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The Political Economy of Natural Resource Races Enhanced State Power, Geopolitics, or Simply Business As Usual?

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Abstract

Competition for natural resources is a prominent trend in the contemporary international political economy. The much observed Chinese search for such resources abroad is only one among several factors that explain the trend. They include hectic mergers and acquisitions by established actors, short-term investment in resources by financial actors, state policies to enhance national supply of critical resources, and geopolitical motives to check competitors. The paper first takes a historical approach comparing the confrontation of resource politics and corporate agency under the so-called New International Economic Order period during the 1970s with the current period. The current push of Chinese and other 'emerging economies' for market power in these markets is framed in geopolitical terms and thus by many perceived as an advance of state influence and of changed power relations. Competition for natural resources is seen as an aspect of a global power struggle. However, financial actors also enter resource markets to 'securitize' their assets or speculate; China is a major producer of rare metals; and the state companies of China and other nations sometimes act as 'normal' market actors. The paper discusses these various factors and suggests some themes and hypotheses for further research.

*) The paper is a first and preliminary contribution in a project that intends to study the relevance and role of natural resource access and control in the contemporary global political economy. It relates to research conducted by the author in an earlier period, making comparisons and analysis of long-term trends a major issue. Research assistance was provided by Ingar Bondhus and Øyvind Foldal.

Argument and analytical perspective

During the first decade of the Millennium markets for minerals, metals and agricultural raw materials were characterized by price volatility, increased foreign direct investments, discoveries of new deposits, and not the least by more political attention being devoted to resource availability. The present paper reviews these trends, concentrating on minerals and metals markets.

When explanation for the current trends in prices, investments and availability is sought, the usual suspect is the growth-driven Chinese demand for imports. This, however, is a simplistic representation of the international political economy of natural resources. For one thing it overlooks the fact that China is situated at the supply side of markets for the ‘rare earth elements’ (REEs) so vital for hi-tech industries and the ‘new economy’, and for military purposes. But while this observation may modify the perception that markets are driven by Chinese demand, it stresses China’s role in minerals and stimulates geopolitical and strategic considerations when framing the political economy of natural resources. Not less so after reports from US sources that vast reserves of precious metals and minerals have been discovered in Afghanistan.¹

Few if any cognitive ‘maps’, therefore, are more influential in contemporary international political economy than the rise of Chinese power and discoveries in geopolitically hot Asian territory. When it is added that China is the producer of 95 % of globally marketed REEs, it is not only geopolitics that matter, but also the perception that natural resources are increasingly coming under state control (Campbell et al 2009; for details see below). The OECD West has been used to an international market structure where production and distribution of natural resources were being controlled by ‘its’ privately owned corporations.

¹ Geologists and military personnel according to New York Times, xx June 2010.

Has this resource hegemony come to an end? And if so, does this mean that state-owned corporations are taking control of natural resource markets?

We need, in other words, an analytical model that situates the analysis at *two levels simultaneously* – that of the international political economy and that of the state/private relationship. If systemic power moves towards China, Brazil and other emerging economies become the main locations of mining for world markets, and natural resources at the same time increasingly come under state control, then a change of the global political economy is taking place. Then there is a swing to new geographical locations that are also aspiring powers under partly different types of political system, and there is a swing from private to state ownership and management. And, if these swings are in fact taking place it would also make the political economy of natural resources a vital element in the ‘big global game’ of power politics.

The paper situates the analysis within this power game. It applies a political economy perspective to discuss *five propositions* that may contribute to an understanding of what factors determine the availability of and competition for the minerals, including development of prices. Three of them are of a political nature and thus involves the state: a) geopolitically motivated competition for access, b) military security reasons, and c) industrial policy. The remaining two are mostly of an economic type: d) supply/demand, that is the market mechanism, and f) financially motivated investments, including speculative behaviour. *The paper argues that claims of a major power shift in natural resource markets – from the West to emerging economies and from private to state power - are exaggerated.* The shift is possible, but not destined to happen. The argument, however, is based on preliminary analysis; propositions are presented in what is a theoretical exercise with some empirical support offered, but without attempting to make affirmative conclusions.

In order to understand the present and to be able to place it in proper context, a quick look back at the previous major round of global natural resource politics – that of the 1970s - is necessary. Inter-temporal comparison may indicate whether the changes in trade patterns that have occurred since then, are accompanied by a change in market power and in market shares. Such an exercise in geoeconomics (Luttwak 1990; Baumard and Lorot 1997) should take into account the industrial transformation from traditional manufacturing to the modern ICT and hitech related mineral base. And then be related to a geopolitical perspective that in the present context represents the role of the nation-states in the exercise of power over natural resources. A geoeconomic and a geopolitical perspective link economic products and territory, respectively, to power. Some combination of the two is found in Nye's argument why US power will remain but with new, 'soft' power resources (2004), but also in studies that contradicts Nye and predicts a multipolar global power sharing (Lucas and Harbulot 2006).

Dependency relations: a historical perspective

Without entering into a discussion of causality in agency/structure relationships in this brief historical overview, I submit that the role of the state in general, and in the natural resource markets in particular, has been greatly influenced by changes in the international context. During World War II, and in the context of the Cold war, the state maintained tight respectively relatively tight control over access to strategic and economically vital natural resources. The tight direct control that US authorities exercised during WWII was due to the special context, but the authorities maintained some degree of direct control by stockpiling and conducting close supervision of availability during the Cold war. During that period Western governments under the leadership of the United States supported private control over production and distribution with various

measures aimed at containing Soviet influence and state control over geoeconomically important locations. State control was tolerated in countries viewed as friendly, but not in those which were viewed as unfriendly such as Allende's Chile. As the Cold war came to an end and former Soviet-dominated natural resource locations were privatized in the early 1990s, private ownership took over. Outside the Soviet sphere crude oil production was the exception; here state ownership increased at the national level, and OPEC exercised influence, although weakened by internal conflicts and thus fluctuating, at the international level (Claes 2002). National stockpiling programmes were cut down, affecting markets and preparedness. Industry relied heavily on private corporate supplies of the natural resources it needed. (Table 1 for a summary)

Table 1: *Periodization of systemic power and private/state relations in natural resources*

	1939-45+	1947-1980s	From end 1980s	From appr. 2005
Characteristica of period	'Warm' war, securing the Allied, fighting the Axis powers	Cold war, containment; securing the West and the market power of its corporations	US unipolarity, Western liberal institutional market	Contesting US unipolarity and (partly) liberal market system Transformation to multipolar ?
Systemic power structure	Open power struggle	Bipolarity, power shared between US and USSR	Unipolarity, US is undisputed leader	Disputed unipolarity, multipolar trend
State/private authority relationship	State control (US Materials Board)	Embedded liberalism (in OECD), opposing socialist resource control attempts outside Comes OPEC,	Privatization and deregulation waves – with globalization	Oil production state dominated, other natural resources under mixed (moderately growing state) ownership

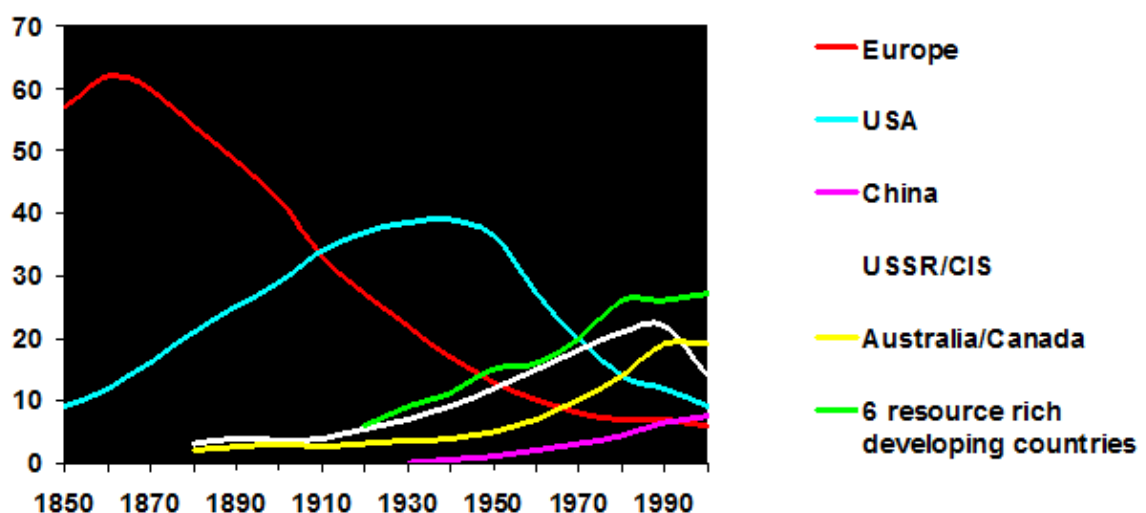
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Geological, or physical availability, was a matter of concern during the 1970s when the Limits to growth and other warnings of scarcity made some impact on market actors and state authorities.² The impact of geoeconomic and in particular geopolitical factors was, however, seen as much more important – except during the unipolar moment in the 1990s. Then US hegemony was undisputed and US power - relational, structural and ideational - was seen as a guarantee of resource availability.

