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## Comparative Study on the Characteristics and Development Modes of International Mining Capital Market

To cite this article: Jiang Guangyu 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **267** 062016

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# Comparative Study on the Characteristics and Development Modes of International Mining Capital Market

**Jiang Guangyu**

China University of Geosciences (Beijing), School of Earth Sciences and Resources,  
Beijing 100083, China

e-mail:344418688@qq.com

**Abstract.** Lack of mineral exploration capital market has become a bottleneck restricting the development of mineral exploration industry. It is meaningful to study the developing path of the mineral exploration capital market in China under the current difficult economic situation. Therefore, we should focus on the development of the capital market of mineral exploration in China, and improve the efficiency of capital allocation of mineral exploration effectively, and thus promote the development of the mining industry and the overall economy. Another important content of this paper is to compare the development of mineral exploration capital market in some industrialized countries, and to review and summarize the historical evolution of China's mineral exploration capital market. Based on the analysis above, this paper finally analyses the obstacles and opportunities faced by China to develop mineral industry, and discusses the development path of the mineral capital market in China.

## 1. Introduction

Due to the world economy slowing down, demand for mineral resources is weakening and the investment of mineral exploration industry is declining. Inevitably, the mining industry has entered a downward cycle. Affected by the global situation, the decline of China's mineral exploration investment is unavoidable. Under such difficult background of mineral exploration industry and to develop the industry, we need to focus on the role of allocation function of the capital market to use the limited capital efficiently. However, since the reform and development, although the domestic capital market has been more fully developed, the establishment and development of mineral exploration capital market has not been given due attention.

From the market value scale and the number of listed companies, it is not difficult to see that Canada and Australia are the centers of the world mining capital market, while Britain is the gathering place of large mining listed companies. Relatively speaking, the mining capital market in the United States is relatively small, while in South Africa and other places, the mining capital market depends on the development of the domestic mining industry, and is not closely linked with the world mining capital market. This series of characteristics is caused by the different positioning of mining capital market in different countries. Capital market plays an important role in investment and financing of mineral exploration. International experience shows that countries with high development of mineral exploration capital market can not only promote the development of domestic mineral exploration industry, but also play an important role in the internationalization of mineral enterprises. The importance of capital market to mineral exploration can be achieved from two aspects: the intermediary role of connecting the supply and demand side of investment and financing and the capitalization of physical rights and interests. In the field of mineral exploration, the supplier of funds



includes enterprises, governments, individuals and other venture capital entities, while the demander of funds includes not only private mineral exploration enterprises, but also other non-private mineral exploration enterprises, which include grass-roots exploration enterprises, primary exploration enterprises and possibly senior exploration enterprises. In the absence of capital market exploration, different types of capital demanders and suppliers have to search the market for enterprises matching their own financing scale or fund supply willingness. Sometimes, the search costs are so high that buyers and sellers will abandon profitable transactions, or in order to save time and entry costs, buyers and sellers will reach agreements with enterprises that do not meet their wishes. Both of these situations will result in inefficient allocation of capital. Once the mineral exploration capital market is formed, the above situation will be greatly improved. Firstly, capital market provides opportunities for both sides of financing to appear in the same trading place at the same time, which reduces the cost of identifying the other side, because the probability of appearing in the same trading place at the same time indicates the potential willingness to buy and sell. Secondly, the capital market brings together most of the financial intermediaries willing to trade, thus providing a guarantee for the formation of a competitive trading market. One of the drawbacks of searching for sellers or buyers outside the capital market is that the market size is very small and the external choices of investment and financing enterprises are relatively insufficient, so the transaction price formed is not transparent. In the capital market of scale, because of the existence of a large number of traders, enterprises have more external choices, so they can form more competitive prices.

