in the country: Grupo México, Industrias Peñoles, Grupo Acerero del Norte, Minera Frisco and Grupo Ferrominero (Compañía Minera Autlán). By "mining group" we refer to a central company made up of different subsidiaries, integrated vertically and horizontally, as well as bound together by family ties and a shared strategy for growth, control and profit-making (Dos Santos, 2016).

This research employs a mixed methodology based on the analysis of official statistics. The primary information sources used were the databases provided by the Secretariat of the Economy and the annual reports prepared by the companies themselves. We also used cartographic interpretation and analysis of the mining concessions using the QGIS program, version 3.4 Madeira, with the aim of determining the location, distribution and size for each mining group. To complement this information, we consulted the list of the 500 most important companies in Mexico published by *Revista Expansión*, as well as various academic publications, with the goal of contextualizing and confronting the results. The contribution of this research is to document an overview of the main changes, continuities and contradictions of large Mexican mining capital from a geographical and temporal perspective.

This work is composed of five sections, in addition to the introduction, and is structured as follows: the second part discusses conceptual aspects on which this work's criteria are based; the third reviews the role played by the disincorporation process of national mining reserves and the privatization of companies with state involvement in the formation and consolidation of Mexican mining groups. The fourth analyzes these companies' hoarding of

subsoil by means of accumulating mining concessions. The fifth evaluates the share of domestic production and the level of integration, diversification and internationalization of capital achieved by these five mining groups, as well as their influence in the development of the domestic industry. Finally, we present the conclusions.

2. DISPOSSESSION FOR ACCUMULATING MINING CAPITAL

The emergence of mining projects and operations in Latin America has mainly been taken on by two theoretical approaches. The first proposal is that of extractivism, an approach influenced by political ecology and dependent economies' reprioritization process. The second is that of accumulation by dispossession, a concept which retakes Marx's (2003) proposals on the extra-economic mechanisms that sustain capitalism to this day.

Extractivism is a concept frequently used by various authors to refer to the type of development characterized by intensive extraction of large volumes of resources, with little or no processing. It affects large geographical areas, is devoted to exportation, has a large social and environmental impact and is of dubious benefit to the territories where it is taking place (Gudynas, 2015). Among the classic examples are mining activity, the extraction of hydrocarbons, the expansion of livestock and the export of monocultures, along with other activities that occur in enclave economies, which are almost always disconnected from local or national economies (Azamar, 2018; Svampa, 2019).

With regard to accumulation by dispossession, it is a proposal made by Harvey (2007) which takes up Marx's (2003) concept of accumulation, interpreting it as a process of accumulation consisting of numerous practices based on extra-economic means which represent the predominant form of accumulation in neoliberalism and a possible solution to the recurring crises of over-accumulation of capital (Téllez and Sánchez, 2018). Among the primary predatory practices one will find the extraction of natural resources, the hoarding of land and common property, and the privatization of public infrastructure (water, sanitation, telecommunications, transport and even public institutions such as universities) (Harvey, 2007).

Both extractivism and accumulation by dispossession are theoretical proposals that agree that the source of problems arising from mining activities, particularly those of open pit operations, lies in the adoption of a neoliberal economic model. Both highlight the fact that the State plays a crucial role in executing this activity, not only by forcing the adoption of capitalist institutional devices, but also by acquiring and privatizing goods as the original foundation for the accumulation of capital which in turn favors certain classes or their subsets (Harvey, 2007).

However, extractivism is a theoretical proposal that has limitations in explaining the reality present in countries such as Mexico. First, because it does not consider mining to be an industry as it is an activity which refers only to the extraction and export of minerals without them being processed by the companies themselves (Gudynas, 2015). This assumption does not correspond with the degree of vertical integration achieved by the large Mexican mining groups, which happens to be the subject of this research. As will be demonstrated in the following sections, these conglomerates' mining operations are not limited to the extraction phase and initial processing phase, but also include the stages of smelting and refining of metals and alloys, and even the production of chemicals such as sodium sulphate and magnesium sulphate. In other words, they include all the stages that make up the mining and metallurgical industry.

This does not mean that there is a connection with the metalworking industry, nor that the greater part of the mining production is consumed in Mexico. In fact, domestic-based monopolistic mining capital continues to depend on sales in the global market, as well as on technology and financing from developed countries (Téllez, 2019). However, by focusing on the extraction phase, the extractivism approach ignores that Mexican conglomerates control not only several world-class deposits, but also the only metallurgical complexes in the country and even in Latin America. ¹

Second, extractivism does not take into consideration that Mexican mining groups' operations are articulated with other non-extractive activities in which they partake, such as financial services, telecommunications, transportation infrastructure and energy production. By not considering these relationships, one runs the risk of not seeing the whole picture of what elements have made it possible for these groups to increase their capital.

This article, therefore, does not use the concept of extractivism.² Instead, this research uses studies which propose that the accumulation of mining capital does not exclusively come about from the "free play" of market forces, but also from the imposition of certain predatory practices such as turning over mining concession titles en masse.