This situation has changed. But how much change is there since the period of unipolarity and Western corporate hegemony? Or, since that period is fairly recent and the question thus difficult to assess fully - how fast does the geoeconomic structure *appear* to change? Straightforward analysis of the export-import structure of world trade, supplemented with data on reserves and

Figure 1: *Changes in the geographical location of mining, 1850-2000, by region*

% of global mining



² The resource scarcity issue and the validity of the peak theory are not discussed in this paper; for a review see Wouters and Bol, 2009.

Source: Raw Materials Group, 2005

production country by country will offer an answer. One part of the answer is offered in Figure 1.

In a political economy perspective a very relevant indicator of change is what I term '*geo-economic dependency*'. It refers to the extent to which a country is dependent on supplies from a particular geographical location that is not a stable political ally or part of its own jurisdiction. If the location is in a country or region that represent a competing industrial and/or political-military power, such dependency takes on a geopolitical character as well as geo-economic. If, on the other hand, the location on which supplies are dependent is in a friendly, allied or in other ways politically-economically close country, the dependency relationship is fairly unproblematic. In between these two extremes there are various intermediate positions where the nature of the dependency relationship is determined by factors such as the political character of the foreign country, its power resources, whether the supplier is a private corporation or the state, and whether there is a contractual relationship between the supplier and the importer country that guarantees supply regularity and regulates disputes.

In order to explore whether import dependency patterns have changed over the last generation, a comparison is made between the import dependency rates of the major economies in the 1970s and the 2000s. Data is collected for only the largest (in value terms) 'traditional' base minerals (See Table 2). As their industrial and military importance is fairly recently acknowledged and data hardly available, I treat the REEs separately below.

The general tendency is one of continued high import dependency in the cases of the Western powers and Japan, and increasing dependency in the case of China. Even in the case of two other BRICS countries, India and Russia, the

general tendency is increased import dependency, but from a level of considerable self-sufficiency. In the case of Russia domestic production of base

Table 2: *Import dependency rates of the big industrial powers for some industrial base minerals (imports as % of total consumption)*

Mineral	United States		Germany EU 27		China		Japan		Russia	
	1970	2005	1970	2008	1970	2005	1970	2005 1)	1970	2005
Alum/Bauxite	93	100	100	87	33	43*	100	100	49	0
Chromium	92	54	100	55	s.n.s.		98			
Cobalt	97		100	100		100	100	100		
Copper	16	50	100	50	65	79	97	100	18	0
Iron ore	31	8	93	88	0	55	100	100	0	0
Lead	13		87				78			
Manganese	98	100	100	90	s.n.s.	100	99	100		
Nickel	90	100	100		s.n.s.	70	100	100	0	0
Tin	100	80	100	82			100	100		
Titanium		77		100		100		100		
Tungsten	50	61	100		0		100			
Zinc	62	73	68	85			74	92		

S.n.s. means 'Some, not specified'. For blank boxes data are not yet available.

*: Sources vary considerably with respect to data, information thus inaccurate.

1) Data from 1995.

Sources: Hveem and Malnes 1980, based on various sources; US Geological Survey, Mineral Commodity Summaries 2008; Graham 2006; Materials Innovation Institute 2009; Sohn 2008.

metals is still substantial, although the high self-sufficiency rate seen during the Soviet era (Hveem and Malnes 1980) is somewhat reduced.³ Brazil and South Africa, also BRICS members, are still large suppliers of base metals and some rare ones as well. Theoretically, and *ceteris paribus*, the BRICS countries could form a strong export-import system for inter-state provision of natural resources among themselves – if such provision were to become a major factor that could boost their position in the global power structure.

This not being what the world looks like (yet?), the most obvious issue for the Western powers is whether they are dependent and increasingly so on imports from political and/or legal entities which make Western leaders feel vulnerable. In the 1970s the Western big powers imported about 20 % of chromium, a vital alloy material at the time, from the Soviet Union. Although lobbyists for the military-industrial complex would argue otherwise, that direct import relationship hardly made the West vulnerable to Soviet power (Hveem and Malnes 1980). It was in the event of Soviet control over third party resources that Western vulnerability could be at stake, a control that the West was actively working to contain.

Is the situation today different, likely to represent increased vulnerability?⁴ Before we look at the facts, the dependency relationship needs to be a little further explored theoretically and conceptually. Import vulnerability may be managed by the importer and in several different ways. As Hirschman argues in his classical study, an importation dependency that constitutes a monopsony may be turned into an instrument of power in the hands of the importer.⁵ The exporting country is locked in a structure that makes it totally dependent on the

³ Based on preliminary analysis of available data to be finalised and inserted in Table 2.

⁴ See Keohane and Nye 1977 for the authoritative definition of vulnerability as opposed to a relationship characterised by sensitivity, and Hveem and Malnes 1980 for an application to natural resource trade.

⁵ Import dependency is calculated as net imports which are imports minus exports plus adjustments for changes in national stock of material.

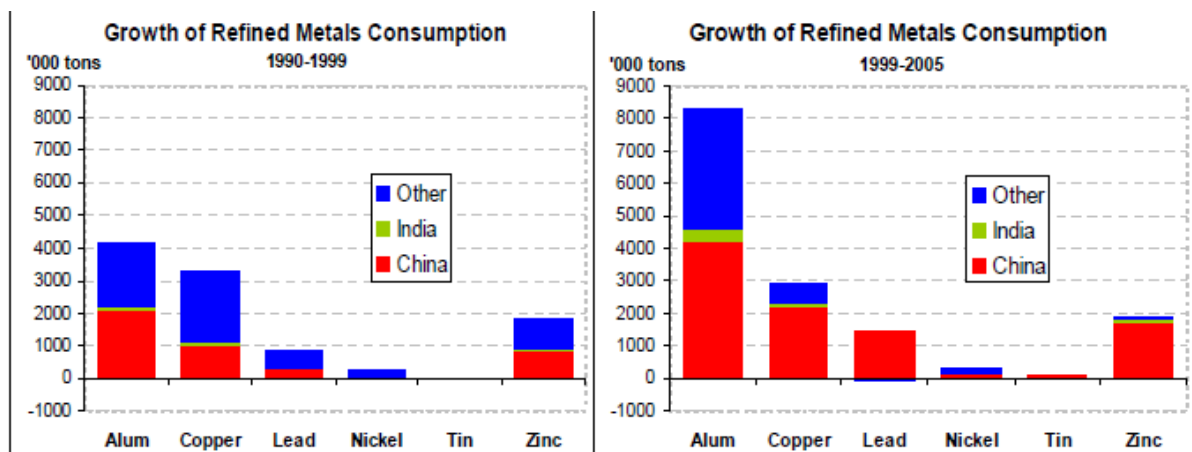
importing country. This, he argued, was the case with some European countries that supplied Hitler's Germany with raw materials during the build-up to the war and during the war itself (Hirschman 1945). By making them totally dependent on exports to the *Reich* economy they were subjected to the power of Hitler. Arguably the same would hold true, at least in general terms, for post-war relationships between a great power and its dependent exporter clients. A look at the statistics on trade structure for some mineral-exporting countries over the last decades (UNCTAD 2007 and 2008) – a structure characterised as monocultural on the export, and monopsonist on the import side – indicates that Hirschman type of relationships were fairly widespread in post-colonial times. In several cases they could still be.