## 2. Comparison of International Major Mining Capital Markets

Table 1 Market Value and Quantity Statistics of Mining Enterprises

Countries	Total value (\$100 million)	Market share (%)	Number of enterprises	Enterprise share (%)	Total value (\$100 million)
Canada	2300	15	918	44	2404
America	1100	8	165	9	926
South Africa	3766	25	262	13	3562
Australia	3400	22	530	27	3920
England	4500	30	143	7	5120

(1) Toronto Stock Exchange of Canada is currently the sixth largest stock financing place in the world according to the stock financing quota from 2012 to 2015. According to the ranking of countries, the scale of stock financing in Canada is second only to that in the United States and China. In particular, the support of the Toronto Stock Exchange for resource-based enterprises, especially for mineral exploration enterprises, has made its achievements in the mineral industry world-renowned. At present, Toronto Stock Exchange has become the first financing place for mining enterprises and mineral exploration enterprises in the world. In 2013, nearly 60% of mining companies listed in Canada, and more than 40% of new mining exploration financing came from the Toronto Stock Exchange. Around the 1980s, the Toronto market successfully raised a large amount of funds for large mining enterprises such as Barrick Corporation of America, Laker Mineral Company and Echo Bay Enterprise. These successful cases laid an important position for Canada in the mineral industry. Both TSX and TSX-V can provide financing platform for mining enterprises. The mining risk plate can provide risk capital for mining enterprises, especially for small enterprises such as mineral exploration. From the perspective of development orientation, the Toronto Stock Market in Canada is particularly suitable for exploration capital and venture capital. In view of the importance of Canadian mineral exploration capital market in the international mining capital market, we will introduce it in detail later.

(2) The New York Stock Exchange (NYSE) is the largest stock exchange in the world. At present, 90% of the Dow Jones Index companies, 78% of the S&P 500 index companies and 77% of the new wealth Top100 companies are concentrated in the NYSE. Although the U.S. capital market plays an

important role in the development of the mining market, the U.S. capital market is more diversified than other countries stock exchanges. It can be seen from the distribution of all kinds of enterprises on the NYSE. The NYSE has an excellent trading system, which makes it the most liquid stock exchange in the world (27.7%) and the smallest bid-ask spread (48.8 bps). Therefore, NYSE attracts different enterprises from all over the world to come to the market for financing. Compared with the overall size of NYSE, the proportion of mining enterprises financing is relatively small. Nevertheless, the US capital market has provided tremendous support to the oil and other energy industries, as well as shale oil and gas exploration and development in recent years. In comparison, except for some emerging energy companies, the New York Stock Exchange has no particular preference for mining companies, but it does not impose strict restrictions.

(3) The Australian Stock Exchange (ASX) has always been an important mining and development center in the world due to its unique natural endowment advantages. BHP Billiton and Rio Tinto, the world's largest mining companies, ranked the first and second, are both giants originating in Australia. Australia's mining capital market started early, as early as the 19th century, Australia appeared mining stock trading. Moreover, the marriage between mining and finance is even a catalyst for the development of capital market. In the late 19th century, some states established their own stock exchanges. The Australian Stock Exchange is now a merger of six state exchanges. At the beginning of the 21st century, ASX was small in scale, and the share of stock financing in the global market was relatively small. However, with the rapid development of recent years, as of June 2014, the number of enterprises listed on ASX has reached 2200. The total market value of listed companies is more than \$1.88 trillion, ranking eighth in the world. Especially noteworthy is that the Australian stock market is based on resources, so in ASX listed companies, 33% of listed companies are resource enterprises. From global mining giants to small exploration enterprises, there are cases of ASX listing. ASX has formed a very mature enterprise valuation model for mineral enterprises. Mining exploration enterprises in different stages of development can be invested and valued. It can be said that ASX is built on the basis of mining enterprises, thus forming a very standardized listing procedure for mining enterprises, attracting a large number of international investors to invest. According to statistics, 42% of the market value of ASX is enjoyed by international investors.