From this perspective, accumulation by dispossession in mining activity is a set of trends which economic groups foster in order to seize both natural goods and socially owned assets (water, forests, land, energy sources, in addition to minerals), as well as public goods (mining reserves and state-owned companies), which allows them to "obtain high profits based on extraordinary gains generated when these assets are incorporated and valued as merchandise in the goods markets or in the financial system" (Rodríguez, 2017, p. 51).

As such, the article aims to explain the relationships and the mechanisms of dispossession that have given birth to the large Mexican mining operations' current functional logic of, as well as the impact on, their expanded reproduction of capital.

3. CONCENTRATION OF MINING AND THE IMPLEMENTATION OF THE NEOLIBERAL MODE

The Regulatory Law of the 27th Article of the Constitution regarding mining concerns³ was promoted since 1984, during the former President Miguel De la Madrid's presidency (1982-1988), and 1986 saw the drastic liquidation of Fundidora Monterrey. Yet the real measure which established the foundation for consolidating the neoliberal mining model was the execution of the National Mining Modernization Program and the Mining Law⁴ of 1992. This program –promoted by the World Bank and operated by the government of then president Carlos Salinas de Gortari– drove the reform of legal

frameworks related to mining activity, basically those related to land ownership, the granting of mining concessions and the use of mining resources, as well as aspects of capital mobility with the aim of creating a setting ripe for attracting private investments (Azamar, 2018).

In this way big mining capital accepted the change without hesitation, since these neoliberal policies bestowed upon it various advantages from the start. Two which stand out are the fostering of exports by means of a new economic support system for companies engaged in substantial exports (ALTEX),⁵ implemented between 1983 and 1986, and in particular the credit bailout carried out by the Mexican State by means of the Trust Providing Coverage for Foreign Exchange Risks (FICORCA)⁶ (Basave, 2016). From 1983 to 1992, this trust, designed and operated by Ernesto Zedillo, offered prepayment and conversion of foreign debt acquired in the 1960s and 1970s by Mexican companies, including mining ones. In particular, this measure served to rescue large national economic groups from the crisis of their private foreign debt. This accounted for 80% of the trust's resources, around \$10 billion USD of the close to \$12 billion USD originally contemplated (Fernández, 2009). The result of the bailout was that these companies managed to recover their financial capacity, thus making it possible to obtain the economic resources to acquire State assets which would later be privatized.

The disincorporation of the national mining reserves was the first act which started this sector's modernization, a measure consisting in declaring over 98% of the area's mining reserves as available land.⁷ The State had created these mining reserves with the aim of meeting the country's future demands or to preserve strategic minerals. This was a rushed process as the total of 6,453,700 hectares of mining reserve registered as of 1989, shrunk to only 146,300 hectares in 1996 (Sánchez and Casado, 2018). The Mexican mining groups, without a doubt, took advantage of the State disincorporating these reserve areas.

The second measure implemented by the Mexican government was the privatization of mining and metallurgical companies which theretofore had state involvement. This too was an accelerated process as it only took six years for 23 of the primary mining companies with state involvement, be it a majority and minority share, to be sold, once again to the benefit of large national mining groups (see Table 1).

Table 1. List of major mining companies privatized in favor of nationally based mining groups, 1988-1993

<i>Company name</i>	<i>Year State involvement began</i>	<i>State's share (%)</i>	<i>Year of privatized</i>	<i>Acquiring mining group</i>	<i>Corporate group</i>
Impulsora Minera de Angangueo (IMASA)	1955	36	1988	Industrial Minera Mexico	Grupo Mexico
Refractarios Mexicanos	1974	33	1988	Industrias Peñoles	Grupo Bal
Cía. Minera Cedros	1970	15	1989	Industrias Peñoles	Grupo Bal
Cía. Minera Cananea	1971	91	1989	Industrial Minera Mexico	Grupo Mexico
La Caridad	1970	44	1989	Industrial Minera Mexico	Grupo Mexico
Minera Lampazos	1970	32	1989	Minera Frisco	Grupo Carso
Minera Real de Ángeles	1969	32	1989	Minera Frisco	Grupo Carso
Refractarios Hidalgo	1981	n.d.	1989	Industrias Peñoles	Grupo Bal
Química Fluor	n.a.	17	1989	Minera Frisco	Grupo Carso
Cía. Real del Monte y Pachuca	1948	100	1990	PARA Mexico	Grupo Acerero del Norte
Carbón y Minerales Coahuila	n.a.	100	1991	Altos Hornos de Mexico	Grupo Acerero del Norte
Cerro de Mercado (CEMESA)	n.a.	100	1991	Altos Hornos de Mexico	Grupo Acerero del Norte
Cía. Carbonífera La Saucedá	n.a.	100	1991	Altos Hornos de Mexico	Grupo Acerero del Norte
Cía. Minera El Mamey	n.a.	100	1991	Altos Hornos de Mexico	Grupo Acerero del Norte
Cía. Minera La Florida de Múzquiz	n.a.	100	1991	Altos Hornos de Mexico	Grupo Acerero del Norte
Complejo Minero Benito Juárez Peña Colorada	1967	100	1991	Altos Hornos de Mexico	Grupo Acerero del Norte
La Perla	n.a.	100	1991	Altos Hornos de Mexico	Grupo Acerero del Norte
Minas de California	1974	100	1991	Industrias Peñoles	Grupo Bal
Minera del Norte (MINOSA)	n.a.	100	1991	Altos Hornos de Mexico	Grupo Acerero del Norte
Minerales Monclova (MIMOSA)	n.a.	100	1991	Altos Hornos de Mexico	Grupo Acerero del Norte
Refractarios H.W. Flir	1974	n.d.	1991	Industrias Peñoles	Grupo Bal
Minera Carbonífera Río Escondido (MICARE)	1977	100	1992	Altos Hornos de Mexico	Grupo Acerero del Norte
Cía. Minera Autlán	1974	35	1993	Grupo Ferrominero	Autlán Holding

Note: n.a.= not available.