The Hirschman relationship represents the relational, Weberian type of power. In addition the importing country may apply several others means of controlling against being influenced in a position of vulnerability: increasing domestic production, building stockpiles, increasing recycling, and using the possibility of substituting the imported mineral geographically (shifting to another supplier country) and/or technically (using a different mineral). All of these were being employed in the 1970s; recycling of the most important base metals, for example, was accounting on the average for about 1/3 of consumption in the Western world (US Senate, 1978). But if resources are concentrated to a few geolocations, geographical substitution is less of an option; budget constraints may put limits on stocking; and technical substitutability is hardly or not at all possible. If it is not outright infeasible, it may be time-consuming as it requires innovation, adaptation of production processes, *etcetera*. The neo-liberal ideology reduced emphasis on political factors and on the state having a role in the (foreign) economy (1980s). And with the cognitive change in risk assessment that took place during the US unipolar moment (1990s), emphasis on vulnerability issues was further reduced. In the late 2000s they are coming back

with force in Western headquarters. The financial crisis was the final push that brought the state back into prominence in the issue-area, but also into reduced financial means to stockpile materials and support costly innovation. In many Western countries, that is, not in most emerging economies.

In the global geoeconomy what is changing is that historical monopsony structures are being challenged by China and to some extent by other newly industrialised or emerging economies. Not India yet; it is on the average only the 10th largest consumer of the most important base metals (Figure 2) in the world. At the same time the structure of key geoeconomic locations is also changing somewhat. As Brazil becomes a more important supplier, South Africa leaves apartheid behind, and industrial transformation makes REEs a strategically important resource and China a monopoly supplier, there is also less room for the G7 to exercise Hirschman type power.

Figure 2: *Growth in consumption of some base metals, 1990-2005*



Source: Streifel, World Bank 2009.

China is likely to behave as the G7 big powers have traditionally behaved; she may therefore attempt to handle her own and fast-growing import dependency in

several base metals by exercising such power for instance in Africa.⁶ This prospect is already highlighted by Western media and concerned state authorities. But the China focus of these observers is exaggerated as it overlooks two historical factors that are still present: first, the continued export-import relationship between African and Western countries with which China competes; and secondly the role of transnational corporations of Western origin. In addition China-US competition in Africa may simply be framed as a commercial and not a geopolitical one (Xu 2008).

On the first of these factors Hirschman dependency in the mineral-metal sector could develop in a country like Peru whose exports in three major base metals were primarily directed towards China already some years ago (Deutsche Bank 2006). The financial crisis and China's huge investments in infrastructure construction have further increased metal exports from these countries to China.

Referring to the second factor mentioned, import dependent countries may still rely on transnational corporate structures to provide stable access to important resources, if they are unable to increase domestic supplies of needed resources (in the medium term). If these mostly privately owned corporations cannot be seen as the arms of their home state nor being dependent on its support, they may handle transaction costs or represent a mediator or buffer in relations with exporting country governments.⁷ In 2004 the five largest corporations, all Western based, accounted for 40 % of global copper, almost 50 % of nickel, and more than 50% of refining of several important base metals including steel.

⁶ For a strong version of a 'malign' China that threatens the West, see Follath 2010. A sympathetic view of China's new role in Africa is represented by Dambisa Moyo, the Zambian economist who riled Western donors with her book *Dead Aid*, quoted in Financial Times 9th Dec 2009.

⁷ See Lipson 1985 for a discussion of the state-corporate relationship.

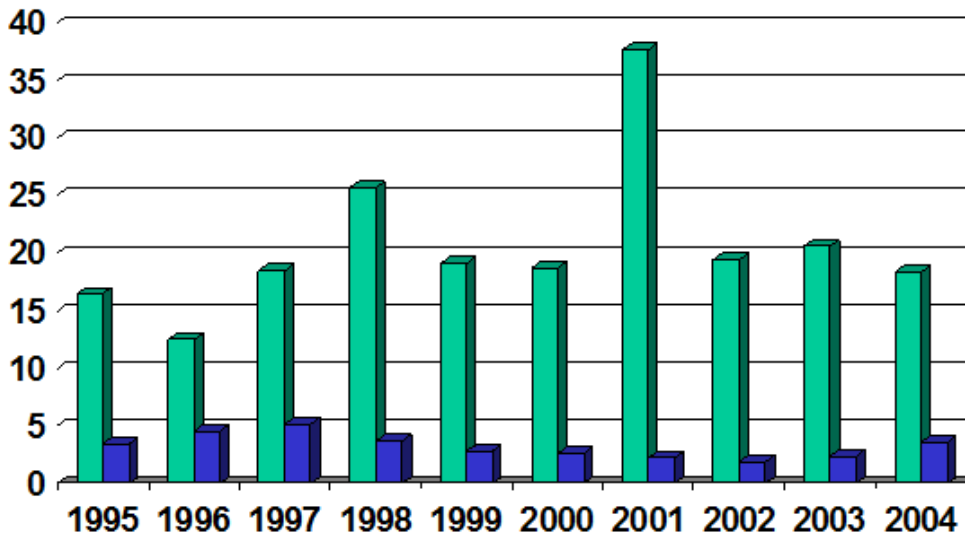
They are also vertically integrated, although slightly less so in 2004 compared to 1975 (Raw Materials Group 2005).⁸

In addition horizontal integration, through mergers and acquisitions, is a strong trend that reduces the number of market actors and may lead to concentrated market structures. Throughout most of the 1990s and until the financial crisis erupted, there was a wave of M&A's directed by Western based corporations. In the mineral-metal sector M&As worth about 100 billion USD were concluded from 1995 to 1999. In one year, 2001, the value of global M&As in the sector amounted to 37 billion USD. After a drop due to 9/11 and other factors an upward trend resumed in 2005-06, to be abruptly broken by the crisis. The wave illustrates a tendency towards more competition and of the oligopolistic type, and it takes place during a period of little exploration for new resource locations. The spending on exploration was dwarfed by spending on M&A's throughout the whole of the 1995-2004 period, although it started to increase slowly from 2002 on (see Fig. 3). This may contribute to a tightening of supply and thus affect prices upwards, and it will increase the market power of the large mining corporations – both in the short term at least. In the longer term the fact that the

Fig. 3: Global spending on exploration compared to spending on mergers and acquisitions, 1995-2004

⁸ RMD 2005 measures this by calculating the ratio between share of refining and share of mining for the 20 largest mining companies. This ratio dropped from 0.74 to 0.68 from 1975 to 2004.

Billion USD



Sources: Raw Materials Data and MEG.

companies that spent most on exploration in 2004-05 were the small and medium-sized companies (Metals Economics Group (MEG) 2006) may increase competition. However these so-called 'junior' companies may be acquired by the 'majors'. As for state companies they hardly spent anything on exploration during 1995-2005 (ibid.).

Notwithstanding these trends there are still many companies operating in mining and refining (Table 3).⁹ At the same time there is increasing concentration of

Table 3: *Mining corporations' share of world mining, 2004*

⁹ One recent merger that has been contested because of its potential effect on competition, is the one between BHP Billiton and Rio Tinto.