(4) The London Stock Exchange (LSE), as the third largest stock exchange in the world, has not only made an important contribution to the prosperity and development of the British economy, but also to the development of the mineral industry. However, because of the conservative thinking of LSE, most of the enterprises listed in LSE are traditional mining giants, and the mining exploration enterprises with higher risk and smaller scale are not very welcome. This can also be judged from the average market value scale of mining enterprises in each exchange. The average size of UK-listed mining companies in 2009 was \$3.147 billion, 4.7 times of the US, 4.9 times that of Australia and 12.5 times that of Canada. Despite all the declines in 2013, it still amounts to \$2.695 billion. The average size of mining enterprises listed on the London Stock Exchange is much larger than that on other exchanges, which is directly related to the fact that only large mining enterprises with relatively large scale and low risk are allowed to list. The geographical division of European countries is obvious, and mineral resources have been gradually exhausted due to the early start of industrialization. In this context, European exchanges are very cautious about the listing of mineral enterprises. Basically, all European stock exchanges allow the listing and financing of mineral exploration enterprises without proven mineral reserves. However, given that London's financial markets are in.

### **3. Canadian Mining Capital Market Development Experience**

The support of Canadian mining capital market for small-scale mineral exploration enterprises makes it the most popular stock exchange place for mining enterprises in the world. In terms of system design, the Toronto Stock Exchange of Canada not only avoids the shortcomings in financing of mineral exploration enterprises, but also protects the rights and interests of investors. To this end, we will make a deep analysis of Toronto's mining capital market.

Toronto's mining capital market has become the largest mining enterprise in the world, especially the place of listing and financing for mineral exploration enterprises. Canada has three stock exchanges: Vancouver Stock Exchange, Toronto Stock Exchange (TSX) and Toronto Stock Exchange Risk Board (TSXV). The latter two are the main listing places for mining enterprises. As of December 2015, TSX is still the largest number of mining listed companies in the world. Among them, there are 1318 global enterprises listed in TSX and TSXV. In TSX, 266 enterprises have been upgraded and transferred from TSXV, and 208 enterprises are listed on two exchanges at the same time. The Toronto Stock Exchange is completely open to foreign companies. 107 of the listed companies issue shares or bonds in other countries at the same time. In terms of financing scale, the Toronto Stock Exchange has become the largest financing place for mining enterprises in 2015, raising 6.8 billion US dollars for mining enterprises, accounting for 53% of the total global mining financing.

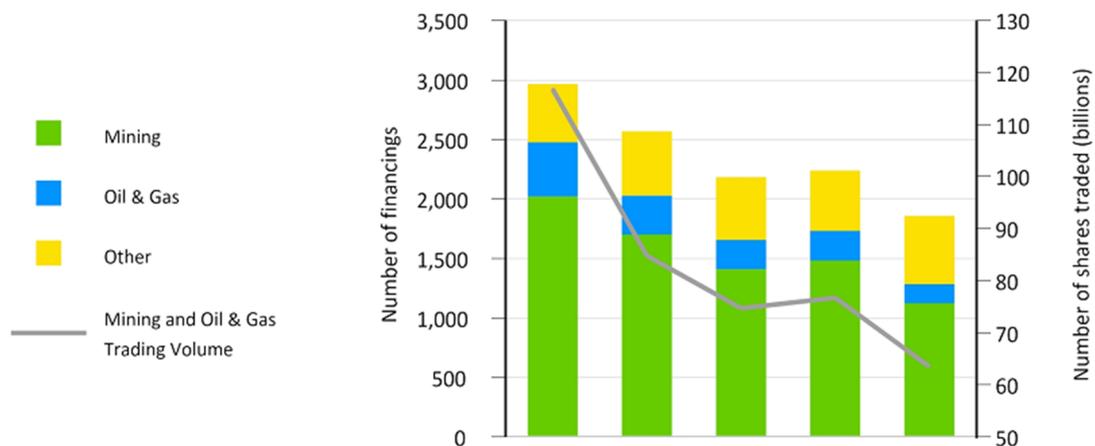


Figure 1 TSX/TSXV Enterprise Financing and Transaction

However, in the depressed mining development environment, whether from the number of financing enterprises or the scale of new financing, Toronto capital market is still the best stock exchange place for global mining enterprises. The success of Toronto's capital market in financing the listing of mining enterprises is incomparable to that of other stock exchanges, which depends on its comprehensive and systematic market system and government policy arrangements.