Source: created by the authors based on Concheiro (1996), Morales (2002), Sarrago et al. (1988) and Urias (1980).

One of the first and most outstanding sales happened in 1989 when the the State sold off its share of the Compañía Minera de Cananea, one of the largest copper deposits being exploited in the world. There were two requests for bids, in which Protexa Monterrey and Industrias Peñoles took part, offering \$975 million USD and \$650 million USD respectively. After the State cancelled the requests, it awarded the historic company to Grupo México for only \$175 million USD, 3.7 times less than Protexa Monterrey's offer (Gómez, 2014).

Grupo México, then headed by Jorge Larrea, also managed the cancellation of the collective contract, whose value was estimated at \$10 billion MXN in 1989, in exchange for bestowing 5% of the company's shares to workers, thereby keeping them in the game after privatization. A few months after revoking the miners' collective contract, along with the State's financial remediation, Grupo México acquired the La Caridad mine for approximately \$680 million USD (one third of its value) (Barranco, 2014).

It was that same year when the group PARA México, owned by Alonso Ancira Elizondo and Xavier Autrey Maza, a subsidiary of Grupo Acerero del Norte, bought the company Real del Monte y Pachuca – a major producer of silver and gold – for \$6 million USD, despite the fact that its value was estimated at US\$105 million. As a result of this privatization, 2,500 miners were laid off, which led to the disappearance of Section One of the National Union of Mine, Metal, Steel and Similar Workers of the Mexican Republic (Ortega, 1996). The wave of privatizations brought with it not only the selling off of state mining complexes, but also layoffs, the destruction of collective contracts and the dissolution of unions, practices systematically repeated over the following years (Morales and Téllez, 2016).

Once they carried out the privatization of the mining and metallurgical complexes, as well as of federal reserves, to the benefit of corporate groups controlled by national and monopolistic capital, the Mexican State brought about a series of important constitutional reforms, some directly affecting mining and others closely related to it, with the explicit aim of attracting foreign direct investment. These reforms include:

- *Amendment of Article 27 of the Constitution in November 1991 and its Regulatory Law Regarding Communal Land in February 1992.* This reform facilitated the acquisition of communal land and collective property.
- *Reform of the Mining Law in 1992.* Among other features, this law declared mining as a preferential activity over any other use of land where minerals are located. It simultaneously extended the duration of the concessions from 25 to 50 years with the possibility to extend them for another 50, with no limit to the size of land conceded, and made the payment of rights a negligible amount.
- *Reform of the National Waters Act in 1992.* This reform allowed the private hoarding of this vital resource, even in places with water stress.
- *Amendment of Foreign Investment Law in 1993.* Through this reform, the door was opened to creating entirely foreign business partnerships which can repatriate all their profits without any major inconveniences.
- *Signing of the North American Free Trade Agreement (NAFTA).* This trade agreement laid the foundations for weakening national entrepreneurs who lacked the economic conditions to compete, thereby strengthening the sector's monopolization.
- *Reform of article 28 of the Constitution in 1998.* This change involved the privatization of the national railway system, a process from which several national mining companies benefited.
- *Lax environmental legislation.* In addition to the above-mentioned reforms, a favorable regulatory framework was established whereby mining companies could operate without effective environmental verification.