Controlling company	Country	Share of value of mine production (%)	Cumulative value (%)
1 Anglo American	UK	6.6	6.6
2 CVRD	Brazil	4.6	11.2
3 BHP Billiton	<u>Austr.</u>	4.3	15.5
4 Rio Tinto	UK	4.0	19.5
5 Norilsk Nickel	Russia	2.9	22.4
6 <u>Codelco</u>	Chile	2.5	24.9
7 Newmont	USA	1.6	26.5
8 Phelps Dodge	USA	1.6	28.1
9 Impala	South Africa	1.4	29.5
10 <u>Grupo Mexico</u>	<u>Mexico</u>	1.3	30.8

Source: Raw Materials Group, 2005

Table 4: *Concentration ratios in mining for gold and 8 base metals, 1975 and 2005, % accounted for by 5 biggest producers*

Sector	Top 5 producers %	
	2005	1975
Gold Mining	33.9	54.8
Platinum Mining	86.6	63.3
Copper Mining	39.1	29.7
Iron Ore	41.3	16.9
Aluminum	46.9	38.9
Bauxite Mining	47.3	48.8
Nickel Mining	53.3	51.5
Lead Mining	28.9	22.9
Zinc Mining	27.3	21.7

Source: Raw Materials Group, in World Bank 2006.

market shares in the mining of base metals over the period 1975-2005, although more in some than in others (Table 4). And assuming that there is still competition among them and given the fact that several new companies based in China and India are advancing, the market power that Western corporations have been able to exercise whenever needed may be challenged.

Does it all come down to the market mechanism?

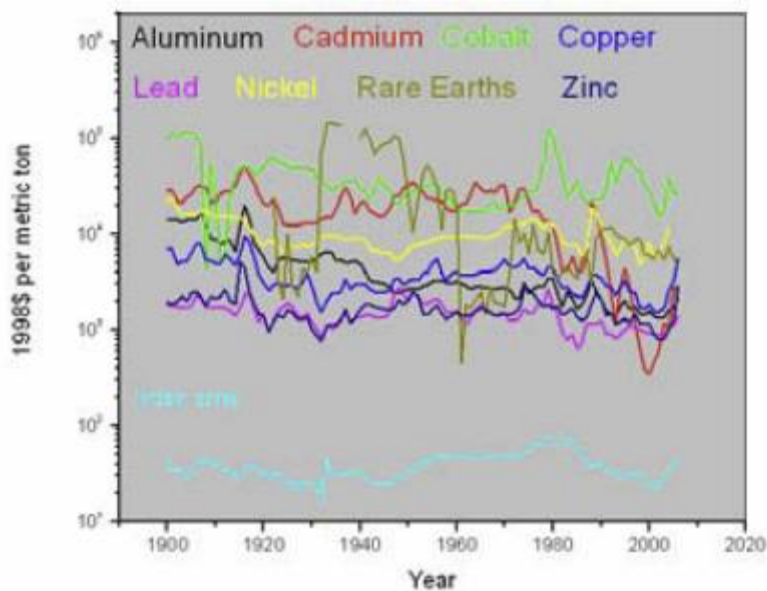
During the years leading up to the financial crisis the markets for many metals, minerals and agricultural materials were subject to high demand growth. It resulted in long-term increases combined with short-term volatility of prices. In 2008 prices on many base metals were at a historical high. According to the IMF metals have been on the whole more affected than energy raw materials (IMF 2007:43). Developments in some base metals appear to have shifted market power from buyers to sellers. China has been a major force in driving demand for some of the most important base metals, and so has other Asian economies (Park and Zhai 2007). For copper, as an example, two third of demand growth between 2001 and 2006 has been attributed to China (Stürmer 2008).

Price volatility is obviously a historical fact (Fig. 4). But in inflation-adjusted (constant) dollar terms, using the Consumer Price Index (CPI) to deflate current to constant dollars, prices in 2008 were similar to their historical values (Papp et al 2008). According to the CPI the upward trend disappears.

Are prices ‘simply market-driven’ as standard economics analysis would represent the case? In political economy analysis the question to be asked is rather if prices are influenced by whether they are being formed in a freely competitive or oligopolistic or monopolistic market – *and* whether political, institutional, structural and cognitive factors of some sort affect the supply and demand mechanism.

Historically wars, the ultimate arm of politics according to the realist view, have had a strong effect on prices; as I demonstrated above there were price peaks during World War I, before World War II, and before 1980 in the post-Vietnam era. It was also pointed out that the American state exercised strict control

Fig. 4: *Evolution of natural resource prices in real (inflation-adjusted) terms*



Unit value of selected metals
in inflation-adjusted dollars
using the CPI.

(k1998\$/t is thousand 1998 dollars per
metric ton.)

Source: Papp et al 2008:8.

during WWII; this was a major reason why prices stabilized. But the stabilising ambition that was pursued after WWII failed with the failure of the Havana Charter. And price increases during the 1970s were not due to the attempts to control prices in the multilateral negotiations on the UNCTAD Integrated programme on commodities. They were rather part of the general inflation during that decade.

The second proposition on the effect of economic factors relates to financialisation, the acts of actors who hedge or speculate in natural resources. Hedging could be when an actor buys an amount of a metal in order to store it for future use, in which case the actor is a manufacturer – enter into some sort of swap transaction that involves financial institutions, or find metals to be an investment object for available capital considered safer than e.g. keeping the capital in a bank or share. Speculation takes place when the actor is betting, that is investing in order to take a profit on price increases. It is the latter type of act that has been highlighted recently.

There is a proven element of both in the case of gold, but also in some agricultural materials including wheat (l'Edito Matières premières et Devises, 2010). According to a very detailed and thorough empirical study of the oil market there is also some speculative behaviour by financial actors, but arguably less than has been widely assumed. The volatility during 2008-09, however, is to a certain extent due to these agents (Chevalier 2010). Speculators do operate in metals markets, but to which extent and with what effects are not known to this author. While it is probably safe to assume that metals have been subject to much the same degree of speculative behaviour as has the oil market, available studies are mostly based on historical data and offer mixed evidence and conclusions.¹⁰

Rare earth minerals – the new strategic asset?

“Rare earths are to China as oil is to the Middle East”, Deng-Tsiaoping is reported to have declared in 1992.¹¹ If the story is true, a quick look at some current developments makes it appear as a very good prediction.

¹⁰ See Park and Zhai 2007 for a brief survey.

¹¹ Javier Blas in Financial Times 29 January 2010.

Rare earth elements (REEs) are used in a number of different commercial and military applications because of their magnetic and other unique properties. REEs appear as various classes of materials such as ores, oxides, metals, alloys, semifinished products and components containing REEs. Applications include cell phones and other consumer electronics, computer hard drives, lasers, fuel cells, wind power turbines, fiber optics, batteries including for the new electric cars, nanotechnology, emission purification technology - and jet engines, road-bomb resisting military vehicles, and precision-guided munitions. As an example rhenium, a REE, has heat-resisting qualities that help jet engines operate at higher speeds. If the so-called 'minor metals' such as cobalt are included, we speak of a range of materials that are crucial in the hitech industry, for developing the green economy, and for the modern military. According to one expert assessment about 25 % of new technologies rely on minor minerals and REEs.¹²

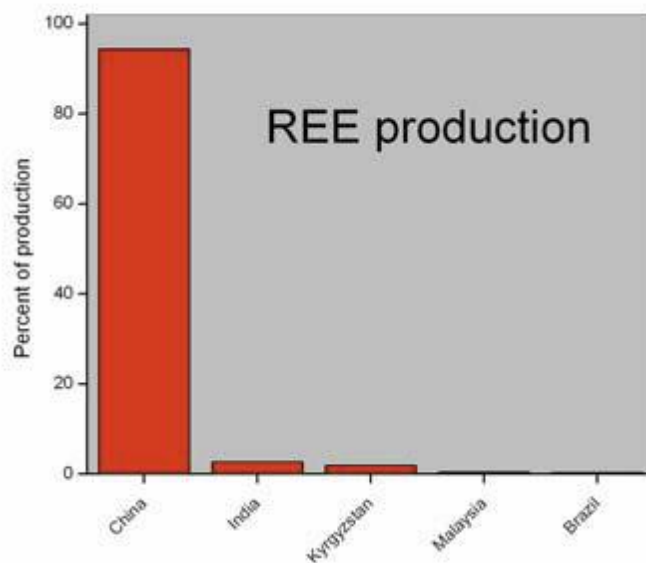
Deng's thesis no doubt rings bells in some Western quarters today (if or when they become aware of it). The growth of demand for REEs is exponential; and world-wide attention towards REEs appears to be growing at an even more exponential pace.¹³ There are several reasons why: innovations in particular in energy-saving productions drive new applications; in addition to the new applications production of those applications already on sale is growing rapidly; and China is currently the monopoly producer. Thus REEs arguably is a perfect test case for our theoretical propositions. The fact that 'the China factor' directs the minds of decision-makers and at the same time lead them to very different interpretations of China's intentions looks like a promising new territory for constructivists in IR. This paper, however, will argue that traditional 'modernist' IPE is at least as good a strategy.