#### (1) Flexible and sound management system of mining rights

The precondition of realizing the capitalization of mineral resources smoothly is to rationally allocate and manage mining rights. Developed capital markets can price mining rights and provide a platform for power transfer. But the first requirement is that the ownership of mining rights should be clear and correct, and there are no restrictions or disputes on transfer. Mining rights may include both prospecting rights and mining rights. Firstly, the Canadian government has set up a unified mining management structure to avoid confusion of management responsibilities. Governments at all levels have a clear division of responsibility for the management of mining rights, and there is no obvious gap in cross-management or management. Canada is a federalist country with hierarchical management at the federal and provincial levels. Secondly, the acquisition of mining rights is simple, which lowers the entry threshold. For the division of mining rights, the Canadian government's provisions are more cleared. Mining rights include primary exploration rights, advanced development rights and mining rights. Different types of mining rights have different restrictions on acquisition and transfer, but they are all obtained by enterprises independently. Finally, the transfer of mining rights and the freedom of mortgage increase the frequency of transactions. The Canadian government does not make rigid demands on the transfer and mortgage of mining rights. Most state government transfer of mining rights does not need the approval of the local government, but is carried out freely in the market. Once the transfer transaction is completed, the transferor and the transferee can register the change of mining rights in government departments.

#### (2) Scientific and Rational Arrangement of Listing Financing System

Toronto mining capital market is developed, in addition to the large number of mining enterprises in other countries around the world, which are competing for listing here. The reason why Toronto market can attract a large number of foreign companies to list and raise funds is that Canadian securities regulators have met the requirements of lowering the threshold for applicants and effectively protecting the rights and interests of investors. In order to meet both requirements in the mineral capital market, the Canadian government has designed a scientific and reasonable financing system.

The design of mining capital financing market at different levels can meet different financing needs of mining enterprises. Mining enterprises listed on the main board should enter a mature stage of commercial operation, while the GEM listing only requires investment in mining areas that have already invested between 20 and 500,000 yuan. Secondly, financial requirements. Mining enterprises listed on the motherboard should not have liabilities, and they should have sufficient working capital to complete the planned work. Secondly, the scale of fund-raising and the requirements of project sponsors. Due to the different risks and expected future income of enterprises in different sectors, the allowable financing scale for listing on the main board is higher than that of GEM, and requires that the main board enterprises have a higher degree of equity dispersion. By contrast, the requirements of GEM listed companies are much relaxed, but also to maintain a certain degree of equity decentralization, to avoid some large shareholders operating the market, infringe on the interests of minority shareholders.

### (3) Mature and standardized intermediary service institutions

Mature and perfect intermediaries can provide professional intermediary services. They are lubricants for connecting investment and financing enterprises and developing capital market. The development of Canadian mining capital market is inseparable from its standardized and systematic intermediary system. Marketization and independence are important characteristics of the development of Canadian intermediary market. According to the listing requirements of Canadian government supervision agencies for mineral exploration enterprises, capital market can't be separated from the subsidiary intermediaries such as sponsor organizations, law firms, accounting firms, asset appraisal firms, credit appraisal institutions and investment consultation institutions, which are necessary for the general listing of mineral exploration enterprises. At the same time, due to the characteristics of mining enterprises themselves, they can't be separated from independent mines. Qualification assessment enterprises, geological technology service companies and registered geological analysts, etc. In particular, the improvement of independent industry associations and qualification assessment enterprises, which are closely related to mineral exploration, has played an important role in solving the information asymmetry between investment and financing participants in mineral exploration industry. Independent professional assessment of reserves in mining areas; comprehensive technical reports issued by Geological Professional Technical Association; recommendation reports provided by sponsors, etc.