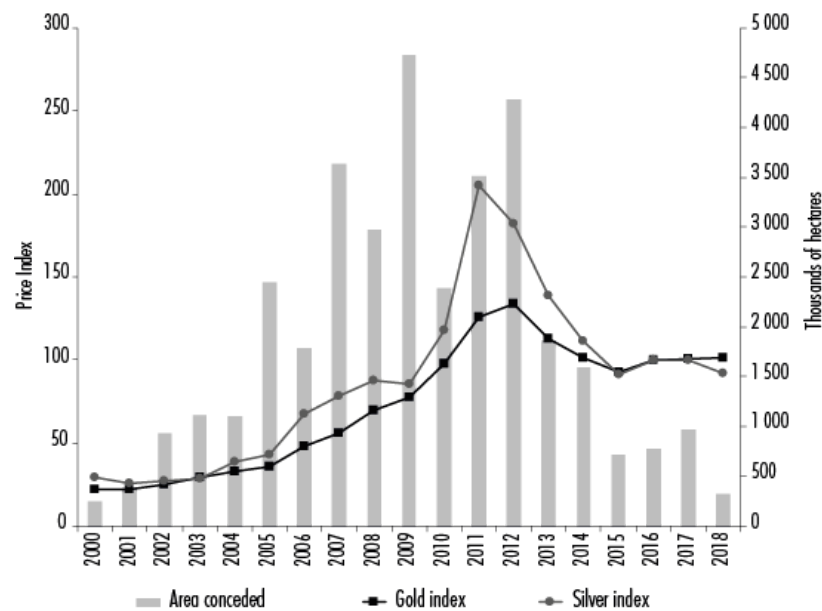
Thanks to these neoliberal economic measures and reforms, Mexican mining transitioned from a mixed structure dominated by national private and State companies, to an industry controlled by Mexican mining groups with a growing presence of foreign-funded companies, especially Canadian ones focused on the exploitation of precious metals. Although restrictions on foreign investment were effectively eliminated so it could once again have a majority share, the clear beneficiaries of the accumulation based on the privatization of state assets were the following: Grupo México, Grupo Peñoles, Grupo Acerero del Norte, Minera Frisco and Grupo Ferrominero (now Autlán Holding). These companies took advantage of the State's benevolence not only to consolidate their control over the country's main deposits and metallurgical plants, but also to achieve greater vertical integration and/or diversify into other economic branches. This led to new investments outside the country (Basave, 2016) and even to absorbing important foreign operations such as the case of Grupo México which in one of history's ironic moments (Delgado Wise and Del Pozo, 2001, p.124), purchased the American ASARCO's mining and metallurgical assets on November 17th, 1999.

4. LARGE MINING CAPITAL'S TERRITORIAL EXPANSION AT THE START OF THE 21ST CENTURY

The privatization of nearly all companies with state involvement (be it a majority or a minority share) meant a radical transfer of assets favoring the same group of the "Regime's favored sons" created in the period of Mexicanization (Delgado Wise and Del Pozo, 2001, p. 113). Nevertheless, starting in the 21st century, said capital's concentration was reinforced thanks to the hoarding of huge areas of national subsoil, driven by the upward cycle of international precious metals prices (2001-2012), the second longest since the 1970s when the then American president, Richard Nixon, declared the inconvertibility of the dollar into gold (Farhi, 1999; Verbruggea and Geenen, 2019).

Since 1992, when the Mining Law was amended, the area concessioned began to grow, especially during the administration of President Ernesto Zedillo when the hectares conceded grew to 992,783 (see Figure 1). It was not until the first decade of the 21st century when we saw an unprecedented increase in the area granted, a trend that maintained a causal relationship between the rise in price of precious metals and gold derivatives. This relationship was much more pronounced between 2007 and 2012, when mining concessions were granted for 3,587 hectares on average, which coincided with the period of high international prices for precious metals. Although there was a drop during the administration of President Enrique Peña (2013-2018), the area accumulated as of December 2017 was approximately 35,891 granted hectares, of which 21 million are currently valid, covering 11% of the national territory (Secretaría de Economía, 2018) (see Figure 1).

Figure 1. Price index of precious metals and area granted in concessions in Mexico, 2000-2018 (2016=100)*



Note: * the conceded area includes both the granting of new mining lots as well as reductions and expansions.

Source: created by the authors using information from the Secretaría de Economía (2018), SGM (2020) and Presidencia de la República (2019).

The concentration of mining concession titles in the hands of the five main Mexican mining groups holds great relevance. As of December 2017, these companies controlled 24% of the area bestowed as concessions in Mexico, represented by 4,000 mining titles (for exploration, exploitation and refining of metallic and non-metallic minerals).

Altos Hornos de México and Grupo Peñoles stand out as the largest Mexican concessionaires as together they account for almost two out of every ten hectares bestowed in concessions (see Table 2).