¹² Avalon Rare Metals of Toronto, quoted in *ibid*.

¹³ See e.g. several articles in *Financial Times*, including 29 Jan 2010, *Le Monde* 13 Feb 2010 and more.

As one would expect military leadership and political decision-makers have reacted and asked for immediate action to guarantee availability of REEs for strategic national purposes.¹⁴ The first strategic stockpile of materials considered vital for national military and industrial preparedness was set up in the United States in 1939, played an important role even after WWII, but was periodically subject to cuts in line with easing of international political tensions or national budget policy requirements. OPEC embargo and price actions from 1971 on and what appeared to be a threat of supply disruptions in markets for strategic metals led to a new wave of demands for national preparedness measures in the 1970s (Hveem 1978; Hveem and Malnes 1980). In the 1990s stockpiles were again cut, partly as a response to the end of the Soviet Union and the emergence of US unipolarity. In line with hegemonic stability theory the latter was believed to be able to provide for market stability – and nobody paid attention to Deng’s thesis at the time.

Fig. 5: *Country shares in world production of Rare earth elements 2008, %*



Source: Papp et al 2008.

¹⁴ See Liam Pleven, “Pentagon in Race for Raw Materials”, *The Wall Street Journal*, May 3, 2010.

A new wave of stockpiling appears as a likely outcome of present market turbulence. As an example the price of rhenium suddenly shot up 1000 %, probably as a reaction to China's quota system that put restrictions on exports in 2006. Stockpiling may also come as a response to Chinese inroads into African and Latin American resource deposits of strategic minerals. The US Department of Defense is currently conducting an assessment of US dependence on foreign sources of REEs in order to find out whether increased stockpiling and of more materials should take place.¹⁵ But the Defense National Stockpile has already stopped its selling from the stock of materials previously considered in excess, added new ones including some REEs, and it is expecting to add more.¹⁶ One likely cause is the radical strengthening of Chinese restrictions on exports of its REEs that took place early 2010.

What explains the Chinese decision? Not that China represents the only known deposit of REE reserves; in strict geological terms there is no problem as 'minor minerals' and REEs are abundant in the earth's surface. According to calculations by the US Geological Survey the United States has 13%, Russia and Central Asia 19%, Australia 5.5% and several other countries including France 22% of known reserves, while China has 36 %.¹⁷ But most of the materials are so dispersed that mining of them is economically feasible only in places where they are found in high concentrations. Southern China's Bayan Ono mine has occupied that position since the 1990s; its low-cost production with no environmentally grounded restrictions has offered materials for exports at attractive prices compared to those that alternative locations may offer. There is thus a straightforward geoeconomic explanation why China has come to occupy such a dominant position in supply. Production from mines in the US and

¹⁵ A report is due in September 2010.

¹⁶ Plevin, The Wall Street Journal, May 3 2010.

¹⁷ See http://minerals.usgs.gov/minerals/pubs/commodity/rare_earths.

Australia was closed some years ago because of the Chinese competitor. These mines, and some more, will now reopen. The former dominant producer, the Mountain Pass mine in California, has already resumed production.¹⁸ And part of the reason is again geo-economic: demand is expanding so fast, apparently not much affected by the ongoing crisis, that China will be unable to cover it.

But this is where political type explanations should enter. The responses to Chinese market dominance from military and political institutions in the West are no doubt motivated by geopolitical, security and by ideological considerations. Decision-makers see a China aspiring to superpower status, with growing military resources for power (although still far from those of the US) and they see the Chinese state behind the strategy. Does this mean that we may combine explanations at the international system level with an explanation at the level of the state/private national system level?

Turning to the difficult task of assessing Chinese motivations there are two partly related responses to this question, reflecting each of the two political type propositions that were made. The first is suggesting that China uses its control over access to strategic materials to strengthen its relative position in the field of military power. This proposition, however, is not plausible: US military resources not the least in hitech military equipment that is particularly using minor minerals and REEs, are far greater than those of China and will remain so for some time still. US manufacturers are also the dominant refiners of REEs (Naumov 2008). We should therefore turn to the second political type proposition – that the Chinese strategy is determined by industrial policy. The state's role in global markets is, in other words, a more relevant issue than the effects of China's strategy on the international power structure. True there is a strong tradition for arguing that the industrial base of a country is a vital

¹⁸¹⁸ Government Accounting Office of the US (GAO), 2010.

element, in some respects an integrated part of, the military sector and that this holds for a country like the US, not only for state-governed China. We should, however, still keep the possibility open that industrial policy is conducted for purposes that are not primarily dictated by military strategy, even in the case of China.

Bringing the state back in?

As China has become the largest consumer of minerals in the world and the monopoly producer of REE's it is no surprise that China figures prominently *nor* that the role of the state in minerals markets has become a major issue. While military and intelligence quarters naturally are seriously preoccupied, and some think-tanks too, a wide range of commentators have been pointing to the triple effect of the Chinese advance: an increased role for the state, more emphasis on geopolitics, and a shifting power structure. Let us briefly review the first of these alleged effects.

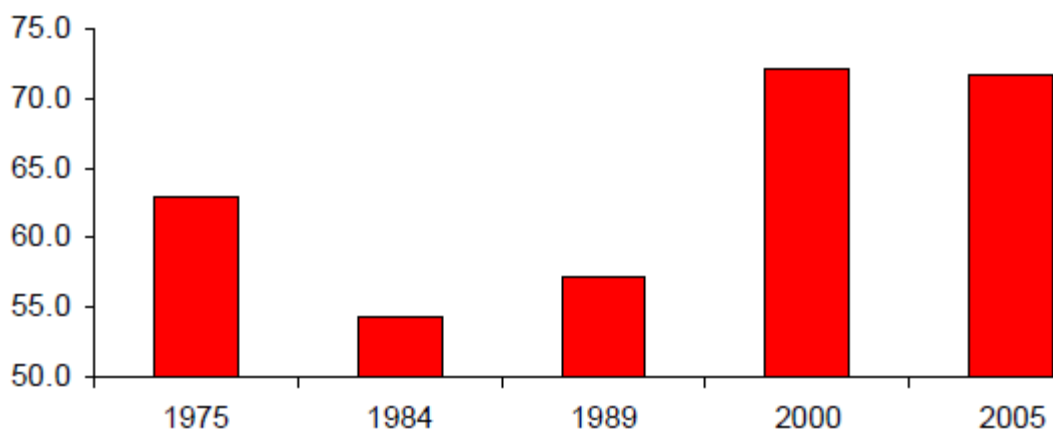
An increased role for the state is indicated by *mercantilist or protectionist* patterns in economic policies, by other varieties of industrial policy, and by state ownership of economic actors. While there were few signs of increased protectionism in minerals markets until the mid-2000s (UNCTAD 2007), there have been some protectionism before and after the financial crisis. As early as 1999 Russia imposed export duties on some metals, while China introduced export tariffs and restrictions on a whole range of metals in 2006. In 2008 India imposed export duties on iron ore exports in order to prevent exports to China (China-Interfax 2008:1). Finally US authorities imposed some restrictions on exports of steel products to China in 2009 (ref.).