### (4) Government organization and management of moderate regulation and control

The Canadian government starts with financial support, tax relief, industry supervision and the cultivation of commercial culture to build and maintain the development of its mineral exploration capital market. With the support of government departments, TSX has become the most popular mineral exploration financing market in the world. Especially when the domestic mineral exploration industry is affected by a sudden negative impact or the impact of the global external economy, timely intervention by Canadian government departments has played an immediate effect. The Canadian government adopts the hierarchical management system for the supervision of the mineral industry. The central government and the state government have different emphasis on the supervision of the industry. The former mainly plays the role of the design of the supervision system, while the state government has higher autonomy and can formulate incentive policies including tax policies on its own.

#### 4. Conclusions and policy suggestions

In the major mining developing countries in the world, equity financing is the main means of financing for mining enterprises. Stock exchanges have developed rapidly and gradually formed six major global mineral stock exchanges, including the Hong Kong Stock Exchange. It has played an important role in the development of mining market and global mining prosperity. With the development of mining capital in the world, due to the different positioning of mining capital market in different countries, each exchange has gradually formed its own characteristics. The TSX and TSX-V boards of the Toronto Stock Exchange of Canada are suitable for small enterprises such as mineral exploration and venture capital financing; the New York Stock Exchange of the United States still provides support to energy industries such as oil and mining enterprises in shale oil and gas exploration and development in recent years; and the mature and standardized listing procedures of mining enterprises of the Australian Stock Exchange (ASX) attract. There are a large number of international investors; the London Stock Exchange (LSE) has formed a hierarchical financing structure, but it is still more inclined to provide support for the financing of large mineral exploration enterprises. Finally, the development model of Toronto Stock Exchange in Canada is analysed and discussed. Its flexible and sound management system of mining rights, scientific and reasonable listing system, mature and standardized intermediary system and moderate government regulation provide important reference for the development of China's mineral exploration capital market.

#### References

- [1] Becker, B. Jacob M. & Jacob, M. Payout taxes and the allocation of investment. *Journal of Financial Economics*, 2013, 107(1), 1-24.
- [2] Bird Ron Matthew Grosse and Danny Yeung. The market response to exploration, resource and reserve announcements by mining companies: Australian data. *Australian Journal of Management*, 2013,38(2): 311-331.
- [3] Caron, Joanie, Suzanne Durand, and Hugo Asselin. Principles and criteria of sustainable development for the mineral exploration industry. *Journal of Cleaner Production*, 2016,119: 215-222.
- [4] Emel, Jody, and Matthew T. Huber. A risky business: Mining, rent and the neoliberalization of "risk". *Geoforum*, 2008,39 (3): 1393-1407.
- [5] Hsieh C T, Klenow P J. Misallocation and manufacturing TFP in China and India. *Quarterly Journal of Economics*, 2009, 124(4): 1403-1448.
- [6] Luning, Sabine. Corporate Social Responsibility (CSR) for exploration: Consultants, companies and communities in processes of engagements. *Resources policy*, 2012,37 (2): 205-211.
- [7] Majury, Niall. 'Trusting the numbers': mineral prospecting, raising finance and the governance of knowledge. *Transactions of the Institute of British Geographers*, 2014,39 (4): 545-558.
- [8] Moll, Benjamin. Productivity losses from financial frictions: can self-financing undo capital misallocation. *The American Economic Review*, 2014, 104 (10): 3186-3221.
- [9] Pang, Jiaren, and Haibin Wu. Financial markets, financial dependence, and the allocation of capital. *Journal of Banking & Finance*, 2009, 33(5): 810-818.
- [10] Restuccia, Diego, and Richard Rogerson. Misallocation and productivity. *Review of Economic Dynamics*, 2016,16 (1): 1-10.