Table 2. Concessions by Mexican mining group, 2017*

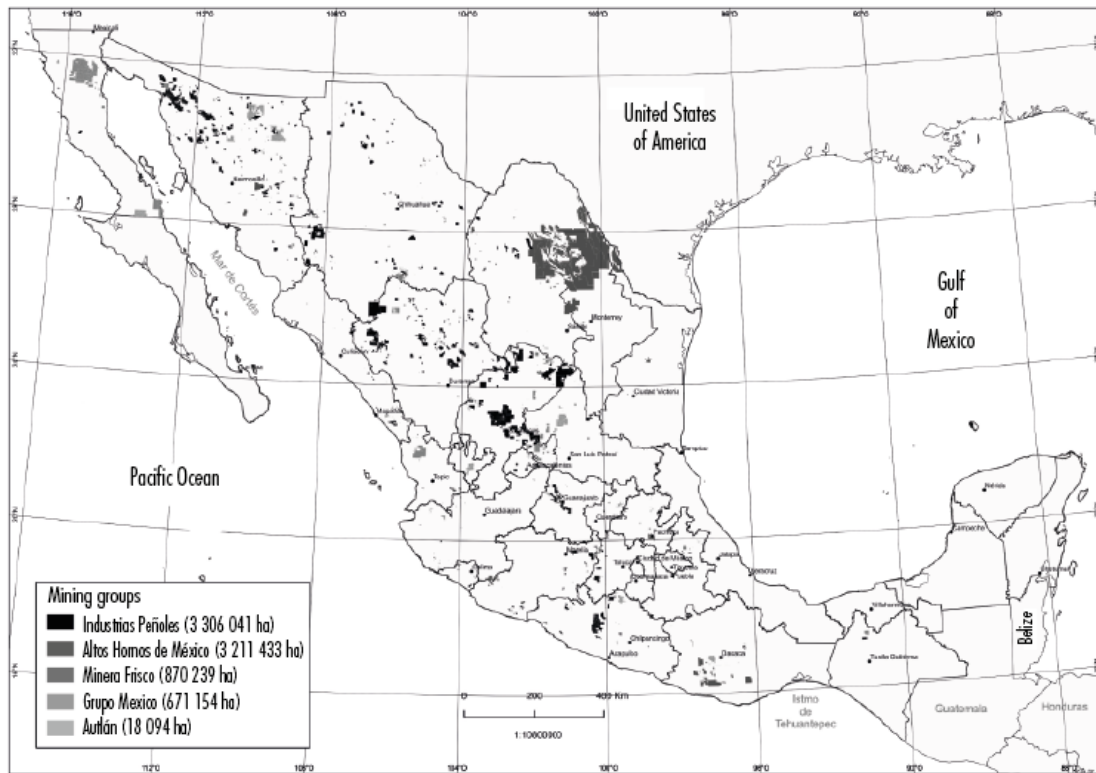
Mining group	Area (thousands of hectares)	Share of national conceded area (%)	Number of titles	Share of the national total (%)
Altos Hornos de México	3 576	10.0	394	1.2
Grupo Peñoles	3 306	9.2	2 280	6.8
Minera Frisco	1 060	3.0	833	2.5
Grupo Mexico	693	1.9	834	2.5
Autlán	19	0.1	60	0.2
Subtotal	8 653	24.1	4 401	13.2
Others	27 238	75.9	28 902	86.8
Total	35 891	100.0	33 303	100.0

Note: *the conceded area includes both the granting of new mining lots as well as reductions and expansions.

Source: created by the authors using information from the Secretaría de Economía (2018).

Of the grand total of 35.8 million hectares conceded in Mexico, Altos Hornos de México has the largest number with 3,576 hectares, most of which are concentrated in the states of Coahuila and Nuevo León, and to a lesser degree, Oaxaca, Sonora, Hidalgo and Michoacán. Second place is held by Grupo Peñoles (including its subsidiary, Fresnillo Plc) which has control of 3,306 conceded hectares. These are distributed among 22 of the country's 32 states, concentrated in Zacatecas, Sonora, Durango and Chihuahua (see Figure 2).

Figure 2. Areas conceded to the main nationally based mining groups, 2017*



Note: "the conceded area includes both the granting of new mining lots as well as reductions and expansions.
Source: taken from Tellez (2019).

While it is true that the minerals in the subsoil remain the property of the nation (DOF, 2012), the hoarding of conceded areas by these "new mining land barrons" is an element related to a crucial monopolistic advantage which poses a certain type of geographical barrier to entry for other companies that lack it. This means that the hoarding of mining assets allows the private exploitation of State assets, which results in the appropriation of extraordinary profits that arise precisely from the exclusive right of ownership that these Mexican mining groups hold over large portions of the subsoil. This subsoil can have exceptional geological and economic qualities, a fact which they take advantage of at the moment it most behooves them (Delgado Wise and Del Pozo, 2001). In other words, these companies have appropriated an income that begins with accumulation based on the concession of the minerals the State holds on behalf of the people it represents, which only results in extraordinary gains because mining resources can be appropriated precisely in an exclusionary manner. Therefore, accumulation based on increasing the number of titles and hectares controlled is the result of the level of concentration achieved by big capital in the last few decades, in addition to its current state (Tellez, 2020).

As such, of the 50 mining units which were controlled by the five main mining groups as of 2018, 29 of them are in the hands of Grupo México and Industrias Peñoles with a geographical distribution which coincides with the states where they have acquired mining concessions (see Table 3). This territorial harmony exhibits control over the deposits currently exploited as well as over possible discoveries, especially in the metallogenetic provinces Sierra Madre Occidental, Sierra Madre Oriental and Mesa Central, areas where the country's most important copper, silver and gold, iron and carbon deposits are located (Sánchez and Casado, 2018).

Table 3. Leading mines of Mexican mining groups, 2018

<i>Mining group</i>	<i>Holding company</i>	<i>Number of mines</i>	<i>Main operations</i>	<i>States</i>
Industrial Minera México	Grupo Mexico	12	San Martín, La Caridad, Buenavista, Taxco, Charcas, Nueva Rosita, Santa Bárbara, Santa Eulalia	Sonora, Chihuahua, Coahuila, Zacatecas, San Luis Potosí, Guerrero
Industrias Peñoles	Grupo Bal	17	Milpillas, Tizapa, Capela, Velardeña, Laguna del Rey, Bismark, Sabinas, Madero, Fresnillo, Saucito, La Herradura, San Julián, Ciénega	Sonora, Chihuahua, Coahuila, Durango, Zacatecas, San Luis Potosí, Mexico, Guerrero
Altos Hornos de México	Grupo Acerero del Norte	9	Real del Monte, Baztán, Hércules, CEMESA, La Perla, MIMOSA, MICARE	Coahuila, Chihuahua, Durango, Hidalgo, Michoacán
Minera Frisco	Grupo Carso	8	El Coronel, Tayahua, María, Ocampo, San Felipe, Concheño, Asientos, El Porvenir	Baja California, Sonora, Chihuahua, Zacatecas, Aguascalientes
Compañía Minera Autlán	Autlán Holding (Grupo Ferrominero)	4	Molango, Nonoalco, Naopa, Columbia	Hidalgo
Total		50		

Source: created by the authors based on Sánchez et al. (2014) and Sánchez and Casado (2018).