Political concern about scarcity, importation dependency and national preparedness with regard to natural resources is motivated by military and

security considerations, but also by the imperative to secure long-term access to needed minerals for national industries. This has always been part of *industrial policy*. While strategic stockpiling is mainly established to meet military preparedness needs, the state invariably sells off the stockpile to meet the needs of civilian production. The flip side of another variant of industrial policy, strategic trade theory, could thus be referred to as *strategic importation* policy. On the other side there are still examples of a weak state in the minerals industry. One is the failed attempt by former Prime minister Kevin Rudd to impose an export tax on minerals in Australia, an attempt that not only was opposed by the mining corporations and the political opposition party, but by large parts of the population, trade unions and by part of his own party, and that cost him the post summer 2010.

Turning to the third of the indicators of state power, *state ownership*, the historical record of world trends is clear: privatization has been the dominant trend since the 1980s, consistent with the general trend towards liberalisation, privatization and deregulation during the neo-liberal wave. Around 2000 more than 70 % (unweighted average) of world mining of 8 base metals was under

Fig. 6: *Private share of mining (non-weighted average for 8 metals), %*



Source: Raw Materials Group, adapted from World Bank 2006.

private ownership. The percentage stayed practically at the same level until 2005, but then started to drop as a result of China's increased production and Chinese companies acquiring shares in mining companies abroad (Fig. 6).

In Russia privatization in the 1990s resulted in a massive transfer of ownership of natural resources from the state to a few private owners. Brazil and India conducted a much slower and gradual privatization process some years later. In India's case the iron and steel industry remained in the hands of the state well after 2000, when Mittal conducted a frenzy of foreign acquisitions that probably has broken the neck of his empire (ref.). Both Brazilian CVRD and Russian Rusal and Norilsk have been strengthening their positions internationally, although CVRD sold a controlling share of its aluminum division to Norwegian Hydro in 2010.

Chinese corporations have been increasing their foreign direct investments in mineral locations abroad exponentially during the 2000s (Humphreys 2009). Some of this push may be explained by the need that Chinese authorities see for investing their huge financial (foreign currency) reserves abroad. But as indicated already in the case of REEs it is largely to be interpreted as an instrument of industrial policy and the growth strategy. The result anyway is a large number of investments in partly owned companies and joint ventures abroad (Deutsche Bank Research 2006; more refs). The push abroad has not been without setbacks, but at the same time Chinese investors appear to learn from them and to adjust (Downs 2008b). The most spectacular attempt abroad mostly failed. After taking a minority share in Rio Tinto Zinc in 2008, RTZ management in 2009 declined a 20 billion USD bid by Chinalco to acquire a more substantial share that would have resulted in a place on the RTZ board. After the failed attempt by CNOOC to acquire Socal, the minor US oil

company, this would have been the single largest Chinese investment abroad ever, and it would have sent global M&A affairs to a new annual record. It would also have eased RTZ's heavy debt burden incurred by its acquisition of Alcan, the Canadian aluminum producer, a few months earlier. The reason Chinalco failed is alleged to have been political opposition in Australia¹⁹. Those opposed could point to the investment being politically motivated with the Chinese state behind it, resonating thus with a widespread view in the West that was highlighted in the CNOOC-Socal case. The fact that Chinalco's CEO sits on the State Council is one proof, the fact that the Chinese state and state banks have been and are still financing much of Chinese FDI another. The Chinalco CEO, on his part, repeatedly affirmed that Chinalco's intentions were purely commercial and that the state-owned Chinese companies are rather independent of the state.²⁰ This is an image that Western observers and stake-holders agree they cannot share.

Chinese companies will change the geoeconomic structure of the world's mineral industries, but they will meet competition and contention. Whether they may find allied among Brazilian, Indian or Russian companies, or even become partners of Western corporations remain an open question (Claes and Hveem, 2008). The market position of the private Western corporations by the middle of the 2000s was still strong and in some base metals even stronger than in the 1970s. Between these two points in time ownership patterns had changed in some, but remained rather stable in other metals. Changes in market organization are therefore more modest than the changes that have taken place in the other geoeconomic variables, production locations and the geographical supply-demand structure (see Table 5 which is to be completed).

¹⁹ Financial Times, 9 June 2009. Chinalco still retains a 9.5 % share in RTZ after a bid by a Chinalco-led consortium that included Alcoa, the US-based metal company; see Financial Times 26 Nov 2008.

²⁰ See Downs 2008a for a thorough analysis of state-company relations in the Chinese oil industry.

Table 5: *World market shares of the largest corporations in some base metals, 1975 and 2005, %*

	Bauxite		Copper concentr		Nickel		Iron ore 1)		Cobalt		Chrom-ite		Mang-anese		Zinc	
	75	05	75	05	75	05	75	05	75	05	75	05	75	05	75	05
Anglo-America			6						4		5					
Rio Tinto Zinc		9	3					13							5	
Comp. Vale RD							10	18					n.a	8		
BHP Billiton	1 2)	n.a	n.a	7	11 2)	11	13 2)	10								
INCO					27	15			6	n.a						
Codelco			13	16												
Norilsk					17	18			7	12						
Alcoa	20	n.a														

1) Figures for 1975 are for iron.

2) 1975 figures are of all Australian mining companies that year.

Sources: Hveem and Malnes 1980; M2iScarcity Report; Wårell 2007; and www.bergforsk.se and www.mineweb.com.

Back to geopolitics

In geoeconomic terms demand for minerals has shifted to Asia and to China in particular. The other aspiring global power, India, is not yet a big *demandeur*, but is expected to become one soon (Streifel 2009). For our purpose, however, it is more important that mining has shifted from locations in the West or traditionally under Western power, to emerging economies that are not falling into that category. With industrial change to new materials and the emergence of REEs as materials of strategic importance, this represents a significant change. This is also where geopolitics enters the analysis.

It appears rather unlikely that the five BRICS countries, the leading ‘emerging economies’ and coming or aspiring big powers, will act as a collective in mineral markets. For governments to be able to act as a cartel a number of conditions will have to be met which are simply not there; crude oil is a special case (Hveem 1978). As I indicated above, *if* they were to manage to do so, they would represent a formidable source of potential power. In terms of where mining is currently taking place a BRICS member is the largest producing country in 22 out of 33 metallic minerals surveyed. But a BRICS country also is the second largest producer in 10 and the third largest producer in 8 of the 33. China alone is the largest producer in 13, the second largest in 4 and the third largest in 3 of the 33 minerals (see Appendix, table A).

Following the perspective developed above, a country would be perceived as a *geopolitical* challenge (in the West, but also by other concerned non-Western actors) if it occupies a strong market position (geoeconomic variable), is an established or aspiring political and military power in its region (power ambition), is perceived as politically-ideologically different, has a state exercising a dominant or strong influence over economic policy, and is likely to pursue conflict more than (or as much as) collaborative strategies towards other powers. This is a simple account of the way China is perceived in US decision-making quarters. It is arguably also, but to a lesser extent, how Russia is perceived in some quarters in the West. But it is not, generally speaking, how India, South Africa and on the whole Brazil are perceived. India’s and Brazil’s state ownership positions in mining and other industries have been subject to processes of privatization. And in political and ideological terms they as well as South Africa are clearly different from China and partly also Russia.

However, the geopolitical view does not put a strong emphasis on ideology, and not on state vs private ownership patterns. It emphasizes structural and geoeconomic characteristics of the market rather than economic ones narrowly defined; and it assumes that actors are driven by power ambitions, and that conflict with main contenders is likely as anarchic conditions prevail in the international system. Combined with political attention to matters of supply vulnerability these are the factors that activate geopolitics in minerals.

At the beginning of 2010 three of the biggest iron ore mining companies, CVRD, RTZ and BHP Billiton, met with Japanese importers to “reach a benchmark agreement that they can present to Beijing on a “take it or leave it” basis. The decision to sideline Beijing is remarkable”²¹ China is the biggest producer and importer of iron ore, accounting for 37 % of global steel consumption in 2007, a reflection of its formidable industrial growth and infrastructure programmes in the 2000s. Sidelining it, and after talks with another importing country, is therefore a move that catches attention. It may have had something to do with the legal case that the Chinese brought against employees of RTZ charged of obtaining commercial secrets and later sentenced. It may have something to do with the RTZ’s blocking of the Chinalco attempt, although there are no clear indications of that. But it is also most probably an illustration of the strains that a geopolitical view may set on commercial relations.