The biggest example of this control is AHMSA as four of the nine mining facilities it owns are located in Coahuila, a state where the group has acquired more than 2.5 million hectares in concessions which, on average, will not expire until 2050 (as can be seen in Figure 2).

5. WHO CONTROLS MEXICAN MINING IN THE 21ST CENTURY?

Concurrent with the process of concentrating mining concessions which denotes an open policy of dispossession (Azamar, 2017), Mexican mining groups strengthen their capacity to control national production during the boom period, as well as reinforce the diversification and internationalization of their activities. The increase in international prices for the primary metals which Mexico produces and exports was a key factor in the large national-based mining capital increasing its dominance over Mexican mining, to the point that in 2018 they had 31% of national gold production and 41% of silver, with Fresnillo Plc standing out as the largest national producer of precious metals with a 24% share in the case of gold and 29% for silver. These levels are greater than those attained by its main rivals, Torex Gold, Agnico Eagle and Newmont Goldcorp. Mexican mining groups controlled 85% of copper production in the same year, with Grupo México as its main producer in the country with a 74% share. With regards to zinc and lead, Mexican companies' share of total production was 81% and 87%, respectively (CAMIMEX, 2019) (see Table 4).

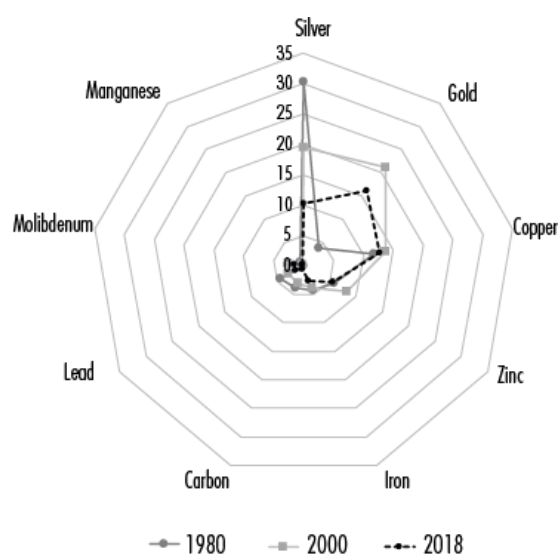
Table 4. Primary companies' share of national mining production, 2018

<i>Gold</i>		<i>Silver</i>		<i>Copper</i>		<i>Zinc</i>		<i>Lead</i>	
<i>Company</i>	<i>%</i>	<i>Company</i>	<i>%</i>	<i>Company</i>	<i>%</i>	<i>Company</i>	<i>%</i>	<i>Company</i>	<i>%</i>
Fresnillo Plc	24	Fresnillo Plc	29	Grupo Mexico	74	Peñoles	29	Fresnillo Plc	22
Torex Gold	9	Newmont Goldcorp	9	Peñoles	4	Newmont Goldcorp	21	Newmont Goldcorp	22
Agnico Eagle	9	Grupo Mexico	6	Grupo Inyecture	4	Fresnillo Plc	13	Peñoles	12
Newmont Goldcorp	7	Pan American Silver	6	NEMISA	3	Grupo Mexico	10	Grupo Mexico	9
Minera Frisco	7	Peñoles	6	Minera Frisco	3	Minera Frisco	8	Minera Frisco	7
Others	37	Others	44	Others	11	Others	19	Others	27
Large Capital	%		%		%		%		%
National	31	National	41	National	85	National	60	National	40
Foreign	32	Foreign	15	Foreign	4	Foreign	21	Foreign	22
Total	63	Total	56	Total	89	Total	81	Total	62

Source: taken from Sánchez et al. (2019).

It is in the domestic production of precious minerals that foreign capital has a greater share, particularly in gold extraction. Newmont Goldcorp, Torex Gold, Agnico Eagle and Alamos Gold are some of the main foreign companies which have increased their gold production in Mexico in the last few years. One could even say that these corporations' entering the market (practically all of them funded by Canadian capital) has been the factor which "aurified" Mexican mining (Casado and Sánchez, 2019) as this metal went from having a share of 3.8% in the 1980s to making up 21% of the total national production value in 2000 and 16% in 2018 (see Figure 3).

Figure 3. Evolution of the primary products' share (%) of the national mining production, 1980-2000-2018



Source: created by the authors using data from Sánchez et al. (2014) and SGM (2019).