What is certain is that several political instruments are being employed to increase availability and secure transactions from mining abroad. A series of bilateral trade and investment agreements have been concluded, many with regulations addressing trade and investments in minerals, some only relating to commercial matters such as long-term delivery guarantees. Such agreements

²¹ Financial Times, 12 Jan 2010.

have been used by Western powers in the past whenever they found corporate channels of supply not enough of a guarantee. China has been working diligently to forge long-term supply agreements with diverse countries to manage its resource-supply exposures (Economist 2008a). A prominent example is the agreement with Congo DR; the agreement offers Congo transportation infrastructure, mining investments and other financial transfers in exchange for long-term deliveries of metals to China. This minerals-for-infrastructure programme certainly revives memories of colonial and post-colonial relations, and it mobilises geopolitical reasoning in third party headquarters. After China and Congo DR made the big infrastructure-for-minerals deal, the International Monetary Fund intervened to protest against some of the conditions included holding back at the same time a proposal to reschedule Congo's foreign debt; the bargaining that followed ended in the China-Congo deal being considerably reduced.²²

China's position in international markets and the most important foreign locations of strategic minerals is growing, but still exaggerated in quantitative terms. However, objective facts are one thing, cognitive mechanisms may produce images that differ from 'the real'. Sohn is therefore probably representing a widely held view when she observes:

“China's growing economic power and its announced plans to develop, over the next 10–15 years, a 'blue water' naval capability should concentrate the minds of those who make light of the increasing geopolitical stress caused by competition over resources. To this equation I would also incorporate the additional geopolitical stress caused by a resurgent and confident Russia –whose global ambitions are still unclear – since Russia is a major source of most of the non-fuel minerals” (Sohn 2009:x).

Another sign of the increased importance of geopolitical thinking is the rapid proliferation of white papers and strategy documents on resource security in the

²² Financial Times, 11th Nov 2009.

major headquarters. In the 1990s such documents were rare and mostly preoccupied with geoeconomic issues such as reserve and supply statistics and the corporate marketing and distribution networks. In the 2000s focus has increasingly been on political and strategic aspects of locations and availability, demand and supply structures, and ‘resource security’ issues. A wave of policy debates and assessments has hit Western capitals, Tokyo and the World Bank.

Australia is in a way squeezed in between geoeconomic and geopolitical thinking. China’s resource demands and Australia’s resource supplies have made China into Australia’s biggest trading partner. But Chinese attempts to take a share of decision-making in Australia’s mining sector in ways that remind of normal commercial relations between two members of the WTO have mobilised counter-forces in Australia. Minerals markets thus have become more conflictuous. Conflict may also be mounting even among powers which not only compete in minerals markets, but also aspire to more global power such as India and China?²³ In addition, the question is whether the resource race and the preoccupation with availability and security are putting increased pressure on the environment in a phase where environmental protection is demanded? Is the preoccupation with geopolitics also going to slow down ongoing law-making and political efforts in the US and EU to cope with the particular REEs found in Eastern Congo - coltan, cassiterite and wolframite – that are so important for ICT hardware and at the same time the source of smuggling, whitewashing and outright murder and war in that region?

Conclusion

The paper is a report of an ongoing research process. It has raised issues and proposed five hypotheses that may help understand and eventually explain the processes taking place within the international political economy of minerals.

²³ The Economist 21st August 2010: 15-18.

The purpose has not been to offer conclusive tests on these hypotheses but rather assess the empirical evidence in a preliminary and inconclusive way.

What may be concluded is that geopolitical and political propositions must be added to economic and geoeconomic ones in order to understand and eventually explain actions and processes in international mineral industries. Supply-demand factors are obviously at work; low investments in exploration up until the mid-2000s are part of the explanation why supply of many base metals has become tight and prices go up. In the ‘rare earth elements’ China is the monopoly supplier at the moment and prices and other market aspects reflect this. With respect to the role of financial actors and ‘financialization’ of markets, information is yet to be uncovered, but if available information on crude oil and gold offers any clue to what goes on in mineral-metals markets, this role is on the whole not a major one.

The role of the state as an owner of mines and regulator of markets was considerably reduced during the 1980s and 1990s through privatization and deregulation. In Brazil and partly India this change was particularly prominent. However, China’s rapid expansion of domestic mining and ownership positions in mining abroad, and its monopoly position in REEs, bring the state back onto the scene. Still, the traditional geoeconomic organization with a few Western-based corporations controlling mining and distribution worldwide, remains a strong factor. In addition it is supported by periodic waves of mergers and acquisitions and by political measures to contain the spread of state ownership by Chinese and other companies. Behind these measures there are certainly geopolitically motivated considerations. Geopolitics is thus entering as a strong factor, supporting the established geoeconomic structure wherever Western governments consider it necessary to secure what they perceive are vital national interests.

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Appendix table A

Table 8. Top three producing mining regions for selected metallic minerals (2006)⁵³

Metal	First		Second		Third		Cumulative [%]
	country	fraction [%]	country	fraction [%]	country	fraction [%]	
Rare Earth concentrates	China	95	USA	2	India	2	99
Niobium	Brazil	90	Canada	9	Australia	1	100
Antimony	China	87	Bolivia	3	South Africa	3	93
Tungsten	China	84	Canada	4	EU	4	92
Gallium	China	83	Japan	17	-		100
Germanium	China	79	USA	14	Russia	7	100
Rhodium	South Africa	79	Russia	11	USA	6	96
Platinum	South Africa	77	Russia	11	Canada	4	92
Lithium	Chile	60	China	15	Australia	10	85
Indium	China	60	Korea	9	Japan	9	78
Tantalum	Australia	60	Brazil	18	Mozambique	5	83
Mercury	China	57	Kyrgyzstan	29	Chile	4	90
Tellurium	Peru	52	Japan	31	Canada	17	100
Selenium	Japan	48	Canada	20	EU	19	87
Palladium	Russia	45	South Africa	39	USA	7	91
Vanadium	South Africa	45	China	38	Russia	12	95
Titanium	Australia	42	South Africa	18	Canada	12	72
Rhenium	Chile	42	USA	17	Kazakhstan	17	76
Chromium	South Africa	41	Kazakhstan	27	India	8	76
Bismuth	China	41	Mexico	21	Peru	18	80
Tin	China	40	Indonesia	28	Peru	14	82
Cobalt	D.R. Congo	36	Australia	11	Canada	11	58
Copper	Chile	36	USA	8	Peru	7	51
Lead	China	35	Australia	19	USA	13	67
Molybdenum	USA	34	China	23	Chile	22	79
Bauxite	Australia	34	Brazil	12	China	11	57
Zinc	China	28	Australia	13	Peru	11	52
Iron ore	Brazil	22	Australia	21	China	15	58
Cadmium	China	22	Korea	16	Japan	11	49
Manganese	China	21	Gabon	20	Australia	16	57
Nickel	Russia	19	Canada	16	Australia	13	48
Silver	Peru	17	Mexico	14	China	13	44
Gold	South Africa	12	China	11	Australia	11	34

Source: Wouters and Bol, 2009.

Appendix Table B.