However, foreign capital's share finds itself diluted in the businesses of smelting and refining, areas in which the two main Mexican mining groups exercise complete control. The situation was similar to the oligopoly of the 1950s in refining precious metals which was dominated by American Smelting

and Refining (ASARCO), American Metal Climax (AMAX) and Anaconda Copper which caused so much damage to the competition and local industrial development; a new business cluster has now been formed, consisting of Grupo México and Industrias Peñoles, the only companies currently partaking in smelting and refining raw gold in Mexico, once again creating limits for competition and the development of independent production chains.

In 2018, the two groups combined produced a total of 1.3 million ounces of refined raw gold, 88% by Industrias Peñoles and 12% by Grupo México (see Table 4). Metallurgical production is furnished with concentrates and doré bars⁸ from the mines of Mexican groups, as well as from foreign companies' deposits, where Newmont Goldcorp stands out (CAMIMEX, 2019).

This level of metallurgical production concentration is repeated in regards to the refining of silver, copper, lead and zinc, as these conglomerates control the only primary refining plants for these metals in Mexico: Industrias Peñoles' Met Mex in Torreón, and Grupo México's refinery in San Luis Potosí (CAMIMEX , 2013). Grupo México is the only company that manages to vertically integrate extracting, smelting and refining the country's copper deposits. Industrias Peñoles, on the other hand, boasts a national hegemony in refining the other main metals produced in Mexico: 89% of refined silver, 69% of refined zinc and 100% of refined lead. This control is what places the group as the world's leading producer of refined silver and among the leading global producers of zinc (2.5% of world production) and refined lead (3% of the world's total) (CAMIMEX, 2019) (see Table 5).

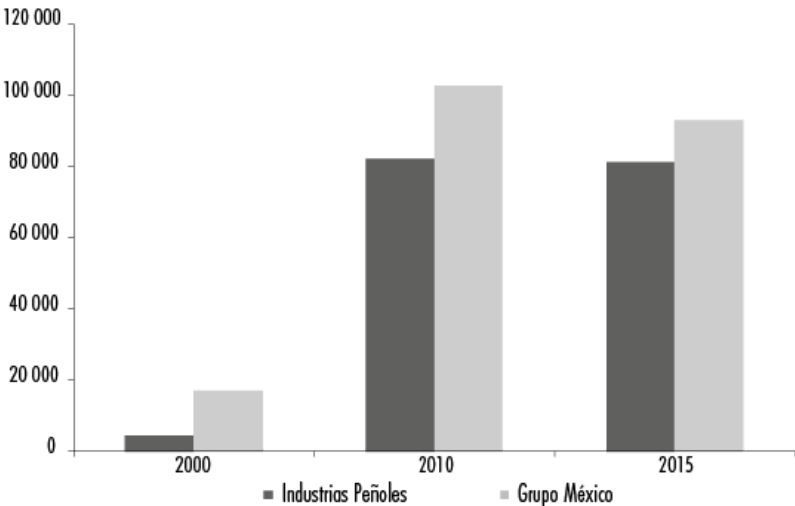
Table 5. Industrias Peñoles' and Grupo México's share of national metallurgical production, 2018*

Grupo minero	Oro	Plata	Plomo	Zinc
Industrias Peñoles	88	89	100	69
Grupo México	12	11		31
Total Nacional	100	100	100	100

Source: created by the authors using data from CAMIMEX (2019, pp. 277-301).

However, if one compares the value of sales and total assets registered in the first 15 years of the 21st century, Grupo México is the primary mining group in the country. Although its creation came about from personal favors and direct assignments by important privatized mining companies (Azamar, 2019), its current situation was consolidated during the presidential tenures of Vicente Fox and Felipe Calderón. As one can see in Figure 4, this mining group multiplied its net sales sixfold, going from a value of \$17 billion MXN in 2000 to a little over \$102 billion MXN in 2010.

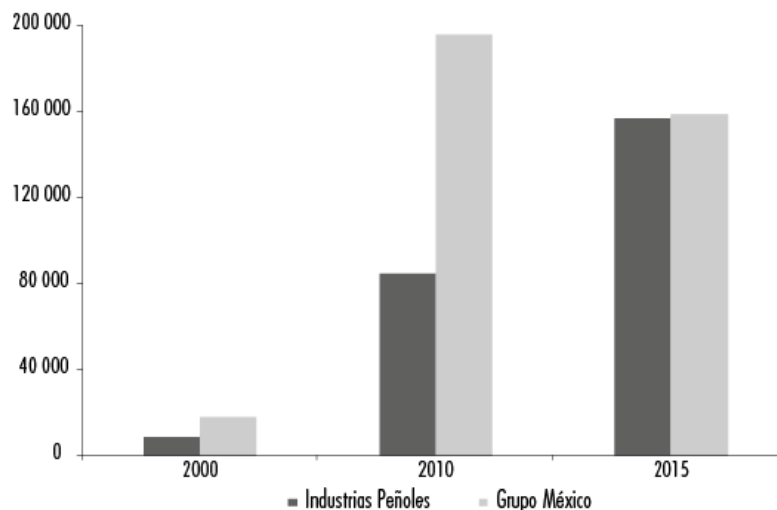
Figure 4. Industrias Peñoles** and Grupo México's net sales, 2000-2015 (millions of pesos; 2010=100)



*Note: as of 2010, this includes figures reported by Fresnillo Plc.
Source: created by the authors using information from the Revista Expansión (2001, 2011 and 2016).

The trend favoring Grupo Mexico was even greater in the area of total assets, which in spite of the global economic crisis of 2008, saw its value multiplied by 11, going from \$17.5 billion MXN in 2000 to just over \$195 billion MXN in 2010, then falling to \$158 billion MXN in 2015 as part of the recessionary process which the global mining sector experienced (see Figure 5).

Figure 5. Industrias Peñoles** and Grupo México's total assets



**Note: as of 2010, this includes figures reported by Fresnillo Plc.*

Source: created by the authors using information from the Revista Expansión (2001, 2011 and 2016).

Mexican mining groups stand out because in the last three decades they have strengthened the vertical integration and diversification of activities, to the point that it is increasingly difficult to distinguish which is the central activity around which the rest are organized (Dos Santos, 2016). Their investments range from mining and metallurgy, to transportation and communications, real estate and hotels, the construction of industrial and urban infrastructure, banking and financial services, to investments in trade and recently in the national oil complex. A range of investments were managed through different subsidiaries, always under the direction and control of the central companies or holdings: Grupo México, Grupo Bal, Grupo Acerero del Norte, Grupo Carso and Autlán Holding.

The best example of this diversification is Grupo México as it has interests in mining, transportation and infrastructure. Furthermore, eight of its mining subsidiaries have a presence in six countries: Mexico, the United States, Peru, Ecuador, Chile and Argentina (Grupo México, 2018).

The degree of integration, diversification and internationalization achieved by large, nationally based mining capital in the last few decades has inevitably caused a remarkable increase in profits. The most iconic case is that of Germán Larrea Mota Velasco, majority shareholder of Grupo México, who during the presidencies of Vicente Fox and Felipe Calderón multiplied his personal wealth by 17, from \$1 billion USD in 2001 to \$16.7 billion in 2012. This has placed him as the second richest man in Mexico for over a decade and number 79 in the world, only behind Carlos Slim (first in Mexico and seventh worldwide) and above Alberto Baillères (third in Mexico and 143rd worldwide) (Fernández, 2013; Medina, 2018). The latter multiplied his wealth sixfold, from \$2.8 million USD in 2006 to \$16.5 million USD in 2012; in other words, each year he added, on average, \$2.2 million USD to his personal fortune (Maldonado, 2016).

6. FINAL CONSIDERATIONS

After over three decades of neoliberalism, the Mexican mining and metallurgical sector continues to be under the control of five nationally based mining groups: Grupo México, Industrias Peñoles, Grupo Acerero del Norte, Minera Frisco and Grupo Autlán. In addition to extracting industrial minerals, these corporations have held an oligopolistic position in the field of refining gold and silver, an industry where there is no competition within the country.

This rise was fueled by a policy of blatant dispossession of national natural and productive resources based on the disincorporation of federal mining reserves, the privatization of highly productive operations and the hoarding of mining concessions, as well as the adoption of various constitutional reforms. These measures favored not only these conglomerates' current vertical integration but also their diversification and internationalization.

In spite of these advantages provided by the Mexican State since 1982 and the subsequent boost received from the global boom seen from 2001 to 2012, large Mexican mining capital has made no major efforts to foster domestic manufacturing of equipment and machinery for mining activities. It is precisely due to the concentration of production, hoarding of territory and limited legislative controls in this regard that mining groups have not managed to bring about a reduction in the technological dependence Mexico has on countries such as Germany or Sweden. This is due in part to the reproduction of the enclave model, a structural limit of the mining sector identified several decades ago by Ceceña (2016 [1953]), Sariego *et al.* (1988) and Urias (1980).

As such, in this international division of labor, Mexican mining groups continue to occupy the role of mineral and alloy suppliers to developed countries, gold, silver, copper, lead and zinc in particular. Three decades after the sector's privatization began, large Mexican capital carries on with colonial mining dispossession (Morales and Tellez, 2016), which does not seek to benefit the country directly nor the territories where mining operations are installed. Rather it seeks to enhance their capacity to exploit and export the goods extracted for the benefit of concentrating the wealth of a select group of corporations.

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¹ For example, Industrias Peñoles owns the metallurgical complex Met-Mex, the largest producer of refined silver and gold in Latin America and third-largest globally in terms of capacity (Téllez, 2019).

² This is not to say that their contribution should be ignored as several of them are pertinent and even useful when studying mining dispossession.

³ TL note: *Le Reglamentaria del Artículo 27 constitucional en materia de minería* in the original Spanish.

⁴ TL note: *Programa Nacional de Modernización de la Minería* and the *Ley Minera*, respectively, in the original Spanish.

⁵ TL note: Acronym derived from the Spanish term *Empresas Altamente Exportadoras*.

⁶ TL note: From the original Spanish *Fideicomiso para la Cobertura de Riesgos Cambiarios*.

⁷ "Available land" is understood to mean that part of the subsoil which "does not have current mining activity nor is reserved energy or hydrocarbon transmission activities" Transparencia Mexicana, 2020, p41).

⁸ Bars made from a gold and silver alloy.