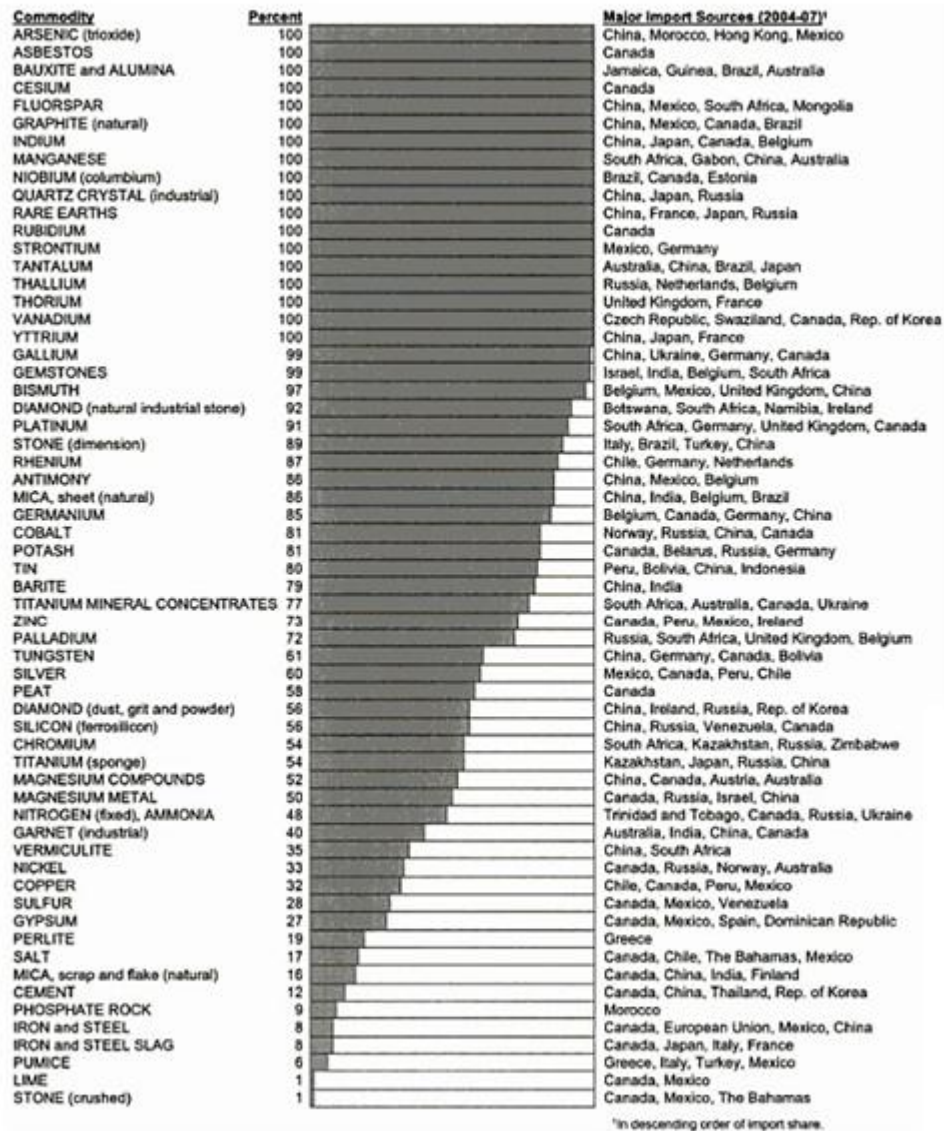
Table X. Main 3 exporter and importer countries in selected minerals in 2008.

Mineral	Exporter country	Share of world in %	Importer country	Share of World in %
Thorium ores and concentrates	Vietnam	66	China	83.2
	USA	24.4	Canada	7.9
	Malaysia	8.6	France	3.5
Tin ores and concentrates	Congo	34.3	Thailand	49.9
	Rwanda	21.3	Malaysia	27.1
	Bolivia	14.7	China	9.4
Tungsten ores and concentrates	Canada	25.9	USA	36
	Russia	16.7	China	35.3
	Portugal	10.5	Austria	16.4
Manganese ores and concentrates	South Africa	30.2	China	40
	Australia	27.1	Ukraine	17.5
	Gabon	22.3	India	6
Copper ores and concentrates	Chile	34.2	Japan	26.5
	Peru	13.6	China	26.3
	Australia	9	India	11.4
Nickel ores and concentrates	Australia	34.3	China	52.9
	Indonesia	18.3	Finland	24
	Canada	12.5	Japan	12.3
Titanium ores and concentrates	South Africa	48.2	USA	22.6
	Ukraine	8	China	11.1
	Canada	7.4	Germany	10.6
Iron ores incl roasted iron pyrites	Australia	37.6	China	56
	Brazil	24.5	Japan	12.2
	India	8.3	Rep. of Korea	4.5
Aluminum ores and concentrates	Guinea	29	China	37
	Brazil	14.3	USA	15
	Indonesia	10.5	Germany	6.3
Lead ores and concentrates	Peru	25.2	China	39.7
	Australia	15.2	Rep. of Korea	13.9
	USA	11.5	Japan	9.9
Cobalt ores and concentrates	Congo	84.9	China	76.2
	Cuba	6.5	Finland	15.4
	USA	2.2	India	4.9
Zink ores and concentrates	Peru	24.2	China	17.8
	Australia	16.9	Rep. of Korea	16.5
	Bolivia	11.6	Japan	10.7
Chromium ores and concentrates	South Africa	32.7	China	68
	Turkey	17.8	Russia	15
	Kazakhstan	15.3	Japan	2.1
Unwrought beryllium, beryllium powders	Kazakhstan	57.4	Russia	34.9
	USA	35.8	USA	33.2
	Canada	5	South Africa	11.3

Source: Trade Map. [International Trade Centre 2010.](http://www.trademap.org)

Appendix, fig. 1

2008 U.S. Net Import Reliance for Selected Nonfuel Mineral Materials

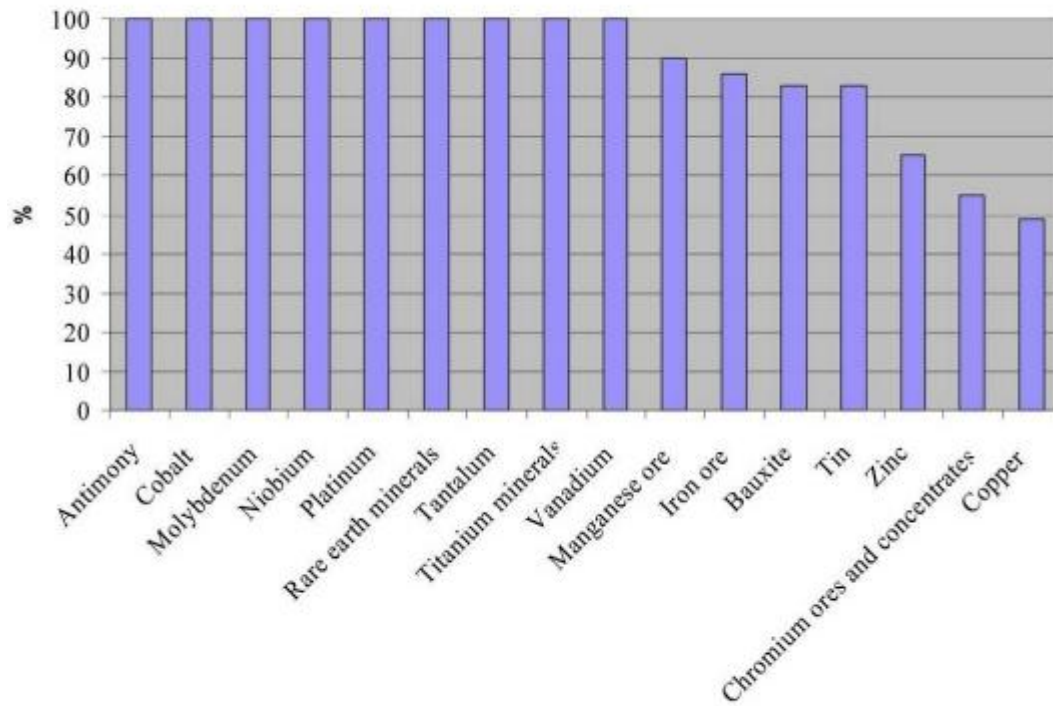


¹In descending order of import share.

Source: USGS, "Mineral Commodity Summaries 2009", US Geological Survey, Reston, Virginia, USA, 198p, minerals.usgs.gov/minerals/pubs/mcs/, 2009.

Appendix fig. 2

Metal concentrates and ores net imports of EU27 as fraction of apparent consumption in 2008⁵⁹



Source: Materials Innovation Institute (M2i) - Material scarcity report (2009)